CITY OF
Fremont

CONTRACT DOCUMENTS

FOR

WARM SPRINGS MEETING ROOM AND RESTROOM REPLACEMENT

CITY PROJECT NO. PWC 8777
No 18-037

CITY COUNCIL REFERENCE ONLY

PROJECT MANAGER
MARK MENNUCCI
MMENNUCCI@FREMONT.GOV
(510) 494 – 4530

LICENSED LANDSCAPE ARCHITECT
ROGER E. RAVENSTAD
No. 3509
STATE OF CALIFORNIA

COMMUNITY SERVICES DEPARTMENT • LANDSCAPE ARCHITECTURE DIVISION
CITY OF FREMONT • ALAMEDA COUNTY, CALIFORNIA

LANDSCAPE ARCHITECTURE DIVISION

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INSTRUCTIONS TO BIDDERS

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CONTRACT

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SPECIAL CONDITIONS

TECHNICAL SPECIFICATIONS

APPENDICES

PLANS (ATTACHED SEPARATELY)

FOR

WARM SPRINGS MEETING ROOM AND RESTROOM REPLACEMENT

CITY COUNCIL REFERENCE ONLY

CITY PROJECT NO. PWC 87777
Bid No 18-037

IN THE
CITY OF FREMONT, ALAMEDA COUNTY, CALIFORNIA

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PROJECT LOCATION MAP

City of Fremont

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CITY COPY FOR REFERENCE ONLY

Notice Inviting Bids

1. **Bid Acceptance.** The City of Fremont ("City") will accept sealed bids for its (**PWC 8777) WARM SPRINGS MEETING ROOM AND RESTROOM REPLACEMENT** ("Project"), on or before **June 7, 2018**, at 2: p.m. ("Bid Deadline"), at its Purchasing Division, located at 3300 Capitol Avenue, Building B, Fremont, California 94538, at which date, time and place the bids will be opened publicly and the dollar amounts of each bid will be read aloud.

2. **Project Information.**

2.1 Location and Description. The Base Bid Project is located at **Warm Springs Community Park**, at 47300 Fernald Drive, Fremont, California, 94539, and is described as follows:

The improvements include the disconnection of all utilities, demolition of the existing Bathroom and Meeting Room structures, including proper removal and disposal of all hazardous materials as described the Appendix, concrete demolition and conform grading; new concrete work to achieve accessible grades, fire suppression system from existing point of connection, utility connections, irrigation and planting, and the installation of a bathroom and meeting room structure and structural footings and foundations.

2.2 Time for Completion. The planned timeframe for commencement and completion of construction of the Project is:

Contractor will achieve substantial completion and temporary occupancy within a total maximum of **120 working days** after the date specified in the City's Notice To Proceed ("Contract Time"). Contractor will fully complete the Work for the Project and achieve final occupancy within **150 Working Days** after the date specified in the City's Notice to Proceed ("Contract Time").

The City will assess liquidated damages in the amount of **$500** for each and every calendar day of delay in finishing the work in excess of the contract time past **120 working days**, and an additional **$500** for each and every calendar day of delay in finishing the work in excess of the contract time past **150 working days**, for a total amount of **$1000** per calendar day past 150 working days.

2.3 Estimated Project Cost. The estimated construction cost, or construction cost range, for the Project is $**900,000**. This estimate serves only as a guideline to bidders of the scope of the Work and the Project. No bidder, including the successful bidder, is entitled to make any claim against City based on inaccuracy of the estimated cost or range of cost of the Work or the Project.

3. **License and Registration Requirements.**

3.1 License. This Project requires a valid California contractor's license for the following classification(s): **Class A or B.** Contractors bidding as a joint venture must secure a joint venture license prior to award of the Contract for the Project.

3.2 DIR Registration. City will not accept a Bid Proposal from, or enter into the Contract with, a bidder without proof that the bidder is registered with the California Department of Industrial Relations ("DIR") to perform public work under Labor Code Section 1725.5, subject to limited legal exceptions.

OUT TO COUNCIL REFERENCE ONLY

4. **Obtaining Contract Documents.** The plans, specifications, plan-holder's list, bid, and contract documents for the Project, and any addenda thereto ("Contract Documents") may be purchased from ARC Document Solutions Santa Clara ("ARC"), located at 821 Martin Avenue, Santa Clara, CA 95050; telephone: (408) 295-5770; email: santaclara@e-arc.com; or via Planwell at: www.e-arc.com/ca/santaclara. No partial sets will be issued and the cost of purchase is non-refundable. Call in advance to confirm availability.

   Reference City of Fremont **Bid No. 18-037**.

   Bidders are encouraged to recycle unused Contract Documents.

5. **Bid Proposal and Security.**

   5.1 Bid Proposal Form. Each bid must be submitted using the Bid Proposal form provided with the Contract Documents.

   5.2 Bid Security. The Bid Proposal must be accompanied by bid security of ten percent of the maximum bid amount, in the form of a cashier's or certified check made payable to City, or a bid bond executed by a surety licensed to do business in the State of California on the Bid Bond form included with the Contract Documents. The bid security must guarantee that, upon award of the bid, the successful bidder will execute the Contract and submit the payment and performance bonds, the insurance certificates, and the other documentation required by the Contract Documents, within ten days after City's issuance of the Notice of Award.

6. **Prevailing Wage Requirements.**

   6.1 General. This Project is subject to the prevailing wage requirements applicable to the locality in which the Work is to be performed for each craft, classification or type of worker needed to perform the Work, including employer payments for health and welfare, pension, vacation, apprenticeship and similar purposes.

   6.2 Rates. The prevailing rates are on file with the City Engineer and available online at http://www.dir.ca.gov/DLSR. Each Contractor and Subcontractor must pay no less than the specified rates to all workers employed to work on the Project. The schedule of per diem wages is based upon a working day of eight hours. The rate for holiday and overtime work must be at least time and one-half.

   6.3 Compliance. The Contract will be subject to compliance monitoring and enforcement by the DIR, under Labor Code Section 1771.4.

7. **Performance and Payment Bonds.** The successful bidder will be required to provide performance and payment bonds, each for 100% of the Contract Price.

8. **Substitution of Securities.** Substitution of appropriate securities in lieu of retention amounts from progress payments is permitted under Public Contract Code Section 22300.

9. **Subcontractor List.** Each bidder must submit, with its Bid Proposal, the name, location of the place of business, California contractor license number, and DIR registration number, and portion of the Work (based on the Base Bid) for each Subcontractor that will perform work or service, or fabricate or install work, for the prime contractor in excess of one-half of 1% of the bid price, using the Subcontractor List form included with the Contract Documents.

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10. **Instructions to Bidders.** Additional and more detailed information about the Project and City's bidding requirements is provided in the Instructions to Bidders. All bidders should carefully review the Instructions to Bidder before submitting a Bid Proposal for the Project.

11. **Bidders' Conference.** A conference will be held on **May 24, 2018 at 10:00am**., at the following location: **Warm Springs Community Park**, in front of the existing meeting room and bathroom, at 47300 Fernald Street, Fremont, California, 94539, for the purpose of acquainting all prospective bidders with the Contract Documents and the Worksite. The bidders' conference is not mandatory.

12. **Specific Brands.** Pursuant to Public Contract Code Section 3400(c), City has found that the following specific brands or trade names are required for the following particular material(s), product(s), thing(s), or service(s), and no substitutions will be considered or accepted for the Project:

Item	Required brand or trade name	Reference
Grab Bars	Bobrick B-5806X36 stainless steel finish	PCC Section 3400 (c) (3)
Grab Bars	Bobrick B-5806X42 stainless steel finish	PCC Section 3400 (c) (3)
Toilet Tissue Dispense	Georgia Pacific, 2 roll Vertical; Tissue dispenser #56782 Brushed stainless steel finish	PCC Section 3400 (c) (3)
Toilet Seat Cover Dispenser	Bobrick B-3013; stainless steel satin finish	PCC Section 3400 (c) (3)
Paper Towel Dispenser (Recessed)	Bobrick B-359; stainless steel satin finish	PCC Section 3400 (c) (3)
Waste Receptacle (Recessed)	Bobrick B-3644; stainless steel satin finish	PCC Section 3400 (c) (3)
Paper Towel Dispenser/ Waste Receptacle (Recessed)	Bobrick B-3944; stainless steel satin finish	PCC Section 3400 (c) (3)
Toilet	Wall Hung, Front Mount Murdock 1001F & 1002F stainless steel finish w/plastic seat	PCC Section 3400 (c) (3)
Urinal	Murdock Model 1030 Series stainless steel finish	PCC Section 3400 (c) (3)
Sink	Murdock Model 101B Series stainless steel finish	PCC Section 3400 (c) (3)
Soap Dish	Bobrick-680	PCC Section 3400 (c) (3)

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Soap Dispenser (Recessed)	Bobrick-306	PCC Section 3400 (c) (3)
Mirror	Bobrick B-942; stainless steel Polished finish	PCC Section 3400 (c) (3)
Partitions	Bradley Series 700; stainless steel satin finish	PCC Section 3400 (c) (3)
Diaper Changing Station	Koala Kare KB110-SSRE; stainless steel satin finish	PCC Section 3400 (c) (3)
Hand Dryer	Dyson AB12 Airblade V; Nickel finish	PCC Section 3400 (c) (3)
Remote Control Valves	Griswold 2000 series	PCC Section 3400 (c) (3)
Rotors	Hunter I-20 and Hunter I-40	PCC Section 3400 (c) (3)

Purchasing Division Date: _____

Publication Dates: 1) ____5/8/2018_____ 2) ____5/15/2018_____

END OF NOTICE INVITING BIDS

CITY COUNCIL REFERENCE ONLY

Instructions to Bidders

Each bid ("Bid Proposal") submitted to the City of Fremont ("City") for its **Warm Springs Meeting Room and Restroom Replacement (PWC 8777)** ("Project") must be submitted in accordance with the following instructions and requirements:

1. Bid Submission.

1.1 General. Each Bid Proposal must be signed, sealed and submitted to City, using the form provided in the Contract Documents, by or before the Bid Deadline set forth in the Notice Inviting Bids. City reserves the right to amend or postpone the Bid Deadline by subsequent addendum. Faxed or emailed Bid Proposals will not be accepted, unless otherwise specified. Late submissions will be returned unopened. Each bidder is solely responsible for all of its costs to prepare and submit its bid and by submitting a bid waives any right to recover those costs from City. The bid price(s) must include all costs to perform the Work as specified, including all indirect costs such as applicable taxes, insurance and field offices.

1.2 Bid Envelope. The envelope containing the sealed Bid Proposal and all required forms and attachments must be clearly labeled and addressed as follows:

SEALED BID ENCLOSED, CITY OF FREMONT

BID PROPOSAL
Warm Springs Meeting Room and Restroom Replacement
Project No. **PWC 8777**
Bid No. **18-037**

City of Fremont, Office of Purchasing (Finance Department)
3300 Capitol Avenue, Building B
Fremont, CA 94538
Attn: Linda Wright

The envelope must also be clearly labeled, as follows, with the bidder's name, address, contractor license number(s), and registration number with the California Department of Industrial Relations ("DIR") for bidding on public works contracts (Labor Code sections 1725.5 and 1771.1):

[Contractor company name]
[street address]
[city, state, zip code]
[California contractor license number(s)]
[DIR Registration No:_____]

1.3 DIR Registration. City will not accept a Bid Proposal from or enter into the Contract with a bidder without proof that the bidder is registered with the DIR to perform public work under Labor Code Section 1725.5, subject to limited legal exceptions. If City is unable to confirm that the bidder's DIR registration is current, City may disqualify the bidder and return its bid unopened. (Labor Code section 1725.5.) If the bid is sent by mail, the sealed envelope must be enclosed in a separate envelope.

1.4 Bid Submittals. Each bidder must use the forms provided by City in these Contract Documents for the bid submittal. All bid forms must be fully completed and signed as directed, along with the required attachments, and the sealed bid submittal must include the following:

CITY COUNCIL REFERENCE ONLY

(A) Bid Proposal
(B) Bid Schedule
(C) Subcontractor List
(D) Noncollusion Declaration
(E) Bid Security (Cashier's or Certified Check or Bid Bond)
(F) Bidder's Statement of Responsibility

2. Pre-Bid Investigation.

2.1 Contract Documents. Each bidder is solely responsible for diligent and thorough review of the Contract Documents (as defined in the General Conditions), examination of the Project site, and reasonable and prudent inquiry concerning known and potential site conditions prior to submitting a Bid Proposal. However, except for any areas that are open to the general public, bidders may not enter City's property or the Project site without prior coordination with and written authorization from City. Bidders are responsible for reporting any errors or omissions in the Contract Documents to City prior to submitting a Bid Proposal, subject to the limitations of Public Contract Code Section 1104. City expressly disclaims responsibility for assumptions a bidder might draw from the presence or absence of information provided by City.

2.2 Project Site. Soil and soil test data, water table elevations, and soil analyses for test holes may be available for inspection in the **Landscape Architecture Department** or as otherwise specified in the General Conditions. Any additional subsurface exploration at the Project site must be done at the bidder's expense, but only with prior written authorization from City. All soil data and analyses available for inspection or provided in the Contract Documents apply only to the test hole locations. The water table elevation indicated by a soil test report existed on the date the test hole was drilled. The bidder is responsible for determining and allowing for any differing soil or water table conditions during construction. Because groundwater levels may fluctuate, difference(s) in elevation between ground water shown in soil boring logs and ground water actually encountered during Project construction will not be considered changed Project site conditions.

2.3 Utility Company Standards. The Project must be completed in a manner that satisfies the standards and requirements of the affected utility companies or agencies (collectively, "utility owners"). The successful bidder may be required by the utility owners to provide detailed plans prepared by a California registered civil engineer showing the necessary temporary support of the utilities during coordinated construction work. Bidders are directed to contact the utility owners about their requirements before submitting a Bid Proposal.

3. Questions and Requests for Information or Clarification. Questions, requests for information, and requests for clarification regarding the Project, the bid procedures, or any of the Contract Documents must be submitted to City in writing, addressed to the Project Manager for the Project, as follows:

Mark Mennucci, Senior Landscape Architect
39550 Liberty Street, Fremont, CA 94537
510-494-4530 (phone)
510-494-4721 (fax)
mmennucci@fremont.gov

If a bidder finds any error, omission, inconsistency, or ambiguity in the Contract Documents, the bidder must make a written request for clarification before submitting the bid. Bidders must submit any inquiry under this Section by **12 p.m. at least 4 Working Days** before the Bid Deadline. Questions received any later will not be addressed before the Bid Deadline.

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4. Addenda. Any addenda issued prior to the bid opening are part of the Contract Documents. Subject to the limitations of Public Contract Code section 4104.5, City reserves the right to issue addenda prior to bid time. City will make reasonable efforts to deliver addenda to known plan holders who have provided a delivery address for receipt of addenda. However, City makes no guarantee that all bidders will receive all addenda. Each bidder is responsible for ascertaining and ensuring it has received and reviewed all addenda prior to submitting its bid and must acknowledge receipt of all addenda in the Bid Proposal. Bidders should check with ARC (see Section 4 of Notice Inviting Bids) for any addenda or updates on the Project, at: http://www.e-arc.com/ca/santaclara.

5. Brand Designations and "Or Equal" Substitutions. Any specification designating a material, product, thing, or service by specific brand or trade name, and followed by the words "or equal," is intended only to indicate quality and type of item desired, and bidders may request use of any equal material, product, thing, or service. All data substantiating the proposed substitute as an equal item must be submitted with the written request for substitution. Pre-bid requests for substitution must be submitted to the Engineer at least seven Working Days before the Bid Deadline, so that all interested bidders may be notified of any approved alternative. Any other requests for substitution must comply with the General Conditions. If the Engineer denies the request for substitution, the material, product, thing or service specified in the Contract Documents must be furnished and installed. This provision does not apply to materials, products, things, or services that may lawfully be designated by a specific brand or trade name under Public Contract Code Section 3400(c) and Fremont Municipal Code Section 3.20.167(b).

6. Bid Schedule. Bidders are required to fully complete the Bid Schedule form accompanying the Bid Proposal form with unit prices as indicated, and to submit the completed Bid Schedule with their Bid Proposal.

6.1 Incorrect Totals. This provision is intended to resolve computational errors on the Bid Schedule form.

(A) Unit Price Subtotals. In the event a computational error for any bid item (base bid or alternate) results in an incorrect extended total for that item, the submitted base bid or bid alternate total will be adjusted to reflect the corrected amount (estimated quantity X unit cost).

(B) Unit Price Total. In the event of a discrepancy between the actual total of the itemized or unit prices shown on the Bid Schedule for the base bid, and the amount entered as the base bid on the Bid Proposal form, the actual total of the itemized or unit prices shown on the Bid Schedule for the base bid will be deemed the base bid price.

(C) Alternates. In the event of a discrepancy between the actual total of the itemized or unit prices shown on the Bid Schedule for any bid alternate, and the amount entered for the alternate on the Bid Proposal form, the actual total of the itemized prices shown on the Bid Schedule for that alternate will be deemed the alternate price.

(D) Withdrawal for Material Error. Nothing in this provision is intended to prevent a bidder from requesting to withdraw its bid for material error under Public Contract Code Section 5100 et seq.

6.2 Estimated Quantities. The quantities shown on the Bid Schedule are estimated and the actual quantities required to perform the Work may be greater or less than the estimated amount. The Contract Price will be adjusted to reflect the actual quantities required for the Work. However, items marked as "Final Pay" items will be compensated based solely on City's estimated quantities, and payment will not be adjusted based on actual quantities, even if the actual quantities differ from

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City's estimate on the Bid Schedule. Only changes in quantities due to design changes will be measured and paid separately pursuant to a Change Order.

7. **Bidders Interested in More Than One Bid.** No person, firm, or corporation may submit or be a party to more than one Bid Proposal unless alternate bids are specifically called for. However, a person, firm, or corporation that has submitted a subcontract proposal or quote to a bidder may submit subcontract proposals or quotes to other bidders, and may also submit a Bid Proposal as a prime contractor.

8. **Bid Proposal Form and Enclosures.** Each Bid Proposal must be completed in ink using the Bid Proposal form included in the Contract Documents. The Bid Proposal form should be fully completed without interlineations, alterations, or erasures. Any necessary corrections must be clear and legible, and must be initialed by the bidder's authorized representative. A Bid Proposal submitted with terms such as "negotiable," "will negotiate," or similar, will be considered non-responsive.

9. **Authorization and Execution.** Each Bid Proposal must be signed by the bidder's authorized representative. A Bid Proposal submitted by a partnership must be signed in the partnership name by a general partner with authority to bind the partnership. A Bid Proposal submitted by a corporation must be signed with the legal name of the corporation, followed by the signature and title of two officers of the corporation with full authority to bind the corporation to the terms of the Bid Proposal, under California Corporation Code section 313.

10. **Bid Security.** Each Bid Proposal must be accompanied by bid security of ten percent of the maximum bid amount (meaning the base bid plus all additive alternate prices, if any), in the form of a cashier's check or certified check made payable to City, or a bid bond using the form included in the Contract Documents and executed by a surety licensed to do business in the State of California. The bid security must guarantee that, if City issues the Notice of Award of the Contract to the bidder, then the bidder will provide to City all of the documents required under Section 14 below within ten calendar days thereof.

11. **Withdrawal of Bid Proposals.** A Bid Proposal for the Project will be considered a firm offer and may not be withdrawn for a period of 90 days after the bid opening without forfeiture of the bid security, except as authorized for material error under Public Contract Code Section 5100 et seq. or Fremont Municipal Code Section 3.20.200.

12. **Bid Protest.** Any bid protest must comply with City's protest procedures for public construction project contracts, set forth in Fremont Municipal Code Section 3.20.330. City will issue the Notice of Intent to Award the Contract by posting the notice on designated public bulletin boards and on its bid results webpage at:

http://fremont.gov/index.aspx?NID=532.

A bid protest must be submitted in writing to, and received by, City's Office of Purchasing, located at 3300 Capitol Avenue, Building B, Fremont, California 94538, before 5:00 p.m. on the fifth Working Day after the date of City's posting of the Notice of Intent to Award (the "Bid Protest Deadline"). The protesting bidder will bear the risk of any non-delivery of its bid protest before the Bid Protest Deadline, regardless of the method of delivery used. The bid protest must comply with the following requirements:

12.1 General. Only a bidder that has actually submitted a Bid Proposal is eligible to submit a bid protest against another bidder. Subcontractors are not eligible to submit bid protests. A bidder may not rely on the bid protest submitted by another bidder, but must timely pursue its own protest.

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For purposes of this Section 12, a "Working Day" means a day that City is open for normal business, and excludes weekends and holidays observed by City.

12.2 Protest Contents. The bid protest must contain a complete statement of the legal grounds for the protest, all the facts relevant to the protest, the form of relief requested, and the legal basis for such relief, as well as all supporting documentation. Material submitted after the Bid Protest Deadline will not be considered. The protest must refer to the specific portion(s) of the Contract Documents upon which the protest is based. The protest must include the name, address, email address, and telephone number of the protesting bidder and any person representing the protesting bidder. If City requests additional information, it must be provided to City within the time period City specifies.

12.3 Copy to Protested Bidder. A copy of the protest and all supporting documents must also be concurrently transmitted by fax or by email by the protesting bidder, by or before the Bid Protest Deadline, to the protested bidder and any other bidder who has a reasonable prospect of receiving an award depending upon the outcome of the protest.

12.4 Response to Protest. The protested bidder may submit a written response to the protest, provided the response is received by City before 5:00 p.m. within two Working Days after the Bid Protest Deadline or after actual receipt of the bid protest, whichever is sooner (the "Response Deadline"). The response must include all supporting documentation. Material submitted after the Response Deadline will not be considered. The response must include the name, address, email address, and telephone number of the person representing the protested bidder if different from the protested bidder.

12.5 Copy to Protesting Bidder. A copy of the response and all supporting documents must be concurrently transmitted by fax or by email by the protested bidder, by or before the Response Deadline, to the protesting bidder and any other bidder who has a reasonable prospect of receiving an award depending upon the outcome of the protest.

12.6 Exclusive Remedy. The procedure and time limits set forth in this section are mandatory and are the bidder's sole and exclusive remedy in the event of bid protest. A bidder's failure to comply with these procedures will constitute a waiver of any right to further pursue a bid protest, including filing a Government Code Claim or initiation of legal proceedings.

12.7 Right to Award. City reserves the right to award the Contract to the bidder it has determined to be the responsible bidder submitting the lowest responsive bid, and to issue a notice to proceed with the Work notwithstanding any pending or continuing challenge to its determination.

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13. Rejection of Bids. City reserves the right, acting in its sole discretion, to waive nonmaterial and inconsequential bid irregularities, to accept or reject any and all bids, to issue a new Notice Inviting Bids for the Project, or to abandon the Project entirely.

14. Award of Contract. City will award the Contract, if at all, by issuing a written Notice of Award within 90 days after the opening of bids, or as otherwise specified in the Special Conditions, to the responsible bidder that submitted the lowest responsive bid. The successful bidder must submit to City all of the following documents, within ten calendar days after City's issuance of the Notice of Award:

14.1 Two duly signed counterpart originals of the Contract provided by City with the Notice of Award, using the form included in the Contract Documents;

14.2 Documentation evidencing the authority of the individual(s) signing the Contract on behalf of the successful bidder;

14.3 Payment and performance bonds for the Project as specified in the Contract Documents and using the bond forms included in the Contract Documents, each for 100% of the Contract Price as awarded;

14.4 If required for this Project, a warranty bond as specified in the Contract Documents, using the warranty bond form provided for 20% of the Contract Price as awarded;

14.5 Insurance certificates and endorsements evidencing the successful bidder's insurance coverage, as required by the Contract Documents;

14.6 Documentation evidencing the successful bidder's payment of City business tax and registration tax for a business license, as required by the Contract Documents;

14.7 A copy of the successful bidder's California contractor's license(s), showing the classification(s) required by the Contract Documents; and

14.8 Identification of the successful bidder's on-site superintendent for the Project, as required by the Contract Documents.

15. Statement of Responsibility. Each sealed Bid Proposal must include the bidder's Statement of Responsibility using the form provided with the Contract Documents. The Statement of Responsibility must be completed and signed, including all required attachments, providing satisfactory evidence that shows the bidder's financial resources, the bidder's experience in the type of work being required by City, the bidder's organization available for the performance of the Contract, and any other required evidence of the bidder's qualifications to perform the Contract. City may consider such evidence before making its decision to award the proposed Contract. A bid that does not fully comply with this requirement may be rejected as nonresponsive. A bidder that submits a Statement of Responsibility which is subsequently determined to contain false or misleading information, or material omissions, may be disqualified as non-responsible.

16. License(s). The successful bidder and its Subcontractor(s) must possess the California contractor's license(s) in the classification(s) required by law to perform the Work. The successful bidder must also obtain a City business license within ten days following City's issuance of the Notice of Award. Each Subcontractor must also obtain a City business license before performing any Work.

16.1 Hazardous Materials Certification(s). The Project involves hazardous materials, summarized as follows and further specified in the Contract Documents:

See Appendix D, Pre-demolition/Renovation Asbestos and Lead Survey and Evaluation, dated March 29, 2013, by The Consulting Group.

The successful bidder and/or its Subcontractor(s) must also possess the following hazardous materials certification(s) as required by law to perform the portion of the Work that relates to the hazardous materials:

C-22 – Asbestos Abatement Specialty
HAZ – Hazardous Substance Removal Certification

17. Subcontractors. Any Subcontractor who is ineligible to perform work on a public works project under Labor Code Sections 1777.1 or 1777.7 is prohibited from performing work on the Project.

18. Pre-Construction Conference. City will schedule a mandatory pre-construction conference for the Project following City's issuance of the Notice of Award and Contract execution by the successful bidder. The successful bidder must attend and participate in the pre-construction conference, and provide all of the required information and documents for the conference as set forth in Section 2.2(E) of the General Conditions. City will issue a Notice to Proceed following the conference, identifying the commencement date for the Work and the Contract Time.

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19. **Warranty Bond.** A warranty bond is required for this Project in the amount of 20% of the awarded Contract Price, and must be submitted with the payment and performance bonds as specified in Section 14.

20. **Subcontractor Work Limit.** The prime Contractor must perform at least 15 % of the Work on the Project, calculated as a percentage of the base bid price on the Bid Proposal form, using Contractor's own forces. The remaining Work may be performed by qualified Subcontractors.

21. **"For Reference Only."** The following documents are provided "For Reference Only" as defined in Section 3.4 of the General Conditions:

Appendix C – Soil Sampling and Analysis Technical Report, dated June 19, 2013, by The Consulting Group.

Appendix D – Pre-demolition/Renovation Asbestos and Lead Survey and Evaluation, dated March 29, 2013, by The Consulting Group.

Appendix E – Soils Engineering Study, Meeting Room and Bathroom Replacement Warm Springs Community Park, dated July 30, 2012, by Earth Systems Pacific.

END OF INSTRUCTIONS TO BIDDERS

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Bid Proposal

WARM SPRINGS MEETING ROOM AND RESTROOM REPLACEMENT

_____ ("Bidder") hereby submits this Bid Proposal to the City of Fremont ("City") for the above-referenced project ("Project"), in response to the Notice Inviting Bids and in accordance with the Contract Documents referenced therein.

1. **Base Bid.** Bidder proposes to perform and fully complete the Work for the Project as specified in the Contract Documents, within the time required for full completion of the Work, for the following price ("Base Bid"): $_____.

Bidder will furnish all labor (including supervision), materials and equipment (whether or not permanent or actually incorporated into the Work), utilities for the Work (including water, sanitary facilities, electricity, fuel, light, heat, and telephone), tools, transportation, and services necessary to complete the Work for the amounts quoted in this Bid Proposal (including the costs of all applicable taxes, patent rights, royalties, licenses, and permits). **Any Work shown on the Plans or described in the Specifications without a specific bid item(s) in this Bid Proposal is hereby included within or made part of this Bid Proposal.**

2. **Addenda.** Bidder agrees that it has confirmed receipt of or access to, and reviewed, all addenda issued for this Bid. Bidder specifically acknowledges receipt of the following addenda:

Addendum:	Date Received:	Addendum:	Date Received:
#01	_____	#05	_____
#02	_____	#06	_____
#03	_____	#07	_____
#04	_____	#08	_____

3. **Bidder's Warranties.** By signing and submitting this Bid Proposal, Bidder warrants the following:

3.1 **Examination of Contract Documents.** Bidder has thoroughly examined the Contract Documents and represents that, to the best of Bidder's knowledge, there are no errors, omissions, or discrepancies in the Contract Documents, subject to the limitations of Public Contract Code Section 1104.

3.2 **Examination of Worksite and Local Conditions.** Bidder has visited and examined the Worksite and is familiar with the local conditions at the Project location, including the weather, road access, vehicle routes, and surface and subsurface conditions. Bidder is also familiar with the availability of labor, materials, equipment, and utilities for the Project and has attended any mandatory bidders' conference and any mandatory pre-bid Project site visit.

3.3 **Bidder is Qualified.** Bidder is fully qualified to perform the Work. Bidder has the expertise and financial capacity to perform all obligations required by the Contract Documents.

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3.4 **Contract Time.** The time for completion of the Work for the Project as specified in the Notice Inviting Bids is reasonable and Bidder is ready and able to perform the Work within that timeframe.

3.5 **Legal Compliance.** Bidder is aware of and will comply with all applicable legal requirements for the Project, including all federal, California, local and City laws and regulations.

(A) **Trenching of Five Feet or More**. For the excavation of any trench of a depth of five feet or more, this Bid Proposal includes as a bid item the cost of adequate sheeting, shoring, bracing, sloping or other equivalent provisions to be made, including the costs of design for a detailed plan, for protection of life and limb from the hazard of caving ground during the excavation. Any such provisions will conform to applicable safety orders in accordance with California Labor Code Sections 6705 and 6707.

3.6 **Responsibility for Bid.** Bidder has carefully reviewed this Bid Proposal and is solely responsible for any errors or omissions contained in the completed bid.

4. **Award of Contract**. By signing and submitting this Bid Proposal, Bidder agrees that if Bidder is awarded the Contract for the Project, Bidder will provide all of the following to City within ten calendar days following City's issuance of the Notice of Award:

4.1 **Signed Contract.** Two duly signed counterpart originals of the Contract provided by City with the Notice of Award, using the form included in the Project contract documents ("Contract Documents");

4.2 **Signing Authority.** Documentation evidencing the authority of the individual(s) signing the Contract on behalf of Bidder;

4.3 **Payment, Performance and Warranty Bonds.** A payment bond and a performance bond for the Project, each for 100% of the maximum Contract Price as awarded, and a warranty bond, if required, for 20% of the maximum Contract Price as awarded, each executed by sureties licensed to do business in the State of California and using the applicable bond form included with the Contract Documents;

4.4 **Insurance.** The insurance certificates and endorsements evidencing Bidder's insurance coverage as required by the Contract Documents;

4.5 **Business Tax and Registration Tax.** Documentation evidencing Bidder's and all listed Subcontractors' payment of City business tax and registration tax for a business license, as required by the Contract Documents;

4.6 **Contractor's License.** A copy of Bidder's California contractor's license, showing the classification(s) required by the Contract Documents; and

4.7 **On-Site Superintendent.** Identification of Bidder's on-site superintendent for the Project, as required by the Contract Documents.

5. **Bid Security.** As a guarantee that, if awarded the Contract, Bidder will perform its obligations under Section 4 above, Bidder is enclosing bid security in the amount of ten percent of its maximum bid amount (meaning the base bid plus all additive alternate prices, if any) in one of the following forms (check one):

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____ A cashier's check or certified check payable to City and issued by _____ in the amount of $_____.

____ A bid bond, using the Bid Bond form included with the Contract Documents, payable to City and executed by a surety licensed to do business in the State of California.

This Bid Proposal is hereby submitted on _____, 20__.

s/ _____	_____ Name and Title [print]
s/ _____ *[See section 9 of Instructions to Bidders]*	_____ Name and Title [print]
_____ Company Name Classification	_____ License #, Expiration Date, and
_____ Address	_____ DIR Registration #
_____ City, State, Zip	_____ Phone
_____ Contact Name	_____ Contact Email

END OF BID PROPOSAL

CITY COUNCIL REFERENCE ONLY

Bid Schedule

This Bid Schedule must be completed in ink and included with the sealed Bid Proposal. Pricing must be provided for each Bid Item as indicated. The lump sum or unit cost for each item must be inclusive of all costs, whether direct or indirect, including profit and overhead. The sum of all amounts entered in the "Extended Total Amount" column must be identical to the Base Bid price entered in Section 1 of the Bid Proposal Form. In case of a math error or ambiguity, the unit cost listed for any bid item will prevail over the extended total amount listed for that bid item. The grand total of all of the extended total amounts listed will also prevail over the Total Base Bid listed below.

LS = Lump Sum	EA = Each	LF = Linear Foot	CY = Cubic Yard	F = Final Pay
SF = Square Feet	LB = Pounds	TON = Ton (2000 lbs)	AL = Allowance	S = Specialty Item

BASE BID

BID ITEM NO.	ITEM DESCRIPTION	EST. QTY.	UNIT	UNIT COST	EXTENDED TOTAL AMOUNT
1	Tree Protection	300	LF	$	$
2	Water Pollution Control	1	LS	$	$
3	Mobilization	1	LS	$	$
4	Temporary Construction Fencing	500	LF	$	$
5	Demolition – Existing Buildings	1	LS	$	$
6	Demolition – Existing Site Work	1	LS	$	$
7	Tree Removal	2	EA	$	$
8	Clearing and Grubbing	11,600	SF	$	$
9	Rough Grading (F)	100	CY	$	$
10	Finish Grading and Site Preparation	11,600	SF	$	$
11	Sanitary Sewer Cleanout	3	EA	$	$
12	4" Sanitary Sewer	130	LF	$	$
13	1" Domestic Water - PVC	52	LF	$	$
14	2" Domestic Water – Copper	308	LF	$	$
15	12" Storm Drain	95	LF	$	$
16	Storm Drain Field Inlet	2	EA	$	$
17	Existing Storm Drain Connection	1	EA	$	$
18	6" Fire Sprinkler Extension	630	LF	$	$
19	Fire Sprinkler Tap to Existing	1	EA	$	$
20	New Bathroom Structure	1	LS	$	$
21	New Meeting Room Structure	1	LS	$	$
22	4" Concrete Flatwork over 4" Aggregate Base	2,020	SF	$	$
23	Concrete Mow Band	55	LF	$	$

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BID ITEM NO.	ITEM DESCRIPTION	EST. QTY.	UNIT	UNIT COST	EXTENDED TOTAL AMOUNT
24	Irrigation Modifications	10,000	SF	$	$
25	Irrigation Control Modifications	1	LS	$	$
26	Soil Preparation and Amendment	8,573	SF	$	$
27	Sod (F)	7,483	SF	$	$
28	Trees – 15 Gallon	3	EA	$	$
29	Shrubs – 5 Gallon	43	EA	$	$
30	Shrubs – 1 Gallon	34	EA	$	$
31	3" Bark Mulch	12	CY	$	$
32	Project Signage	1	LS	$	$
33	Plant Establishment (90 days)	1	LS	$	$

TOTAL BASE BID: Items 1 through 33 inclusive: $_____

[Note: The amount entered as the "Total Base Bid" should be identical to the Base Bid amount entered in Section 1 of the Bid Proposal form.]

BIDDER NAME: _____

END OF BID SCHEDULE

CITY COUNCIL REFERENCE ONLY

Subcontractor List

For each Subcontractor that will perform a portion of the Work in an amount in excess of one-half of 1% of the Bidder's total Contract Price,[1] the bidder must list a description of the Work, the name and email address of the Subcontractor, its California contractor license number, the location of its place of business, its DIR registration number, and the percentage of the total Work to be performed by that Subcontractor, as a portion of the base bid price.

Bidders: Please print legibly. Illegible forms may be rejected.

DESCRIPTION OF WORK	SUBCONTRACTOR NAME AND EMAIL ADDRESS	CALIFORNIA CONTRACTOR LICENSE NO.	LOCATION OF BUSINESS	DIR REG. NO.	PERCENT OF WORK

END OF SUBCONTRACTOR LIST

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[1] For street or highway construction this requirement applies to any subcontract of $10,000 or more.

Noncollusion Declaration

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

The undersigned declares:

I am the _____ [title] of _____ [business name], the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid and will not pay, any person or entity for such purpose.

This declaration is intended to comply with California Public Contract Code Section 7106 and Title 23 U.S.C Section 112.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____ [date], at _____ [city], _____ [state].

_____
Signature

_____
Name

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END OF NONCOLLUSION DECLARATION

Bid Bond

_____ ("Bidder") has submitted a bid, dated _____, 20_____ ("Bid"), to the City of Fremont ("City") for work on the **WARM SPRINGS MEETING ROOM AND RESTROOM REPLACEMENT** Project ("Project"). Under this duly executed bid bond ("Bid Bond"), Bidder as Principal and its surety ("Surety"), are bound to City as obligee in the penal sum of ten percent of the maximum amount of the Bid (the "Bond Sum"). Bidder and Surety bind themselves and their respective heirs, executors, administrators, successors and assigns, jointly and severally, as follows:

1. **General.** If Bidder is awarded the Contract for the Project, Bidder will enter into the Contract with City in accordance with the terms of the Bid.

2. **Submittals.** Within ten calendar days following issuance of the Notice of Award to Bidder, Bidder must submit the following to City:

2.1 **Signed Contract.** Two duly signed counterpart originals of the Contract provided by City with the Notice of Award, using the form included in the Project contract documents ("Contract Documents");

2.2 **Evidence of Signing Authority.** Documentation evidencing the authority of the individual(s) signing the Contract on behalf of Bidder.

2.3 **Payment, Performance and Warranty Bonds.** A payment bond and a performance bond for the Project, each for 100% of the maximum Contract Price as awarded, and a warranty bond, if required for 20% of the maximum Contract Price as awarded, each executed by a surety licensed to do business in the State of California and using the applicable bond forms included with the Contract Documents;

2.4 **Insurance.** The insurance certificates and endorsements evidencing Bidder's insurance coverage as required by the Contract Documents.

2.5 **Business Tax and Registration Tax.** Documentation evidencing Bidder's and all listed Subcontractors' payment of City business tax and registration tax for a business license, as required by the Contract Documents.

2.6 **Contractor's License.** A copy of Bidder's California contractor's license, showing the classification(s) required by the Contract Documents.

2.7 **On-Site Superintendent.** Identification of Bidder's on-site superintendent for the Project, as required by the Contract Documents.

3. **Enforcement.** If Bidder fails to execute the Contract and submit to City all of the required documentation as required under Section 2 above, Surety guarantees that Bidder forfeits the Bond Sum to City. Any notice to Surety may be given in the manner specified in the Contract and delivered or transmitted to Surety as follows:

Attn: _____
Address: _____
City/State/Zip: _____
Phone: _____
Fax: _____
Email: _____

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4. **Duration; Waiver.** If Bidder fulfills its obligations under Section 2 above, then this obligation will be null and void; otherwise it will remain in full force and effect for 90 days following award of the Contract or until this Bid Bond is returned to Bidder, whichever occurs first. Surety waives the provisions of Civil Code Sections 2819 and 2845.

This Bid Bond is entered into and effective on _____, 20_____.

SURETY: _____
Business name

s/ _____

_____
Name/Title

(Notary Acknowledgment with Notary Seal for Surety and Surety's Power of Attorney Must be Attached)

BIDDER: _____
Business name

s/ _____

_____
Name/Title

END OF BID BOND

CITY COUNCIL REFERENCE ONLY

Bidder's Statement of Responsibility

WARM SPRINGS MEETING ROOM AND RESTROOM REPLACEMENT PROJECT

The bidder must submit to City, with the Bid Proposal, a completed and signed Bidder's Statement of Responsibility. The bidder must use this form and include all required attachments and attaching clearly labeled additional sheets if needed. City may use the completed Statement of Responsibility to evaluate a bidder's qualifications for this Project. The Statement of Responsibility must be filled out completely, accurately, and legibly. Any errors, omissions, or misrepresentations in completion of the Statement of Responsibility may be grounds for rejection of the bid or termination of a Contract awarded pursuant to the bid.

Part 1: General Information

Bidder Business Name: _____ ("Bidder")

Check One: ___ Corporation
___ Partnership
___ Sole Proprietorship
___ Joint Venture of: _____
___ Other:_____

Address: _____

_____

Phone: _____

Owner of Company: _____

Contact Person: _____

Email: _____

Bidder's California Contractor's License Number(s): _____

Part 2: Bidder Experience

1. How many years has Bidder been performing work as a contractor under its present business name? ____ years

1.1 If any of Bidder's experience listed in this Statement of Responsibility refers to work performed under a different business name(s), list on a separate sheet of paper the other name(s) and describe the relationship to Bidder's current business.

2. Has Bidder completed projects similar in type and size to this Project as a general contractor?
_____ Yes _____ No

3. Has Bidder ever been disqualified on grounds that it is not responsible?
_____ Yes _____ No

If yes, provide additional information on a separate sheet of paper regarding the disqualification, including the name and address of the agency or owner of the subject project, the type and size

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of the project, the reasons that Bidder was disqualified as not responsible, and the month and year in which the disqualification occurred.

4. Has Bidder ever been terminated from a construction project, either as a general contractor or as a subcontractor?
_____ Yes _____ No

If yes, provide additional information on a separate sheet of paper regarding the termination, including the name and address of the agency or owner of the subject project, the type and size of the project, whether Bidder was under contract as a general contractor or a subcontractor, the reasons that Bidder was terminated, and the month and year in which the termination occurred.

5. Provide information about Bidder's current projects performed as general contractor as follows:

5.1 How many construction projects is Bidder currently under contract to perform that are still in progress? _____

5.2 What is the total dollar amount of the current construction contracts listed in Subsection 5.1? $_____

5.3 What is Bidder's total bonding capacity? $_____

5.4 How many construction contracts listed in Subsection 5.1 are:

(A) In an amount of 50% or less of Bidder's total bid amount for the Project? _____

(B) In an amount between 50% and 100% of Bidder's total bid amount for the Project? _____

(C) In an amount between 100% and 150% of Bidder's total bid amount for the Project? _____

(D) In an amount over 150% of Bidder's total bid amount for the Project? _____

6. Provide information about Bidder's past projects performed as general contractor as follows:

6.1 <Insert Number> most recently completed public works projects within the last <Insert Number> years;

6.2 Three largest completed projects within the last three years; and

6.3 Any project which is similar to this Project.

7. Use separate sheets of paper to provide all of the following information for <u>each</u> project identified in response to Sections 5 and 6:

7.1 Project name
7.2 Location
7.3 Owner
7.4 Owner contact (name and current phone number)
7.5 Architect or engineer name
7.6 Architect or engineer contact (name and current phone number)
7.7 Project manager (name and current phone number)
7.8 Description of project and scope of work performed
7.9 Initial contract value (at time of bid award)

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7.10 Final cost of construction (including change orders) (provide estimated cost if project is still in progress)
7.11 Original scheduled completion date
7.12 Time extensions granted (number of days)
7.13 Actual date of completion (provide estimated date if project is still in progress)
7.14 Number and amount of stop notices or mechanic's liens filed
7.15 Amount of liquidated damages assessed against Bidder
7.16 Nature and resolution of any claim, lawsuit, and/or arbitration between Bidder and the owner.

Part 3: Claim History

1. Provide information about Bidder's claims history as follows:

1.1 Has any claim been made against Bidder in the past five years which has resulted in arbitration or litigation?_____

1.2 Has Bidder made a claim(s) against any city or other client in the past five years which has resulted in arbitration or litigation?_____

1.3 If the answer was yes to Subsections 1.1 or 1.2 , describe each claim(s) using the format below:

Project name _____
Claim amount _____
Other party entity name _____
Other party contact (name and current phone number)_____
Description of the claim(s), using separate sheets of paper

Part 4: Surety History

1. Provide information about Bidder's surety history as follows:

1.1 Has Bidder ever failed to satisfactorily complete a construction contract? _____

1.2 Has a surety completed any portion of a Bidder construction contract within the last five years? _____

1.3 If the answer was yes to Subsections 1.1 or 1.2, provide explanation(s) using the format below:

Project name _____
Surety name _____
Surety contact (name and current phone number)_____
Date surety took over the project_____
Explanation(s), using separate sheets of paper

Part 5: Verification

In signing this document, I, the undersigned, declare that I am duly authorized to sign and submit this Bidder's Statement of Responsibility on behalf of the named Bidder, and that all responses and information set forth in this Bidder's Statement of Responsibility and the accompanying pages and attachments are, to the best of my knowledge, true, accurate and complete as of the

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date of submission. **I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.**

Signature: _____ Date: _____

By: _____
Name and Title

On Behalf of (Legal Name of Bidder):_____

END OF BIDDER'S STATEMENT OF RESPONSIBILITY

CITY COUNCIL REFERENCE ONLY

Contract

This public works contract ("Contract") is entered into by and between the City of Fremont ("City") and _____ ("Contractor"), for work ("Work") on the **Warm Springs Meeting Room and Restroom Replacement** ("Project").

The parties agree as follows:

1. **Award of Contract**. In response to the Notice Inviting Bids, Contractor has submitted a Bid Proposal to perform Work on the Project. On _____, 20___, City authorized award of this Contract to Contractor for the amount of Contractor's bid.

2. **Contract Documents**. The Contract Documents incorporated into this Contract include and are comprised of all of the following:

2.1 Notice Inviting Bids;
2.2 Instructions to Bidders;
2.3 Addenda, if any;
2.4 Bid Proposal and attachments thereto;
2.5 Contract and Change Orders;
2.6 Payment and Performance Bonds, and (if required) Warranty Bond;
2.7 General Conditions;
2.8 Special Conditions;
2.9 Project Drawings and Specifications;
2.10 Notice of Award;
2.11 Notice to Proceed; and
2.12 The following:

_____
_____. <List additional documents here, if any, including the document date if there are multiple versions. If there are no additional documents, write "No other documents" in the space above. Do not include informational documents included "For Reference Only" pursuant to Section 3.4 of the General Conditions.>

3. **Contractor's Obligations.** Contractor agrees to perform all of the Work required for the Project, as specified in the Contract Documents. Contractor must provide, furnish, and supply all things necessary and incidental for the timely performance and completion of the Work, including all necessary labor, materials, equipment, transportation, and utilities, unless otherwise specified in the Contract Documents. Contractor must use its best efforts to complete the Work in a professional and expeditious manner and to meet or exceed the performance standards required by the Contract Documents.

4. **Payment.** As full and complete compensation for Contractor's timely performance and completion of the Work in strict accordance with the terms and conditions of the Contract Documents, City will pay Contractor $_____ ("Contract Price"), in accordance with the payment provisions in the General Conditions. The Contract Price is fully inclusive of all direct and indirect costs for performing the Work in full compliance with the Contract Documents, including, but not limited to, the items specified in Section 1 of the Bid Proposal, compliance with all General Conditions and Special Conditions requirements, all Work encompassed by the Plans and Specifications, and all taxes, overhead, and profit.

5. **Time for Completion.** Contractor will fully complete the Work for the Project within <insert number> < insert "calendar days" or "Working Days" > from the commencement date given in the Notice to Proceed ("Contract Time"). Contractor must commence the Work no later

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than ten calendar days after the commencement date stated in the Notice to Proceed. By signing below, Contractor expressly waives any claim for delayed early completion.

6. **Liquidated Damages.** If Contractor fails to complete the Work within the Contract Time, City will assess liquidated damages in the amount of <$_____> for each day of unexcused delay in completion, and the Contract Price will be reduced accordingly.

7. **Labor Code Compliance.**

   7.1 **General.** This Contract is subject to all applicable requirements of Chapter 1 of Part 7 of Division 2 of the Labor Code, including requirements pertaining to wages, working hours and workers' compensation insurance.

   7.2 **Prevailing Wages.** This Project is subject to the prevailing wage requirements applicable to the locality in which the Work is to be performed for each craft, classification or type of worker needed to perform the Work, including employer payments for health and welfare, pension, vacation, apprenticeship and similar purposes. Copies of these prevailing rates are available online at http://www.dir.ca.gov/DLSR.

   7.3 **DIR Registration.** City will not enter into the Contract with a bidder without proof that the bidder and its Subcontractors are registered with the California Department of Industrial Relations to perform public work under Labor Code Section 1725.5, subject to limited legal exceptions.

8. **Workers' Compensation Certification.** Under Labor Code Section 1861, by signing this Contract, Contractor certifies as follows: "I am aware of the provisions of Labor Code Section 3700 which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the Work on this Contract."

9. **Conflicts of Interest.** Contractor, its employees, Subcontractors and agents, may not have, maintain or acquire a direct or indirect conflict of interest in relation to this Contract, or in the performance of this Contract, that violates any City ordinance or policy or violates any California law, including under Government Code Section 1090 et seq. and under the Political Reform Act as set forth in Government Code Section 81000 et seq. and its accompanying regulations. Any violation of this Section constitutes a material breach of the Contract.

10. **Independent Contractor.** Contractor is an independent contractor under this Contract and will have control of the Work and the manner in which it is performed. Contractor and its Subcontractors are not employees of City and are not entitled to participate in any health, retirement, or any other employee benefits from City.

11. **Notice.** Any notice, billing, or payment required by the Contract Documents must be made in writing, and sent to the other party by personal delivery, U.S. Mail, a reliable overnight delivery service, facsimile, or by email. Notice is deemed effective upon delivery unless otherwise specified. Notice for each party must be given as follows:

CITY COUNCIL REFERENCE ONLY

City:

Name: City of Fremont
Address:_ 3300 Capitol Avenue
City/State/Zip: Fremont, California 94538
Phone: <_____>
Attn: <_____>
Email: <_____>
Copy to: <_____>

Contractor:

Name:_____
Address:_____
City/State/Zip:_____
Phone:_____
Attn:_____
Email:_____
Copy to:_____

12. General Provisions.

12.1 Assignment and Successors. Contractor may not assign its rights or obligations under this Contract, in part or in whole, without City's written consent. This Contract is binding on Contractor's successors and permitted assigns.

12.2 Third Party Beneficiaries. There are no intended third party beneficiaries to this Contract except as expressly provided in the General Conditions or Special Conditions.

12.3 Governing Law and Venue. This Contract will be governed by California law and venue will be in the Superior Court of Alameda County, and no other place.

12.4 Amendment. No amendment or modification of this Contract will be binding unless it is in a writing duly authorized and signed by the parties to this Contract.

12.5 Integration; Severability. This Contract and the Contract Documents incorporated herein, including authorized amendments or Change Orders thereto, constitute the final, complete, and exclusive terms of the agreement between City and Contractor. If any provision of the Contract Documents, or portion of a provision, is determined to be illegal, invalid, or unenforceable, the remaining provisions of the Contract Documents will remain in full force and effect.

12.6 Authorization. Each individual signing below warrants that he or she is authorized to do so by the party that he or she represents, and that this Contract is legally binding on that party. If Contractor is a corporation, signatures from two officers of the corporation are required pursuant to California Corporation Code Section 313.

[Signatures are on the following page.]

CITY COUNCIL REFERENCE ONLY

The parties agree to this Contract as witnessed by the signatures below:

CITY OF FREMONT:

s/_____

Brian Stott, Deputy City Manager
Name/Title

Date: _____

Approved as to form:

s/_____

Erik D. Ramakrishnan, Deputy City Attorney
Name/Title

Date: _____

CONTRACTOR: _____
Business Name

s/_____

_____
Name/Title

Date: _____

s/_____

_____
Name/Title

Date: _____

Seal:

_____
Contractor's California License Number(s) and Expiration Date(s)

END OF CONTRACT

CITY COUNCIL REFERENCE ONLY

Payment Bond

The City of Fremont ("City") and _____ ("Contractor") have entered into a contract, dated _____, 20___ ("Contract") for work on the **Warm Springs Meeting Room and Restroom Replacement** ("Project"). The Contract is incorporated by reference into this Payment Bond ("Bond").

1. **General.** Under this Bond, Contractor as principal and _____, its surety ("Surety"), are bound to City as obligee in an amount not less than $_____, under California Civil Code Sections 9550, et seq.

2. **Surety's Obligation.** If Contractor or any of its Subcontractors fails to pay any of the persons named in California Civil Code Section 9100 amounts due under the Unemployment Insurance Code with respect to work or labor performed under the Contract, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of Contractor and its Subcontractors, under California Unemployment Insurance Code Section 13020, with respect to the work and labor, then Surety will pay for the same.

3. **Beneficiaries.** This Bond inures to the benefit of any of the persons named in California Civil Code Section 9100, so as to give a right of action to those persons or their assigns in any suit brought upon this Bond. Contractor must promptly provide a copy of this Bond upon request by any person with legal rights under this Bond.

4. **Duration.** If Contractor promptly makes payment of all sums for all labor, materials, and equipment furnished for use in the performance of the Work required by the Contract, in conformance with the time requirements set forth in the Contract and as required by California law, Surety's obligations under this Bond will be null and void. Otherwise, Surety's obligations will remain in full force and effect.

5. **Waivers.** Surety waives any requirement to be notified of alterations to the Contract or extensions of time for performance of the Work under the Contract. Surety waives the provisions of Civil Code Sections 2819 and 2845. City waives requirement of a new bond for any supplemental contract under Civil Code Section 9550. Any notice to Surety may be given in the manner specified in the Contract and delivered or transmitted to Surety as follows:

   Attn: _____
   Address: _____
   City/State/Zip: _____
   Phone: _____
   Fax: _____
   Email: _____

6. **Law and Venue.** This Bond will be governed by California law, and any dispute pursuant to this Bond will be venued in the Superior Court of Alameda County, and no other place. Surety will be responsible for City's attorneys' fees and costs in any action to enforce the provisions of this Bond.

CITY COUNCIL REFERENCE ONLY

7. Effective Date; Execution. This Bond is entered into and is effective on _____, 20__. Three identical counterparts of this Bond, each of which is deemed an original for all purposes, are hereby executed and submitted.

SURETY: _____
Business Name

s/ _____

_____
Name/Title

(Notary Acknowledgment with Notary Seal for Surety and Surety's Power of Attorney Must be Attached)

CONTRACTOR: _____
Business Name

s/ _____

_____
Name/Title

s/ _____

_____
Name/Title

APPROVED AS TO FORM:

s/ _____

_____
Name/Title

END OF PAYMENT BOND

CITY COUNCIL REFERENCE ONLY

Performance Bond

The City of Fremont ("City") and _____ ("Contractor") have entered into a contract, dated _____, 20____ ("Contract") for work on the **Warm Springs Meeting Room and Restroom Replacement** ("Project"). The Contract is incorporated by reference into this Performance Bond ("Bond").

1. **General.** Under this Bond, Contractor as Principal and _____, its surety ("Surety"), are bound to City as obligee for an amount not less than $_____. By executing this Bond, Contractor and Surety bind themselves and their respective heirs, executors, administrators, successors and assigns, jointly and severally, to the provisions of this Bond.

2. **Surety's Obligations; Waiver.** If Contractor fully performs its obligations under the Contract, including its warranty obligations under the Contract, Surety's obligations under this Bond will become null and void upon recordation of the notice of completion, provided Contractor has timely provided a warranty bond as required under the Contract. Otherwise Surety's obligations will remain in full force and effect until expiration of the one year warranty period under the Contract. Surety waives any requirement to be notified of and further consents to any alterations to the Contract made under the applicable provisions of the Contract Documents, including changes to the scope of Work or extensions of time for performance of Work under the Contract. Surety waives the provisions of Civil Code Sections 2819 and 2845.

3. **Application of Contract Balance.** Upon making a demand on this Bond, City will make the Contract Balance available to Surety for completion of the Work under the Contract. For purposes of this provision, the Contract Balance is defined as the total amount payable by City to Contractor as the Contract Price minus amounts already paid to Contractor, and minus any liquidated damages, credits, or back charges to which City is entitled under the terms of the Contract.

4. **Contractor Default.** Upon written notification from City that Contractor is in default under section 13.3 of the Contract General Conditions, time being of the essence, Surety must act within the time specified in that section 13.3 to remedy the default through one of the following courses of action:

4.1 Arrange for completion of the Work under the Contract by Contractor, with City's consent, but only if Contractor is in default solely due to its financial inability to complete the Work;

4.2 Arrange for completion of the Work under the Contract by a qualified contractor acceptable to City, and secured by performance and payment bonds issued by an admitted surety as required by the Contract Documents, at Surety's expense; or

4.3 Waive its right to complete the Work under the Contract and reimburse City the amount of City's costs to have the remaining Work completed.

5. **Surety Default.** If Surety defaults on its obligations under the Bond, City will be entitled to recover all costs it incurs due to Surety's default, including legal, design professional, or delay costs.

6. **Notice.** Any notice to Surety may be given in the manner specified in the Contract and delivered or transmitted to Surety as follows:

CITY COUNCIL REFERENCE ONLY

Attn: _____
Address: _____
City/State/Zip: _____
Phone: _____
Fax: _____
Email: _____

7. **Law and Venue.** This Bond will be governed by California law, and any dispute pursuant to this Bond will be venued in the Superior Court of Alameda County, and no other place. Surety will be responsible for City's attorneys' fees and costs in any action to enforce the provisions of this Bond.

8. **Effective Date; Execution.** This Bond is entered into and effective on _____, 20___. Three identical counterparts of this Bond, each of which is deemed an original for all purposes, are hereby executed and submitted.

SURETY: _____
Business Name

s/ _____

_____
Name/Title

(Notary Acknowledgment with Notary Seal for Surety and Surety's Power of Attorney Must be Attached)

CONTRACTOR: _____
Business Name

s/ _____

_____
Name/Title

s/ _____

_____
Name/Title

APPROVED AS TO FORM:

s/ _____

_____
Name/Title

END OF PERFORMANCE BOND

CITY COUNCIL REFERENCE ONLY

Warranty Bond

The City of Fremont ("City") and _____ ("Contractor") have entered into a contract, dated _____, 20___ ("Contract") for work on the **Warm Springs Meeting Room and Restroom Replacement** ("Project"). The Contract is incorporated by reference into this Warranty Bond ("Bond").

1. **General.** Under this Bond, Contractor as principal and _____, its surety ("Surety"), are bound to City as obligee in the maximum amount of 20% of the final Contract Price or as otherwise specified in the Contract Documents.

2. **Warranty Period.** The Contract requires Contractor to guarantee its work and that of its Subcontractors on the Project, against defects in materials or workmanship which are discovered during the one year period commencing with recordation of the notice of completion (the "Warranty Period"), and to promptly make repairs or reimburse the City for repairs as further specified in Article 11 of the Contract General Conditions.

3. **Surety's Obligations.** If Contractor faithfully carries out and performs its guarantee under the Contract, and, on due notice from City, repairs and make good at its sole expense any and all defects in materials and workmanship in the Project which are discovered during the Warranty Period, or if Contractor promptly reimburses City for all loss and damage that City sustains because of Contractor's failure to makes such repairs in accordance with the Contract requirements, then Surety's obligations under this Bond will be null and void. Otherwise, Surety's obligations will remain in full force and effect.

4. **Waiver.** Surety waives the provisions of Civil Code Sections 2819 and 2845.

5. **Notice.** Any notice to Surety may be given in the manner specified in the Contract and delivered or transmitted to Surety as follows:

   Attn: _____
   Address: _____
   City/State/Zip: _____
   Phone: _____
   Fax: _____
   Email: _____

6. **Law and Venue.** This Bond will be governed by California law, and any dispute pursuant to this Bond will be venued in the Superior Court of Alameda County, and no other place. Surety will be responsible for City's attorneys' fees and costs in any action to enforce the provisions of this Bond.

7. **Effective Date; Execution.** This Bond is entered into and is effective on _____, 20_____. Three identical counterparts of this Bond, each of which is deemed an original for all purposes, are hereby executed and submitted.

[Signatures are on the following page.]

CITY COUNCIL REFERENCE ONLY

SURETY: _____
Business Name

s/ _____

_____
Name/Title

(Notary Acknowledgment with Notary Seal for Surety and Surety's Power of Attorney Must be Attached)

CONTRACTOR: _____
Business Name

s/ _____

_____
Name/Title

s/ _____

_____
Name/Title

APPROVED AS TO FORM:

s/ _____

_____
Name/Title

CITY COUNCIL REFERENCE ONLY

END OF WARRANTY BOND

General Conditions

Article 1 - Definitions

Definitions. The following definitions apply to all of the Contract Documents unless otherwise indicated. Defined terms and titles of documents are capitalized in the Contract Documents, with the exception of the words “day,” “furnish,” “including,” “install,” “work day” or “working day.”

Allowance means an amount included in the Bid Proposal for Work that may or may not be included in the Project, depending on conditions that will not become known until after bids are opened. If the Contract Price includes an Allowance and the cost of performing the Work covered by that Allowance is greater or less than the Allowance, the Contract Price will be increased or decreased accordingly.

Article, as used in these General Conditions, means a numbered Article of the General Conditions, unless otherwise indicated by the context.

Change Order means a written document duly approved and executed by City, which changes the scope of Work, the Contract Price, or the Contract Time.

City means the City of Fremont, acting through its City Council, officers, employees, City Engineer, and any other authorized representatives.

City Engineer means the City Engineer for City and his or her authorized delegee(s) designated to oversee and manage the Project on City’s behalf.

City Standard Specifications means the current version of City’s Standard Specifications in effect at the time bids were submitted.

Claim means a separate demand by Contractor for a change in the Contract Time or Contract Price, that has previously been submitted to City in accordance with the requirements of the Contract Documents, and which has been rejected by City, in whole or in part; or a written demand by Contractor objecting to the amount of Final Payment.

Contract means the signed agreement between City and Contractor.

Contract Documents means, collectively, all of the documents listed as such in Section 2 of the Contract, including the Notice Inviting Bids; the Instructions to Bidders; addenda, if any; the Bid Proposal, and attachments thereto; the Contract; the notice of award and notice to proceed; the payment, performance and warranty bonds; the General Conditions; the Special Conditions; the Project Drawings and Specifications; any Change Orders; and any other documents expressly made part of the Contract Documents.

Contract Price means the total compensation to be paid to Contractor for performance of the Work, as set forth in the Contract and as amended by Change Order or adjusted for an Allowance. The Contract Price is not subject to adjustment due to inflation or due to the increased cost of labor, material, or equipment following submission of the Bid Proposal.

Contract Time means the number of calendar days for performance of the Work, as set forth in the Contract and as amended by Change Order.

Contractor means the individual, partnership, corporation, or joint-venture that has signed the Contract with City to perform the Work.

CITY COUNCIL REFERENCE ONLY

Day means a calendar day unless otherwise specified.

Design Professional means the licensed individual(s) or firm(s) retained by City to provide architectural, landscape architectural, or engineering services for the Project. If no Design Professional has been retained for this Project, any reference to Design Professional is deemed to refer to the Engineer.

Drawings means the City-provided plans and graphical depictions of the Project requirements, and does not include Shop Drawings.

Engineer means the City Engineer for City and his or her authorized delegees.

Extra Work means new or unforeseen work added to the Project, as determined by the Engineer in his or her sole discretion, that: (A) is not covered by Contract unit prices; (B) is not part of or incidental to the scope of the Work; (C) is substantially different from the Work as described in the Contract Documents at bid time; or (D) results from a substantially changed Project condition.

Field Order means written instructions from the City Engineer that require or authorize minor changes in the Work that do not affect the Contract Price or Contract Time.

Final Completion means Contractor has fully completed all of the Work required by the Contract Documents, including all punch list items, any required commissioning, and has provided all required submittals, including the warranty bond, instructions and manuals, and as-built drawings to City's satisfaction.

Final Payment means payment to Contractor of the unpaid Contract Price, including release of undisputed retention, less amounts withheld pursuant to the Contract Documents, including liquidated damages, up to 125% of the amount of any unreleased stop notice, amounts subject to setoff, up to 150% of any unresolved third-party claim for which Contractor is required to indemnify City, and up to 150% of any amount in dispute as authorized by Public Contract Code Section 7107.

Furnish means to purchase and deliver to the Worksite designated for installation.

Hazardous Materials means any substance or material identified now or in the future as hazardous under any federal, state, or local law or regulation, or any other substance or material that may be considered hazardous or otherwise subject to statutory or regulatory requirements governing handling, disposal, or cleanup.

Including, whether or not capitalized, means "including, but not limited to," unless the context requires otherwise.

Inspector means the individual(s) or firm(s) retained by City to inspect the workmanship, materials, and manner of construction of the Project and its components to ensure compliance with the Contract Documents and all applicable codes, regulations, and permits.

Install means to fix in place for materials, and to fix in place and connect for equipment.

Plans has the same meaning as Drawings.

Project means the public works project referenced in the Contract.

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Project Manager means the individual designated by City to oversee and manage the Project on City's behalf and may include his or her authorized delegee(s) when the Project Manager is unavailable. If no Project Manager has been designated for this Project, any reference to Project Manager is deemed to refer to the Engineer.

Request for Information or RFI means Contractor's written request for information submitted to City, in the manner and format specified by City, about the Contract Documents, the Work or the Project.

Section as used in these General Conditions, means a numbered Section of the General Conditions, unless otherwise indicated by the context, such as statutory references.

Shop Drawings means drawings, plan details or other graphical depictions prepared by or on behalf of Contractor, and subject to City approval, which are intended to provide details for fabrication, installation, and the like, of items required by or shown in the Drawings and Specifications.

Specifications means the technical, text specifications describing the Project requirements, which are prepared for and incorporated into this Project by or on behalf of City, and does not include the Contract, General Conditions or Special Conditions.

Subcontractor means an individual, partnership, corporation, or joint-venture retained by Contractor directly or indirectly through a subcontract to perform a specific portion of the Work. The term Subcontractor applies to subcontractors, suppliers, fabricators, and equipment lessors of all tiers, unless otherwise indicated by the context.

Technical Specifications means Specifications.

Work means all of the construction and services necessary or incidental to completing the Project in conformance with the requirements of the Contract Documents.

Work Day or Working Day, whether or not capitalized, means a weekday which is not a holiday observed by City.

Worksite means the place or places where the Work is performed.

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Article 2 - Roles and Responsibilities

2.1 City.

(A) ***Engineer.*** The Engineer, acting within the authority conferred by the City Council, has primary responsibility for administration of the Project on behalf of City, including authority to provide directions to the Design Professional and to Contractor, in the form of Field Orders or otherwise, to ensure proper and timely completion of the Project.

(B) ***Design Professional.*** The Design Professional is responsible for the overall design of the Project and, to the extent authorized by City, may act on City's behalf to ensure performance of the Work in compliance with the Contract Documents. The Design Professional's decision(s) regarding interpretation of the Drawings or Specifications is final and conclusive.

2.2 Contractor.

(A) ***General.*** Contractor must provide all labor, materials, equipment and services necessary to perform and timely complete the Work in strict accordance with the Contract Documents, and in an economic and efficient manner in the best interests of City.

(B) ***Responsibility for the Work and Risk of Loss.*** Contractor is responsible for supervising and directing all aspects of the Work to facilitate the efficient and timely completion of the Work. Contractor is solely responsible for and required to exercise full control over the Work, including the construction means, methods, techniques, sequences, procedures, and coordination of all portions of the Work with that of all other contractors and Subcontractors, except to the extent that the Contract Documents provide other specific instructions. From the date of commencement of the Work until either the date on which City formally accepts the Project or the effective date of termination of the Contract, whichever is later, Contractor bears all risks of injury or damage to the Work and the materials and equipment delivered to the Work site, by any cause including fire, earthquake, wind, weather, vandalism or theft.

(C) ***Project Administration.*** Contractor must provide sufficient and competent administration, staff, and skilled workforce necessary to perform and timely complete the Work in accordance with the Contract Documents. Before starting the Work, Contractor must designate in writing and provide complete contact information, including telephone numbers and email address, for the officer or employee in Contractor's organization who is to serve as Contractor's primary representative for the Project, and who has authority to act on Contractor's behalf. A Subcontractor may not serve as Contractor's primary representative.

(D) ***On-Site Superintendent.*** Contractor must, at all times during performance of the Work, also provide a qualified and competent full-time superintendent acceptable to City, and assistants as necessary, who must be physically present at the Project site while any aspect of the Work is being performed. The on-site superintendent must be authorized to act on Contractor's behalf concerning the Project, with the authority to sign, send, and receive all notices contemplated or required by the Contract Documents and to direct the Work. City's approval of the superintendent is required before the Work commences. If City is not satisfied with the superintendent's performance, City may request a qualified replacement of the superintendent. Failure to comply may result in temporary suspension of the Work, at Contractor's sole expense and with no extension of Contract Time, until the approved superintendent is physically present to supervise the Work. Contractor must provide written notice to City, as soon as practicable, before replacing the superintendent.

(E) ***Pre-Construction Conference.*** City will designate a date and time for the mandatory pre-construction conference with Contractor following Contract execution. Project administration procedures and coordination between City and Contractor will be discussed. Contractor must submit a draft version of the baseline schedule required under Section 5.2, below, at least ten days before the scheduled date for the pre-construction conference, unless a shorter period is specified by the City. The draft baseline schedule must specify the time or number of days allocated for completion of each major item, rather than the specific dates. If the City provides comments on the draft baseline schedule before the pre-construction conference, Contractor must prepare responses to the City's comments for review at the pre-construction conference. At the pre-construction conference Contractor must also present City with the information or documents listed below for City's review and acceptance before the Work commences. Failure to timely comply with any of these pre-construction submittal requirements may operate to delay issuance of the Notice to Proceed and commencement of the Work.

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Contractor is solely responsible for any resulting delay damages caused by its failure to comply with this provision.

(1) Qualifications of the proposed on-site superintendent for the Project and his or her 24-hour complete contact information, including email address and telephone numbers during regular hours and after hours;

(2) List of all other key Project personnel and their complete contact information, including email addresses and telephone numbers during regular hours and after hours;

(3) Staging plans that identify the sequence of the Work, including any phases and alternative sequences or phases, with the goal of minimizing the impacts on residents, businesses and other operations in the Project vicinity;

(4) If required, traffic control plans associated with the staging plans that are signed and stamped by a licensed traffic engineer;

(5) Responses to City comments on the draft baseline schedule for the Work, and if required in the Special Conditions, proof of order and estimated delivery dates for any long lead time items;

(6) Breakdown of lump sum bid items, and cost distribution schedule of prices (schedule of values), to be used for determining the value of Work completed for future progress payments to Contractor;

(7) Schedule with a list of Contractor's Project submittals that require City review, and list of the proposed material suppliers;

(8) Plan for coordination with affected utility owner(s) and compliance with any related permit requirements;

(9) Videotape and photographs recording the conditions throughout the Project site before any Work begins, showing the existing improvements and current condition of the curbs, gutters, sidewalks, signs, landscaping, streetlights, structures near the Project such as building faces, canopies, shades and fences, and any other features within the Project area limits;

(10) Contractor's safety program and identification of Contractor's safety officer for the Project;

(11) Copies of the required documentation for each Subcontractor, including a copy of the contract between Contractor and each Subcontractor and the Subcontractor's California contractor's license and identification of its authorized representative for the Project;

(12) If requested by City, Contractor's cash flow projections; and

(13) Any other documents or information specified in the Special Conditions or Notice of Award.

(F) ***Standards; Compliance.*** Contractor must, at all times, ensure that the Work is performed in a good, workmanlike manner following best practices and in full compliance with the Contract Documents and all applicable laws, regulations, codes, standards, and

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permits, including City's municipal code, rules, and regulations, and any orders of the administrative or judicial bodies with jurisdiction over the Work.

(G) ***Progress Meetings.*** Contractor, and the Subcontractors requested by City, must attend regular Project progress meetings with City that City will schedule;

(H) ***Responsible Party.*** Contractor is solely responsible to City for the acts or omissions of any Subcontractor(s), or any other party or parties performing portions of the Work or providing equipment, materials or services for or on behalf of Contractor or the Subcontractors. City may, at any time, reasonably request in writing that Contractor remove from the Project, at no cost to City, any employee or Subcontractor of Contractor who has proven during the course of the Work to be incompetent, intemperate or disorderly, or who has failed or refused to perform the Work as required under the Contract Documents.

(I) ***Correction of Defects.*** Contractor must promptly correct, at Contractor's sole expense, any Work that is determined by City to be deficient or defective in workmanship, materials, or equipment. Workmanship, materials or equipment that do not conform to the requirements under the Drawings, Specifications and every other Contract Document, as determined by City, will be considered defective and subject to rejection. Contractor must also promptly correct, at Contractor's sole expense, any Work performed beyond the lines and grades shown on the Plans or established by City, and any Extra Work performed without City's prior written approval.

(J) ***Contractor's Records.*** Contractor must maintain all of its records relating to the Project in any form, including paper documents, photos, videos and electronic records. Project records subject to this provision include: records relating to preparation of Contractor's bid; Project cost and accounting records; Project employment records; a record copy of the Contract Documents, including the Project Plans and Specifications, Addenda, Change Orders, RFIs and RFI responses, Field Orders, and approved Shop Drawings; contracts with Contractor's suppliers and Subcontractors for the Project; and all notes, daily logs and memoranda relating to the Work.

(1) Contractor's cost and accounting records must include all supporting documentation, including original purchase orders, receipts, invoices, and payroll records, evidencing its direct costs to perform the Work, including, but not limited to, costs for labor, materials and equipment. Each cost record should include, at a minimum, a description of the expenditure with references to the applicable requirements of the Contract Documents, the amount actually paid, the date of payment, and whether the expenditure is part of the original Contract Price, related to an executed Change Order, or otherwise categorized by Contractor as Extra Work. Contractor's failure to comply with this provision as to any claimed cost operates as a waiver of any rights to recover the claimed cost.

(2) Contractor must continue to maintain its Project records in an organized manner, according to generally accepted accounting principles, for a period of four years after City's acceptance of the Project or following Contract termination, whichever occurs first. Subject to prior notice to Contractor, City is entitled to inspect or audit any of Contractor's records relating to the Project or to investigate Contractor's plant or equipment during Contractor's normal business hours. Contractor must also provide copies of the Project records to City upon request.

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(K) ***Copies of Contract Documents Onsite.*** Contractor and its Subcontractors must keep copies, at the Project site, of the Work-related documents, including the Contract, Drawings, Plans, Specifications, Addenda, Contract amendments, Change Orders, RFIs and RFI responses, Field Orders, approved Shop Drawings, and any related written interpretations. The Contract Documents, as-built drawings, and all Worksite copies must be available to City for reference at all times.

2.3 Subcontractors.

(A) ***General.*** All Work which is not performed by Contractor with its own forces must be performed by Subcontractors. City reserves the right to approve or reject any and all Subcontractors proposed to perform the Work. Each Subcontractor must obtain a City business license before performing any Work. Each Subcontractor must also pay City business tax and registration tax for a business license, under Fremont Municipal Code Chapter 5.05, before performing any Work.

(B) ***Contractual Obligations.*** Contractor must include a provision in each of its subcontracts that incorporates by reference, and requires the Subcontractor to be bound to and comply with, the provisions of the Contract Documents as they apply to the Subcontractor's portion(s) of the Work, and to likewise bind their own subcontractors or suppliers. Such provisions to be incorporated by reference specifically include, but are not limited to, the following obligations of Contractor under the Contract Documents: indemnification of City; City business tax and registration tax compliance; insurance coverage; and compliance with nondiscrimination and all other applicable laws. Nothing in these Contract Documents creates a contractual relationship between a Subcontractor and City, but City is deemed to be a third-party beneficiary of the contract between Contractor and each Subcontractor.

(C) ***Termination.*** If the Contract is terminated, each Subcontractor's agreement must be assigned by Contractor to City, subject to the prior rights of any surety, provided that City accepts the assignment by written notification, and assumes all rights and obligations of Contractor pursuant to each such subcontract agreement.

(D) ***Substitution of Subcontractor.*** If Contractor requests substitution of a listed Subcontractor under Public Contract Code Section 4107, Contractor is solely responsible for all costs City incurs in responding to the request, including legal fees and costs to conduct a hearing.

2.4 Coordination of Work.

(A) ***Concurrent Work.*** City reserves the right to perform or to have performed other work on or adjacent to the Project site while the Work is being performed. Contractor is responsible for coordinating its Work with other work being performed on or adjacent to the Project site, including by any utility companies or agencies, and must avoid hindering, delaying, or interfering with the work of other contractors and subcontractors. To the full extent permitted by law, Contractor must hold harmless and indemnify City against any and all claims arising from or related to Contractor's avoidable, negligent, or willful hindrance of, delay to, or interference with the work of any utility company or agency or another contractor or subcontractor.

(B) ***Defects.*** Before proceeding with any portion of the Work affected by the construction or operations of others, Contractor must give the Project Manager prompt written notification of any defects Contractor discovers which will prevent the proper execution of the Work. Failure to give notice of any such known defects will be deemed

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acknowledgement by Contractor that the work of others is not defective and will not prevent the proper execution of the Work.

2.5 **Submittals.** Unless otherwise specified, Contractor must submit the following to the Project Manager for review: all schedules, Shop Drawings, samples, product data and similar submittals required by the Contract Documents, and any other submittals requested by the Project Manager. Unless otherwise specified, all submittals, including Requests for Information, are subject to the provisions of this Section.

(A) ***General.*** Contractor is responsible for ensuring that its submittals are accurate and conform to the Contract Documents.

(B) ***Time and Manner of Submission.*** Contractor must ensure that its submittals are prepared and delivered in a manner consistent with the current approved schedule for the Work and within the applicable time specified elsewhere in the Contract Documents, or if no time is specified, in such time and sequence so as not to delay the performance of the Work or completion of the Project. For planning purposes, Contractor should assume at least 14 days for City review of each submittal or batch of submittals, and a longer time period for complex submittals or for large batches of submittals.

(C) ***Required Contents.*** Each submittal must be numbered in sequential order and include the Project name and contract number, Contractor's name and address, the name and address of any Subcontractor or supplier involved with the submittal, the date, and references to applicable Specification section(s) and/or drawing and detail number(s).

(D) ***Required Corrections.*** If City notes exceptions and requires corrections for any submittal, Contractor must promptly make and submit the required corrections to City in full conformance with the requirements of this Section.

(E) ***Effect of Review and Acknowledgement by City.*** City's review and acknowledgement of a submittal that results in no exceptions taken by City will not relieve Contractor from complying with the requirements of the Contract Documents. Contractor is responsible for any errors in any submittal, and review and acknowledgement of a submittal by City with no exceptions taken is not an assumption of risk or liability by City.

(F) ***Enforcement.*** Any Work performed or material used without prior review of a required submittal will be performed at Contractor's risk, and Contractor may be required to bear the costs incident thereto, including the cost of removing and replacing such Work, repairs to other affected portions of the Work, and the cost of additional time or services required of City, including costs for the Design Professional, Project Manager, or Inspector.

(G) ***Excessive RFIs.*** A Request for Information will be considered excessive or unnecessary if City determines that the explanation or response to the Request for Information is clearly and unambiguously discernable in the Contract Documents or in any Field Order that City has issued. City's costs to review and respond to excessive or unnecessary Requests for Information may be deducted from payments otherwise due to Contractor.

(H) ***Additional Requirements for Submittals.*** Any additional requirements for submittals may be included in the Special Conditions or Specifications.

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2.6 Shop Drawings. When Shop Drawings are required by the Specifications or requested by the Engineer, they must be prepared according to best practices at Contractor's expense. The Shop Drawings must be of a size and scale to show all necessary details. Unless otherwise specified by City, three copies must be provided to the Engineer for review at least 30 days before the Work will be performed. If City notes exceptions or requires changes, three copies of the corrected Shop Drawings must be resubmitted to the Engineer for review. For all Project components requiring Shop Drawings, Contractor will not furnish materials or perform any Work until the Shop Drawings for those components are reviewed by City. Contractor is responsible for any errors and omissions in the Shop Drawings, shop fits and field corrections, any deviations from the Contract Documents, and for the results obtained by the use of Shop Drawings. Review of Shop Drawings by the Engineer does not relieve Contractor of such responsibility.

Article 3 - Contract Documents

3.1 Interpretation of Contract Documents.

(A) ***Drawings and Specifications.*** The Drawings and Specifications included in the Contract Documents are complementary. If Work is shown on one but not on the other, Contractor must perform the Work as though fully described on both, consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results. The Drawings and Specifications are deemed to include and require everything necessary and reasonably incidental to completion of the Work, whether or not particularly mentioned or shown. Contractor must perform all work and services and supply all things reasonably related to and inferable from the Contract Documents. In the event of a conflict between the Drawings and Specifications, the Specifications will control.

(B) ***Duty to Notify and Seek Direction.*** If Contractor becomes aware of a changed condition in the Project, or of any ambiguity, conflict, inconsistency, discrepancy, omission, or error in the Contract Documents, including under the Drawings or Specifications, Contractor must immediately submit a Request for Information to the Engineer and wait for a response from City before proceeding further with the related Work. The Request for Information must notify City of the issue and request clarification, interpretation or direction. The Engineer's clarification, interpretation or direction will be final and binding on Contractor. If Contractor proceeds with the related Work before obtaining City's response, Contractor will be responsible for any resulting costs, including the cost of correcting any incorrect or defective Work that results. City will not extend the Contract Time due to Contractor's failure to submit a timely Request for Information to the Engineer.

(C) ***Figures and Dimensions.*** Figures control over scaled dimensions.

(D) ***Technical or Trade Terms.*** Any terms that have well-known technical or trade meanings will be interpreted in accordance with those meanings, unless otherwise specifically defined in the Contract Documents.

(E) ***Measurements.*** Contractor must verify all relevant measurements at the Worksite before ordering any material or performing any Work, and will be responsible for the correctness of those measurements.

3.2 Order of Precedence. Information included in one Contract Document but not in another will not be considered a conflict or inconsistency. Unless otherwise specified in the Special Conditions, in case of any conflict or inconsistency among the Contract

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Documents, the following order of precedence will apply, beginning from highest to lowest:

(A) Change Orders;
(B) Addenda;
(C) Contract;
(D) Notice to Proceed;
(E) Notice of Award;
(F) Special Conditions;
(G) General Conditions;
(H) Payment, Performance and (if required) Warranty Bonds;
(I) Specifications;
(J) Drawings;
(K) Contractor's Bid Proposal and attachments;
(L) Notice Inviting Bids;
(M) Instructions to Bidders;
(N) City Standard Specifications;
(O) City Standard Details; and
(P) Any other documents prepared by and on behalf of a third party that were not prepared specifically for this Project.

3.3 Caltrans Standard Specifications. Any reference in the Contract Documents to or incorporation of the Standard Specifications of the State of California, Department of Transportation ("Caltrans"), including "Standard Specifications," "Caltrans Specifications," "State Specifications," or "CSS," means the most current edition of Caltrans' Standard Specifications, unless otherwise specified ("Standard Specifications"), including the most current amendments as of the date that Contractor's bid was submitted for this Project. The following provisions apply to use of or reference to the Standard Specifications:

(A) ***Limitations.*** None of the "General Provisions" of the Standard Specifications, i.e., Sections 1 through 9, applies to these Contract Documents with the exception of any specific provisions, if any, which are expressly stated to apply to these Contract Documents.

(B) ***Conflicts or Inconsistencies.*** If there is a conflict or inconsistency between any provision in the Standard Specifications and a provision of these Contract Documents, as determined by City, the provision in the Contract Documents will govern.

(C) ***Meanings.*** Terms used in the Caltrans Standard Specifications or Special Provisions are to be interpreted as follows:

(1) Any reference to the "Engineer" is deemed to mean the City Engineer.

(2) Any reference to the "Special Provisions" is deemed to mean the Special Conditions, unless the Caltrans Special Provisions, or any portions thereof, are expressly included in the Contract Documents under Section 2 of the Contract.

(3) Any reference to the "Department" or "State" is deemed to mean City.

3.4 For Reference Only. Contractor is responsible for the careful review of any document, study, or report provided by City or incorporated into or appended to the Contract Documents solely for informational purposes and identified as "For Reference Only." Nothing in any document, study, or report so appended and identified is intended to supplement, alter, or void any provision of the Contract Documents. Contractor is advised

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that City or its representatives may be guided by information or recommendations included in such reference documents, particularly when making determinations as to the acceptability of proposed materials, methods, or changes in the Work. Any record drawings or similar final or accepted drawings or maps that are not part of the Contract Documents are deemed to be For Reference Only. The provisions of the Contract Documents are not modified by any perceived or actual conflict with provisions in any document that is For Reference Only.

3.5 **Plans and Specifications.** Any arrangement or division of the Plans and Specifications into sections is for convenience and is not intended to limit the Work required by separate trades. A conclusion presented in the Plans or Specifications is only a recommendation. Actual locations and depths must be determined by Contractor's field investigation. Contractor may request access to underlying or background information in City's possession that is necessary for Contractor to form its own conclusions. Subject to the limitations of Public Contract Code Section 1104, it is Contractor's responsibility to ascertain the existence of any conditions affecting the cost of the Work.

3.6 **Current Versions.** Unless otherwise specified by City, any reference to the City Standard Specifications, Standard Plans and Standard Details, technical specifications, or any City or California codes or regulations means the latest specification, code or regulation in effect at the time that bids were due.

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Article 4 - Bonds, Indemnity, and Insurance

4.1 **Payment and Performance Bonds.** Within ten days following issuance of the notice of award, Contractor is required to provide a payment bond and a performance bond, each in the penal sum of not less than 100% of the Contract Price, using the bond forms included with the Contract Documents.

(A) ***Surety.*** Each bond must be issued by a surety admitted in California. If an issuing surety cancels the bond or becomes insolvent, within seven days following written notice from City, Contractor must substitute a surety acceptable to City. If Contractor fails to substitute an acceptable surety within the specified time, City may, at its sole discretion, withhold payment from Contractor until the surety is replaced to City's satisfaction, or terminate the Contract for default.

(B) ***Supplemental Bonds for Increase in Contract Price.*** If the Contract Price increases during construction by five percent or more over the original Contract Price, Contractor may be required provide supplemental or replacement bonds within ten days of written notice from City pursuant to this Section, covering 100% of the increased Contract Price and using the bond forms included with the Contract Documents.

4.2 **Indemnity.** To the fullest extent permitted by law, Contractor must indemnify, defend, and hold harmless City, including its elected officials, officers, agents, employees, consultants and volunteers (individually, an "Indemnitee," and collectively the "Indemnitees"), from and against any and all liability, loss, damage, claims, expenses (including, without limitation, attorney fees, expert witness fees, paralegal fees, and fees and costs of litigation or arbitration) (collectively, "Liability") of every nature arising out of or in connection with the acts or omissions of Contractor, including its officers, agents, representatives, employees, Subcontractors and suppliers, in bidding or performing the Work or in failing to comply with any obligation of Contractor under the Contract, except such Liability caused by the active negligence, sole negligence, or willful misconduct of an Indemnitee. This indemnity requirement applies to any Liability arising from alleged

defects in the content or manner of submission of Contractor's bid for the Contract. Contractor's failure or refusal to timely accept a tender of defense pursuant to this Contract will be deemed a material breach of the Contract. City will timely notify Contractor upon receipt of any third-party claim relating to the Contract, as required by Public Contract Code Section 9201. Contractor's indemnity obligations under this Contract will survive the expiration or any early termination of the Contract.

4.3 **Insurance.** No later than ten days following issuance of the notice of award, and before commencing any Work, Contractor must, at its sole expense, procure the insurance coverage required by this Section and provide acceptable proof of the coverage to the satisfaction of City's Risk Manager. Proof of coverage must be evidenced within the body of the insurance policies or in the form of certificates and endorsements as described below. The required insurance must cover Contractor, including its officers, agents, representatives, employees, Subcontractors and suppliers, for claims now and in the future that may relate to or arise from the performance of the Work. The insurance must remain in full force and effect throughout the duration of the Contract. The insurance must be issued by companies licensed to do business in the State of California, and each such insurer must have an A.M. Best's financial strength rating of "A" or better and a financial size rating of "VII" or better. Contractor's procurement of the required insurance will not be construed to relieve Contractor of any performance obligations, to limit Contractor's liability, or to fulfill Contractor's indemnification obligations under the Contract. Contractor may carry any additional insurance it deems necessary or prudent, at its sole expense.

(A) ***Insurance Coverage and Limits.*** Any available insurance proceeds related to this Contract that are broader than or in excess of the specified minimum insurance coverage requirements or limits for Contractor must be made available to the additional insureds under this Contract. The requirements for Contractor's coverage and limits are: (1) the minimum coverage and limits specified in this Contract, or (2) the broader coverage and maximum limits of coverage of any insurance policy or proceeds available to the named insureds, whichever is greater. The limits of insurance required in this Contract may be satisfied by a combination of primary and umbrella or excess insurance. Any umbrella or excess insurance must contain or be endorsed to contain a provision that such coverage will also apply on a primary and non-contributory basis for the benefit of City, before City's own insurance or self-insurance will be called upon to protect it as a named insured.

(B) ***Minimum Scope of Insurance*****.** Contractor must procure and maintain all of the following insurance coverage for this Contract, unless otherwise specified in the Special Conditions:

(1) Insurance Services Office Commercial General Liability ("CGL") insurance that includes:

a) Blanket contractual liability coverage;
b) Contractor's protected coverage;
c) Broad form property coverage;
d) Personal injury coverage;
e) Completed operations coverage; and

(2) Insurance Services Office Automobile Liability insurance, Code 1 (any auto).

(3) Builder's Risk insurance.

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(4) Workers' Compensation insurance as required by the State of California and Employer's Liability insurance.

(5) Any other insurance coverage City may require in the Special Conditions.

(C) ***Minimum Limits of Insurance.*** Contractor must maintain coverage limits of at least the following for this Contract, unless otherwise specified in the Special Conditions:

(1) CGL insurance: Issued on an occurrence basis, with $2,000,000 per occurrence for bodily injury, personal injury and property damage and $4,000,000 general aggregate. If CGL insurance or other form with a general aggregate liability is used, either the general aggregate limit must apply separately to this Contract or the general aggregate limit must be twice the required occurrence limit.

(2) Automobile Liability insurance: $1,000,000 per accident for bodily injury, death and property damage. For owned, loaned, hired and non-owned autos.

(3) Builder's Risk insurance*:* Issued on an occurrence basis, with all-risk coverage on a 100% completed value basis on the insurable portion of the Project for the benefit of City.

(4) Employer's Liability insurance:

a) Bodily Injury by Accident - $1,000,000 each accident;
b) Bodily Injury by Disease - $1,000,000 policy limit; and
c) Bodily Injury by Disease - $1,000,000 each employee.

(5) Any other limits City may require in the Special Conditions.

(D) ***Deductibles and Self-Insured Retentions.***

(1) Any deductible or self-insured retention (SIR) applicable to Contractor's insurance must be declared to and approved by City. At City's option, either: a) the insurer must reduce or eliminate such deductible or SIR with respect to City, including its elected officials, officers, agents, employees, consultants, volunteers and Design Professional; or b) Contractor must procure a bond guaranteeing payment of losses and related investigations, claims administration and defense expenses.

(2) Policies containing any SIR provision must provide or be endorsed to provide that the SIR may be satisfied by either the named insured or City.

(3) City reserves the right to obtain a full certified copy of any insurance policy and endorsement. Failure to exercise this right will not constitute a waiver of the right to exercise it later.

(E) ***Endorsements*****.** The required CGL, automobile liability and builder's risk insurance policies must contain, or be endorsed to contain, the following provisions:

(1) City, its elected officials, officers, agents, employees, consultants, volunteers and Design Professional, are covered as additional insureds as respects: any alleged liability arising out of activities performed by or on behalf of

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Contractor; products and completed operations of Contractor; premises owned, occupied or used by Contractor; any automobiles owned, leased, hired or borrowed by Contractor. The coverage will contain no special limitations on the scope of protection afforded to City, its elected officials, officers, agents, employees, consultants, volunteers and Design Professional.

(2) Any failure to comply with reporting or other provisions of the policies, including breaches of warranties, will not affect coverage provided to City, its elected officials, officers, agents, employees, consultants, volunteers and Design Professional.

(3) The insurance will apply separately to each insured against whom a claim is made or suit is brought, except with respect to the limits of the insurer's liability. The inclusion of more than one insured will not operate to impair the rights of one insured against another, and the coverages afforded will apply as though separate policies have been issued to each insured.

(4) The policy does not exclude explosion, collapse, underground excavation hazard, or removal of lateral support.

(F) ***Insurance Certificates and Endorsements***. Contractor must furnish properly executed certificates of insurance from insurance companies acceptable to City, with signed copies of the specified endorsements for each policy as required in Subsection M below. Such documentation must clearly evidence all coverages as required above, including specific evidence of separate endorsements naming City, its elected officials, officers, agents, employees, consultants, volunteers and Design Professional as additional insureds as also required above. The certificates must also provide that such insurance will not be materially changed, terminated or allowed to expire except after 30 days prior written notice thereof has been filed with the City Clerk by certified mail, return receipt requested, unless the change or termination is due to non-payment of premiums, in which case ten days prior written notice thereof must be filed with the City Clerk.

(G) ***Completed Operations.*** Contractor must maintain the required insurance coverage to the fullest amount allowed by law and must maintain the insurance for a minimum of five years following Final Completion of the Project. In the event Contractor fails to obtain or maintain completed operations coverage as required herein, City at its sole discretion may purchase the coverage required and the cost will be paid by Contractor.

(H) ***Cross-Liability.*** The CGL policy must include a cross-liability or severability of interest endorsement.

(I) ***Failure to Maintain Insurance Coverage.*** Contractor's failure, for any reason, to maintain the required insurance coverage will be deemed a material breach of this Contract. City, at its sole option, may terminate this Contract and obtain damages from Contractor resulting from such breach. Alternatively, City may purchase the required insurance coverage and, without further notice to Contractor, deduct from sums due to Contractor any premium costs advanced by City for the insurance.

(J) ***Primary and Non-Contributory.*** Contractor's insurance coverage under this Contract will be primary insurance as respects City, its elected officials, officers, agents, employees, consultants, volunteers and Design Professional. Any insurance or self-insurance maintained by City, its elected officials, officers, agents, employees,

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consultants, volunteers or Design Professional, will be excess of Contractor's insurance and will not contribute with it. The additional insured coverage under Contractor's policies will be "primary and non-contributory" and will not seek contribution from City's insurance or self-insurance and will be at least as broad as CG 20 01 04 13.

(K) ***Subcontractors***. Contractor must require all Subcontractors to maintain the same levels of insurance and provide the same indemnity that Contractor is required to provide under this Contract, including the requirements related to the additional insureds and waivers of subrogation. A Subcontractor is any party that is under contract with Contractor, or any of its Subcontractors, to perform Work under this Contract. Contractor must require each Subcontractor to provide evidence of the required insurance and endorsements prior to the Subcontractor's commencement of any Work.

(L) ***Subrogation Waiver.*** Contractor agrees to waive subrogation rights against City, regardless of the applicability of any insurance proceeds, and to require all Subcontractors or others involved in any way with the Work to do likewise. Each required insurance policy must include an endorsement providing that the carrier agrees to waive any right of subrogation it may have against City, its elected officials, officers, agents, employees, consultants, volunteers and Design Professional.

(M) ***Verification of Coverage.*** Contractor must furnish City with original endorsements effecting coverage required by this Section 4.3. The endorsements must be signed by a person authorized by that insurer to bind coverage on its behalf. All endorsements must be received and approved by City's Risk Manager before the Work commences. Contractor must provide substitute insurance coverage, and written proof of the substitute insurance coverage, to City, in the form of policies, certificates and endorsements acceptable to City's Risk Manager, no later than 30 days prior to the expiration date of any insurance policy required under this Contract.

4.4 **Warranty Bond.** If required for this Project, within ten days following issuance of the notice of award, Contractor must submit a warranty bond, using the form included with the Contract Documents, to guarantee its Work as specified in Article 11, Completion and Warranty Procedures. The warranty bond must be issued by a surety admitted in California for 20% of the awarded Contract Price or as otherwise specified in the Contract Documents. If an issuing surety cancels the bond or becomes insolvent, within seven days following written notice from City, Contractor must substitute a surety acceptable to City.

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Article 5 - Contract Time

5.1 **Time is of the Essence.** Time is of the essence in Contractor's performance and completion of the Work, and Contractor must diligently prosecute the Work and complete it within the Contract Time.

(A) ***General.*** Contractor must commence the Work on the date indicated in the Notice to Proceed, and must fully complete the Work in strict compliance with all requirements of the Contract Documents and within the Contract Time.

(B) ***Rate of Progress.*** Contractor and its Subcontractors must, at all times, provide workers, materials, and equipment sufficient to maintain the rate of progress necessary to ensure full completion of the Work within the Contract Time. If City determines that Contractor is failing to prosecute the Work at a sufficient rate of progress, City may, in its sole discretion, direct Contractor to provide additional workers, materials, or equipment,

or to work additional hours or days without additional cost to City, in order to achieve a rate of progress satisfactory to City. If Contractor fails to comply with City's directive in this regard, City may, at Contractor's expense, separately contract for additional workers, materials, or equipment or use City's own forces to achieve the necessary rate of progress. Alternatively, City may terminate the Contract based on Contractor's default.

5.2 **Schedule Requirements.** All schedules must be prepared using standard scheduling software acceptable to City, and must provide schedules in electronic and paper form as requested.

(A) ***Baseline (As-Planned) Schedule.*** Within three calendar days following City's issuance of the Notice to Proceed (or as otherwise specified in the Special Conditions), Contractor must submit to City for review a final baseline (as-planned) schedule using critical path methodology showing in detail how Contractor plans to perform and fully complete the Work within the Contract Time. The final baseline schedule must be based on the draft baseline schedule submitted for the pre-construction conference pursuant to Section 2.2, above, and must incorporate City comments as directed during the pre-construction conference. The baseline schedule must show the order of the major items of Work and the dates of start and completion of each item, including when the materials and equipment will be procured. The schedule must also include the work of all trades, reflecting anticipated labor or crew hours and equipment loading for the construction activities, and must be sufficiently comprehensive and detailed to enable progress to be monitored on a day-by-day basis. For each activity, the baseline schedule must be dated, provided in the format specified in the Contract Documents or as required by City, and must include, at a minimum, a description of the activity, the start and completion dates of the activity, the activity's dependence on completion of other activities, and the duration of the activity.

(1) *Specialized Materials Ordering*. The baseline schedule must include ordering and estimated delivery dates for specialized materials or items that are not readily available from suppliers.

(2) *Long Lead Time Items.* The baseline schedule must include realistic estimates of the lead time required for ordering items that require a long lead time, such as items that must be specially fabricated or are subject to special handling or shipping.

(B) ***City's Review of Schedules.*** City will review and may note or take exceptions to the baseline schedule, and to the progress schedules submitted as required below, to assure completion of the Work within the Contract Time. Contractor is solely responsible for resolving any exceptions taken in a schedule and must, within seven days, correct the schedule to address them.

(C) ***Progress Schedules.*** After City reviews a final baseline schedule on which no exceptions are taken, Contractor must submit to City an updated progress schedule and three-week look-ahead schedule, in the format specified by City, for review with each application for a progress payment, or when otherwise specified by City, until completion of the Work. The updated progress schedule must: show how the actual progress of the Work as constructed to date compares to the baseline schedule; reflect any proposed changes in the method of operations, including to achieve Project milestones within the Contract Time; and identify any actual or potential impacts to the critical path. Contractor must also submit periodic reports to City of any changes in the projected material or equipment delivery dates for the Project.

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(1) *Float*. The progress schedule must show early and late completion dates for each task. The number of days between those dates will be designated as the "float." Any float belongs to the Project and not to Contractor.

(2) *Failure to Submit Schedule*. Reliable, up-to-date schedules are essential to timely, efficient and cost-effective administration of the Project. If Contractor fails to submit a schedule within the time periods specified in this Section, or submits a schedule to which City has noted exceptions that are not corrected, City may withhold ten percent from payment(s) otherwise due to Contractor until the exceptions are resolved, the schedule is corrected and resubmitted, and City has taken no further exceptions.

(D) ***Recovery Schedule.*** If City determines that the Work is more than two weeks behind schedule, within seven days following written notice of such determination, Contractor must submit a recovery schedule, showing how Contractor intends to perform and complete the Work within the Contract Time, based on actual progress to date.

(E) ***Effect of Acknowledgement.*** Contractor and its Subcontractors must perform the Work in accordance with the most current schedule unless otherwise directed by City. City's review of a schedule does not operate to extend the time for completion of the Work or any component of the Work, and will not affect City's right to assess liquidated damages for Contractor's unexcused delay in completing the Work within the Contract Time.

(F) ***Posting.*** Contractor must at all times prominently post in its on-site office a copy of the most current progress or recovery schedule that has no exceptions taken by City.

(G) ***Reservation of Rights.*** City reserves the right to direct the sequence in which the Work must be performed or to make changes in the sequence of the Work in order to facilitate the performance of work by City or others, or to facilitate City's use of its property. The Contract Time or Contract Price may be adjusted to the extent such changes in sequence actually increase or decrease Contractor's time or cost to perform the Work.

(H) ***Authorized Working Days and Times.*** Contractor is limited to working Monday through Friday, excluding holidays, from 7:30 a.m. until 4:00 p.m., except as provided in the Special Conditions or as authorized in writing by City. City reserves the right to charge Contractor for additional costs incurred by City due to Work performed on days or during hours not expressly authorized in the Contract Documents, including reimbursement of costs incurred for inspection, testing, and construction management services.

(I) ***Additional Requirements for Work Schedules.*** Any additional requirements for Work schedules may be included in the Special Conditions or Specifications.

5.3 Delay and Extensions of Contract Time.

(A) ***Excusable Delay.*** The Contract Time may be extended if Contractor encounters "Excusable Delay," which is an unavoidable delay in completing the Work within the Contract Time due to causes completely beyond Contractor's control, and which Contractor could not have avoided or mitigated through reasonable care, planning, foresight, and diligence. Grounds for Excusable Delay may include fire, natural disasters including earthquake or unusually severe weather, acts of terror or vandalism, epidemic, unforeseeable adverse government actions, unforeseeable actions of third parties,

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encountering unforeseeable hazardous materials, unforeseeable site conditions, or suspension for convenience under Article 13. Contractor is not entitled to an extension of the Contract Time for delay that will not affect the time for Final Completion, based on the critical path in the baseline schedule.

(B) ***Non-Excusable Delay***. Delay which Contractor could have avoided or mitigated through reasonable care, planning, foresight and diligence is "Non-Excusable Delay." Contractor is not entitled to an extension of Contract Time or any compensation for Non-Excusable Delay, or for Excusable Delay that is concurrent with Non-Excusable Delay. Non-Excusable Delay includes delay caused by:

(1) weather conditions which are normal for the location of the Project, as determined by reliable records, including monthly rainfall averages, for the preceding ten years;

(2) Contractor's failure to order equipment and materials sufficiently in advance of the time needed for timely completion of the Work;

(3) Contractor's failure to provide adequate notification to utility companies or agencies for connections or services necessary for the timely performance and completion of the Work;

(4) foreseeable conditions which Contractor could have ascertained from reasonably diligent inspection of the Worksite or review of the Contract Documents or other information provided or available to Contractor; or

(5) Contractor's financial inability to perform the Work, including insufficient funds to pay its Subcontractors or suppliers.

(C) ***Compensable Delay.*** Pursuant to Public Contract Code Section 7102, in addition to entitlement to an extension of Contract Time, Contractor is entitled to compensation for costs incurred due to delay caused solely by City, when that delay is unreasonable under the circumstances involved and not within the contemplation of the parties ("Compensable Delay"). Contractor is not entitled to an extension of Contract Time or recovery of costs for Compensable Delay that is concurrent with Non-Excusable Delay, or that does not affect the time for Final Completion, based on the critical path in the baseline schedule.

(D) ***Recoverable Costs.*** Contractor is not entitled to compensation for Excusable Delay unless it is Compensable Delay, as defined above. Contractor is entitled to recover only the actual, direct, reasonable, and substantiated costs ("Recoverable Costs") for each working day that the Compensable Delay prevents Contractor from proceeding with more than 50% of the critical path Work scheduled for that day, based on the most recent progress schedule reviewed by City. Recoverable Costs will not include home office overhead or lost profit.

(E) ***Request for Extension of Contract Time or Recoverable Costs.*** A request for an extension of Contract Time or any associated Recoverable Costs must be submitted in writing to City within ten calendar days of the date the delay is first encountered, even if the duration of the delay is not yet known at that time, or any entitlement to the Contract Time extension or to the Recoverable Costs will be deemed waived. In addition to complying with the requirements of this Article 5, the request must be submitted in compliance with the Change Order request procedures in Article 6 below. Strict compliance with these requirements is necessary to ensure that any delay or

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consequences of delay may be mitigated as soon as possible, and to facilitate cost-efficient administration of the Project and timely performance of the Work. Any request for an extension of Contract Time or Recoverable Costs that does not strictly comply with all of the requirements of Article 5 and Article 6 will be deemed waived.

(1) *Required Contents.* The request must include a detailed description of the cause(s) of the delay, and must also describe the measures that Contractor has taken to mitigate the delay and/or its effects, including efforts to mitigate the cost impact of the delay, such as by workforce management or by a change in sequencing. If the delay is still ongoing at the time the request is submitted, the request should also include Contractor's plan for continued mitigation of the delay or its effects.

(2) *Delay Days and Costs.* The request must specify the number of days of Excusable Delay claimed, or provide a realistic estimate if the duration of the delay is not yet known. If Contractor believes it is entitled to Recoverable Costs for Compensable Delay, the request must specify the amount and basis for the Recoverable Costs that are claimed, or provide a realistic estimate if the amount is not yet known. Any estimate of delay duration or cost must be updated in writing and submitted with all required supporting documentation as soon as the actual time and cost is known. The maximum extension of Contract Time will be the number of calendar days, if any, by which an Excusable Delay or a Compensable Delay exceeds a concurrent Non-Excusable Delay. Contractor is entitled to an extension of Contract Time, or compensation for Recoverable Costs for Compensable Delay, only if, and only to the extent that, such delay will unavoidably delay Final Completion.

(3) *Supporting Documentation.* The request must also include any and all supporting documentation necessary to evidence the delay and its actual impacts, including scheduling and cost impacts with a time impact analysis using critical path methodology and demonstrating the unavoidable delay to Final Completion. The time impact analysis must be submitted in a form or format acceptable to City.

(4) *Burden of Proof.* Contractor has the burden of proving that: (a) the delay was an Excusable or Compensable Delay, as defined above; (b) Contractor has made reasonable efforts to mitigate the delay and its schedule and cost impacts; (c) the delay will unavoidably result in delaying Final Completion; and (d) any Recoverable Costs claimed by Contractor were actually incurred and were reasonable under the circumstances.

(5) *Legal Compliance.* Nothing in this Section 5.3 is intended to require the waiver, alteration, or limitation of the applicability of Public Contract Code Section 7102.

(6) *No Waiver.* Any grant of an extension of Contract Time, or compensation for Recoverable Costs due to Compensable Delay, will not operate as a waiver of City's right to assess liquidated damages for Non-Excusable Delay.

(7) *Dispute Resolution.* In the event of a dispute over entitlement to an extension of Contract Time or compensation for Recoverable Costs, Contractor may not stop working pending resolution of the dispute, but must continue to comply with its duty to diligently prosecute the performance and timely completion of the Work. Contractor's sole recourse for an unresolved dispute

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based on City's rejection of a Change Order request for an extension of Contract Time or compensation for Recoverable Costs is to comply with the Dispute Resolution provisions set forth in Article 12 below.

5.4 Liquidated Damages. It is expressly understood that if Final Completion is not achieved within the Contract Time, City will suffer damages from the delay that are difficult to determine and accurately specify. Pursuant to Public Contract Code section 7203, if Contractor fails to achieve Final Completion within the Contract Time, City will charge Contractor in the amount specified in the Contract for each day that Final Completion is delayed beyond the Contract Time, as liquidated damages and not as a penalty.

(A) ***Liquidated Damages.*** Liquidated damages will not be assessed for any Excusable or Compensable Delay, as set forth above.

(B) ***Milestones.*** Liquidated damages may also be separately assessed for failure to meet milestones specified elsewhere in the Contract Documents.

(C) ***Setoff.*** City is entitled to deduct the amount of liquidated damages assessed against any payments otherwise due to Contractor, including unreleased retention. If there are insufficient Contract funds remaining to cover the full amount of liquidated damages assessed, City is entitled to recover the balance from Contractor or its performance bond surety.

(D) ***Occupancy or Use.*** Occupancy or use of the Project in whole or in part prior to Final Completion does not constitute City's acceptance of the Project and will not operate as a waiver of City's right to assess liquidated damages for Contractor's Non-Excusable Delay in achieving Final Completion.

(E) ***No Limitation on Other Remedies.*** City's right to liquidated damages under this section applies only to damages arising from Contractor's Non-Excusable Delay or failure to complete the Work within the Contract Time. City retains its right to pursue all other remedies under the Contract for other types of default or damage, including damage to property or persons, or for defective materials or workmanship. This provision for liquidated damages will not apply to the Contract or limit City in any way if Contractor abandons the Work. In such event, Contractor will be liable to City for all losses incurred.

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Article 6 - Contract Modification

6.1 Contract Modification and Changes in Work. Modifications to the Contract are valid and legally binding only pursuant to a written, duly authorized and signed Field Order or Change Order. City also reserves the right to make changes in the Work without invalidating the Contract. City may direct changes in the Work, which may include Extra Work as set forth in Subsection (B) below. Any change in the Work, whether directed by City or pursuant to Contractor's request for a Change Order under Section 6.2 below, will not be a valid and binding change to the Contract unless it is formalized in a Change Order, which may include commensurate changes in the Contract Price or Contract Time as applicable. Contractor must promptly comply with City-directed changes in the Work in accordance with the original Contract Documents, even if Contractor and City have not yet reached agreement as to adjustments to the Contract Price or Contract Time for the change in the Work or for the Extra Work.

(A) ***Disputes.*** In the event of a dispute over entitlement to or the amount of a change in Contract Time or a change in Contract Price related to a City-directed change

in the Work, Contractor must perform the Work as directed and may not delay its Work or cease Work pending resolution of the dispute, but must continue to comply with its duty to diligently prosecute the performance and timely completion of the Work, including the Work in dispute. In the event that City and Contractor dispute whether a portion or portions of the Work are already required by the Contract Documents or constitute Extra Work, or otherwise dispute the interpretation of any portion(s) of the Contract Documents, Contractor must perform the Work as directed and may not delay its Work or cease Work pending resolution of the dispute, but must continue to comply with its duty to diligently prosecute the performance and timely completion of the Work, including the Work in dispute, as directed by City. Contractor's sole recourse for an unresolved dispute related to changes in the Work or performance of any Extra Work is to comply with the dispute resolution provisions set forth in Article 12, below.

(B) ***Extra Work.*** Contractor must promptly perform any Extra Work authorized by City in accordance with the original Contract Documents, even if Contractor and City have not yet reached agreement on the adjustments to the Contract Price or Contract Time for such work. Contractor must maintain detailed daily records that itemize the cost of each element of Extra Work, and sufficiently distinguish the direct cost of the Extra Work from the cost of other Work performed. Contractor must also provide City with summary report(s) of the Extra Work performed and the related costs, together with copies of certified payroll, invoices, and other documentation substantiating the costs. The Engineer will make any adjustments to Contractor's Extra Work report(s) based on the Engineer's records of such Work. When an Extra Work report(s) is agreed on and signed by both City and Contractor, the report(s) will become the basis for payment under a duly authorized and signed Change Order.

(C) ***Remedy for Non-Compliance.*** Contractor's failure to promptly comply with a City-directed change is deemed a material breach of the Contract, and in addition to all other remedies available to it, City may, at its sole discretion, hire another contractor or use its own forces to complete the disputed Work at Contractor's sole expense, and may deduct the cost from the Contract Price.

6.2 Contractor Change Order Requests. Contractor must submit a request or proposal for a change in the Work or a change in the Contract Price or Contract Time as a written Change Order request or proposal.

(A) ***Time for Submission.*** Any request for a change in the Contract Price or the Contract Time must be submitted in writing to the Engineer within ten calendar days of the date that Contractor first encounters the circumstances, information or conditions giving rise to the Change Order request, even if the total amount of the requested change in the Contract Price or impact on the Contract Time is not yet known at that time. If City requests that Contractor propose the terms of a Change Order, unless otherwise specified in City's request, Contractor must provide the Engineer with a written proposal for the change in the Contract Price or Contract Time within five working days of receiving City's request, in a form satisfactory to the Engineer.

(B) ***Required Contents.*** Any Change Order request or proposal submitted by Contractor must include a complete breakdown of actual or estimated costs and credits, and must itemize labor, materials, equipment, taxes, insurance, and subcontract amounts. Any estimated cost must be updated in writing as soon as the actual amount is known.

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(C) ***Required Documentation.*** All claimed costs must be fully documented, and any related request for an extension of time or delay-related costs must be included at that time and in compliance with the requirements of Article 5 of the General Conditions.

(D) ***Required Form.*** Contractor must use City's form(s), or a format(s) approved by City, for submitting all Change Order requests or proposals, unless otherwise specified by City during the pre-construction conference.

(E) ***Certification.*** All Change Order requests must be signed by Contractor and must include the following certification:

> "The undersigned Contractor certifies under penalty of perjury that its statements and representations in this Change Order request are true and correct. Contractor warrants that this Change Order request is comprehensive and complete, and agrees that any costs, expenses, or time extension request not included herein is deemed waived. Contractor understands that submission of claims which have no basis in fact or which Contractor knows to be false may violate the False Claims Act, as set forth in Government Code Sections 12650 et seq."

6.3 Adjustments to Contract Price. The amount of any increase or decrease in the Contract Price will be determined based on one of the following methods, but in the order provided:

(A) ***Unit Pricing.*** Amounts previously provided by Contractor in the form of unit prices, either in a bid schedule or schedule of values, will apply if unit pricing has previously been provided in Contractor's accepted bid schedule or schedule of values for the affected Work. No additional markup for overhead or profit or other indirect costs will be added to the calculation.

(B) ***Lump Sum.*** A mutually agreed upon lump sum, with no additional markup for overhead, profit or other indirect costs.

(C) ***Time and Materials.*** On a time and materials basis, which may include a not-to-exceed limit, calculated as the total of the following sums:

(1) All direct labor costs, plus 15 percent markup;

(2) All direct material costs, including sales tax, plus 15 percent markup;

(3) All direct plant and equipment rental costs, plus 15 percent markup; and

(4) All direct subcontract costs, plus 15 percent markup for the first $2,000 in such costs and five percent markup for all subcontract costs in excess of $2,000.

(D) ***Markup.*** Markup is deemed to include all indirect costs, including overhead and profit. Any additional bond or insurance premium costs will be considered to be included in the amounts charged to City as set forth above.

6.4 Unilateral Change Order. If City disagrees with the amount of compensation or extension of time that Contractor has requested, City may elect to issue a unilateral Change Order, directing performance of the Work, and authorizing a change in the Contract Price or Contract Time in the amount City believes is merited. Contractor's sole

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recourse to dispute the terms of a unilateral Change Order is to submit a timely Claim pursuant to Article 12, below.

6.5 Non-Compliance Deemed Waiver. Contractor waives its entitlement to any increase in the Contract Price or Contract Time if Contractor fails to fully comply with the provisions of this Article. Contractor will not be paid for unauthorized Extra Work.

6.6 Value Engineering. Unless otherwise specified in the Special Conditions, this Contract does not provide for payment of extra compensation to the Contractor for cost reductions resulting from a proposal submitted by the Contractor, and Contractor will not be entitled additional compensation for value engineering pursuant to Public Contract Code section 7101.

Article 7 - General Construction Provisions

7.1 Permits and Taxes.

(A) ***General.*** With the exception of City building permit fees, Contractor must obtain and pay for all permits, fees, or licenses required to perform the Work, including a City business license. Contractor and all Subcontractors must pay City business tax and registration tax for the business license under Fremont Municipal Code Chapter 5.05. Contractor must cooperate with and provide notifications to all government agencies with jurisdiction over the Project, as may be required. Contractor must provide City with copies of all notices, permits, licenses, and renewals required for the Work. Contractor will be solely responsible for finalizing and closing out all permits for the Project issued by City's building department and all other government agencies with jurisdiction over the Project.

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(B) ***Federal Excise Tax.*** Contractor must pay for all taxes on labor, material and equipment, except Federal Excise Tax to the extent that City is exempt from Federal Excise Tax.

7.2 Temporary Facilities. Except as otherwise specified in the Special Conditions, and in addition to any requirements in the Specifications pertaining to temporary facilities, Contractor must provide, at Contractor's sole expense, any and all temporary facilities for the Project, including an onsite staging area for material and equipment, a field office, sanitary facilities, utilities, storage, scaffolds, barricades, walkways, and any other temporary structure required to safely perform the Work along with any utility services incidental thereto.

(A) ***Standards.*** Such structures must be safe and adequate for the intended use, and installed and maintained in accordance with all applicable federal, state, and local laws, codes, and regulations.

(B) ***Screening.*** Contractor must fence and screen the Project site and staging area, and its operation must minimize inconvenience to neighboring properties.

(C) ***Utilities.*** Contractor must install and maintain the light, power, water and all other utilities required for the Project site, including the piping, wiring, lamps and related equipment necessary to perform the Work.

(D) ***Removal and Repair.*** Contractor must promptly remove all such temporary facilities when they are no longer needed or upon completion of the Work, whichever comes first. Contractor must promptly repair any damage to City's property caused by

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the installation, use, or removal of the temporary facilities, and must promptly restore the property to its original or intended condition.

(E) ***Additional Requirements.*** Additional provisions pertaining to temporary facilities may be included in the Specifications or Special Conditions.

7.3 Noninterference and Additional Work Areas. Contractor must avoid interfering with City's use of its property at or adjacent to the Project site, including use of roadways, entrances, parking areas, walkways, and structures. Contractor must also minimize disruption of access to private property in the Project vicinity. Contractor must coordinate with affected property owners, tenants, and businesses, and maintain some vehicle and pedestrian access to their residences or properties at all times. Temporary access ramps, fencing or other measures must be provided as needed. Before blocking access to a private driveway or parking lot, Contractor must notify the affected parties of the pending closure and allow them to remove vehicles. Private driveways, residences and parking lots must have access to a roadway during non-Work hours.

(A) ***Offsite Acquisition.*** Unless otherwise provided by City, Contractor must acquire, use and dispose of, at its sole expense, any additional Work areas, easements, and temporary facilities necessary to access and perform the Work.

(B) ***Offsite Staging Area and Field Office.*** If additional space beyond the Project site is needed for the staging area or the field office, Contractor may need to make arrangements with the nearby property owner(s) to secure the space. Before occupying any property owned by a third party, Contractor must provide City with a copy of the necessary license agreement, easement, or other written authorization from the property owner, together with a written release from the property owner holding City harmless from any related liability.

7.4 Signs. No signs may be displayed on or about City's property, except signage which is required by law or by the Contract Documents, without City's prior written approval as to size, design, and location.

7.5 Worksite and Nearby Property Protections.

(A) ***General.*** Contractor is responsible at all times, on a 24-hour basis and at its sole cost, for protecting the Work, the Project site, and the materials and equipment to be incorporated into the Work, until the notice of completion has been recorded. Except as specifically authorized by City, Contractor must confine its operations to the area of the Project site indicated in the Drawings. Contractor is liable for any damage caused to the Work, City's real or personal property, the real or personal property of adjacent or nearby property owners, and the work or personal property of other contractors working for City.

(1) Subject to City's approval, Contractor will provide and install safeguards to protect the Work, the Project site, City's real or personal property, and the real or personal property of adjacent or nearby property owners.

(2) Public wastewater systems may not be interrupted. If the Work disrupts existing sewer facilities, Contractor must immediately notify City and establish a plan, subject to City's approval, to convey the sewage in closed conduits back into the sanitary sewer system. Sewage must not be permitted to flow in trenches or be covered by backfill.

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(3) Contractor must remove with due care, and store at City's request, any objects or material from the Project site that City will salvage or reuse at another location(s).

(B) ***Securing Project Site.*** After completion of Work each day, Contractor must secure the Project site and, to the extent feasible, make the area reasonably accessible to the public unless City approves otherwise. All excess materials and equipment not protected by approved traffic control devices must be relocated to the staging area or demobilized. Trench spoils must be hauled off the Project site daily and open excavations must be protected with steel plates. Contractor and Subcontractor personnel may not occupy or use the Project site for any purpose during non-Work hours, except as may be provided in the Contract Documents or pursuant to prior written authorization from City.

(C) ***Reporting Damage.*** If any death, personal injury or property damage occurs in connection with the performance of the Work or otherwise in relation to the Project or the Contract, Contractor must immediately notify City. Contractor must first notify the Project Manager and the City Risk Manager's office by telephone and then promptly submit to the Project Manager and City Risk Manager a written report, in a form acceptable to City, with the following information: (1) a detailed description of the damage or injury, including the location, the circumstances, and the name and address of any injured or deceased person(s) and any affected property owner(s); (2) the name and address of any witnesses to the incident; and (3) the name and address of Contractor's insurance company representatives.

(D) ***Unforeseen Conditions.*** If Contractor encounters facilities, utilities, or other unknown conditions not shown on or reasonably inferable from the Drawings or apparent from inspection of the Project site, Contractor must immediately notify City and promptly submit a Request for Information to the Engineer and avoid taking any action which could cause damage to the facilities or utilities pending further direction from the Engineer. The Engineer's written response will be final and binding on Contractor. If the Engineer's subsequent direction to Contractor affects Contractor's cost or time to perform the Work, Contractor may submit a Change Order request as set forth in Article 6 above.

(E) ***Support; Adjacent Properties.*** Contractor must provide, install, and maintain all shoring, bracing, and underpinning necessary to provide support to City's property and adjacent properties and improvements thereon. Contractor must provide notifications to adjacent property owners as may be required by law.

(F) ***Post-Construction Restoration.*** Contractor must ensure, as part of the Work, that all parts of the construction are properly joined with the previously existing and adjacent improvements and conditions. Contractor must provide all cutting, fitting and patching needed to accomplish that requirement. Contractor must also repair or replace all existing improvements that are damaged or removed during the Work, both on and off the Project site, including curbs, sidewalks, driveways, fences, signs, utilities, street surfaces and structures. Repairs and replacements must be at least equal to the previously existing improvements, and the condition, finish and dimensions must match the previously existing improvements.

(G) ***Additional Requirements.*** Any additional requirements for protecting the Work, the Project site and the adjacent or nearby property may be included in the Special Conditions or Specifications.

7.6 Materials and Equipment.

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(A) ***General.*** Unless otherwise specified, all materials and equipment required for the Work must be new, free from defects, and of the best grade for the intended purpose, and furnished in sufficient quantities to ensure the proper and expeditious performance of the Work. Contractor must furnish evidence satisfactory to the Project Manager concerning the kind and quality of materials and equipment provided. Contractor must also employ measures to preserve the specified quality and fitness of the materials and equipment. Unless otherwise specified, all materials and equipment required for the Work are deemed to include all components required for complete installation and intended operation, and must be installed in accordance with the manufacturer's recommendation. Contractor is responsible for all shipping, handling, and storage costs associated with the materials and equipment required for the Work, and is responsible for providing security and protecting the Work and all of the required materials, supplies, tools and equipment at Contractor's sole cost until City has formally accepted the Project as set forth in Section 11.1 below. Contractor will not assign, sell, mortgage, or hypothecate any materials or equipment for the Project, or remove any materials or equipment that have been installed or delivered.

(B) ***City-Provided.*** If the Work includes installation of materials or equipment to be provided by City, Contractor is solely responsible for the proper examination, handling, storage, and installation of such items in accordance with the Contract Documents. Contractor must promptly notify City of any defects discovered in City-provided materials or equipment. Contractor is solely responsible for any loss of or damage to such items which occurs while the items are in Contractor's custody and control, the cost of which may be offset from the Contract Price and deducted from any payment(s) due to Contractor.

(C) ***Intellectual Property Rights.*** Contractor must, at its sole expense, obtain any authorization or license required, including payment of any royalties or license fees, for the use for or incorporation into the Work of an invention, design, product, material, equipment, device, or process that is patented, copyright-protected, or subject to advance licensure for use. Contractor's indemnity obligation in Article 4 applies to any claimed violation of intellectual property rights in violation of this provision.

(D) ***Certificate of Compliance.*** When a Certificate of Compliance is specified or for any material produced outside of the United States, Contractor must submit a Certificate of Compliance before incorporating that material into the Project. The Certificate of Compliance must be in a form acceptable to the Engineer, identifying the material and its source, and the lot. The Certificate of Compliance must be signed by the material producer stating that the material fully complies with the applicable requirements of the specifications. Submission of a Certificate of Compliance will not limit Contractor's continuing obligation to use only materials that conform with the requirements of the Contract Documents.

7.7 Substitutions.

(A) ***"Or Equal."*** Any specification designating a material, product, or thing (collectively, "item") or service by specific brand or trade name that is followed by the words "or equal" is intended to indicate the quality and type of item or service desired, and Contractor may request use of any equal item or service.

(B) ***Request for Substitution.*** A post-award request for substitution of an item or service must be submitted in writing to the Engineer for approval in advance, within the applicable time period provided in the Contract Documents. If no time period is specified, the substitution request may be submitted any time within 35 days after the date of award

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of the Contract, or sufficiently in advance of the time needed to avoid delay of the Work, whichever is earlier.

(C) ***Substantiation.*** Any available data substantiating the proposed substitute as an equal item or service must be submitted with the written request for substitution. Contractor's failure to timely provide all necessary substantiation, including any required test results as soon as they are available, is grounds for rejection of the proposed substitution, without further review.

(D) ***Burden of Proving Equality.*** Contractor has the burden of proving the equality of the proposed substitution at Contractor's sole cost, including testing using methods acceptable to City. City has sole discretion to determine whether a proposed substitution is equal, and City's determination is final.

(E) ***Approval or Rejection.*** If the proposed substitution is approved, Contractor is solely responsible for any additional costs or time associated with the substituted item or service. If the proposed substitution is rejected, Contractor must, without delay, install the item or use the service as specified by City with no increase in Contract Price or Contract Time.

(F) ***Contractor's Obligations.*** City's review of a proposed substitution will not relieve Contractor from any of its obligations under the Contract Documents. In the event Contractor makes an unauthorized substitution, Contractor will be solely responsible for all resulting cost impacts, including the cost of removal and replacement and the impact to other design elements.

(G) ***Additional Requirements for Substitutions.*** Any additional requirements for substitutions may be included in the Special Conditions or Specifications.

7.8 Testing and Inspection.

(A) ***General.*** All materials, equipment, and workmanship used in the Work are subject to inspection and testing by City at all times and locations during construction and/or fabrication and at any Work site, including at shops and yards as well as at the Project site. All manufacturers' application or installation instructions must be provided to the Inspector at least ten days prior to the first such application or installation. Contractor must, at all times, provide City with safe access to the Work site and make all portions of the Work available for inspection.

(B) ***Scheduling and Notification.*** Contractor must cooperate with City in coordinating the inspections and testing. Contractor must schedule all tests required by the Contract Documents in time to avoid any delay to the progress of the Work. Contractor must notify the Engineer no later than two Working Days before any inspection or testing, and must provide timely notice to the other necessary parties as specified in the Contract Documents. If Contractor schedules an inspection or test beyond specified Work hours, or on a Saturday, Sunday, or recognized City holiday, Contractor must notify the Engineer at least two Working Days in advance for approval. If approved, Contractor must reimburse City for the cost of the overtime inspection or testing.

(C) ***Responsibility for Costs.*** City will bear the initial cost of testing to be performed by City's inspectors or any independent testing consultants retained by City, subject to the following exceptions:

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(1) Contractor will be responsible for the costs of any subsequent tests which are required to substantiate compliance with the Contract Documents, and any associated remediation costs.

(2) Contractor will be responsible for inspection costs, at City's established rates, for inspection time lost because the Work is not ready or Contractor fails to appear for a scheduled inspection.

(3) If any portion of the Work that is subject to inspection or testing is covered or concealed by Contractor prior to the inspection or testing, Contractor will bear the cost of making that portion of the Work available for the inspection or testing required by the Contract Documents, and any associated repair or remediation costs. If the Engineer requests to see a covered or concealed portion of the Work that was not subject to such testing or inspection, Contractor must promptly uncover the Work but may also submit a request for a Change Order for the cost of uncovering and then re-covering that portion of the Work. However, if the uncovered Work does not conform to the Contract Documents, Contractor must pay all such costs and will not be entitled to any adjustment to the Contract Time or Contract Price.

(4) Contractor is responsible for properly shoring all compaction test sites deeper than five feet below grade, as required under Section 7.15 below.

(5) Any Work or material that is defective or fails to comply with the requirements of the Contract Documents must be promptly repaired, removed, replaced, or corrected by Contractor, at Contractor's sole expense, even if that Work or material was previously inspected or included in a progress payment.

(D) ***Contractor's Obligations.*** Contractor is solely responsible for any delay occasioned by remediation of defective or noncompliant Work or material. Inspection of the Work does not in any way relieve Contractor of its obligations to perform the Work as specified. Any Work done without the required inspection(s) will also be subject to rejection by City.

(E) ***Distant Locations.*** If required off-site testing or inspection must be conducted at a location more than 100 miles from the Project site, Contractor is solely responsible for the additional travel costs required for testing and/or inspection at such locations.

(F) ***Final Inspection.*** The provisions of this Section 7.8 apply to final inspection under Article 11, Completion and Warranty Provisions.

(G) ***Additional Requirements for Testing and Inspection.*** Any additional requirements for inspection and testing may be included in the Special Conditions or Specifications.

7.9 Worksite Maintenance and Operation. Contractor must at all times, on a 24 hour basis and at its sole cost, maintain the Project site and staging and storage areas in clean and neat condition and in compliance with all regulatory requirements for air quality and dust control. Contractor must also, on a daily basis and at its sole cost, remove and properly dispose of the debris and waste materials from the Project site. Project site maintenance expenses are deemed to have been included in Contractor's Bid Proposal.

(A) ***Air Emissions Control***. Contractor must not discharge smoke or other air contaminants into the atmosphere in violation of any applicable law, regulation or rule.

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(B) ***Dust and Debris***. Contractor must minimize and confine dust and debris resulting from the Work. Contractor must abate dust nuisance by cleaning, sweeping, and immediately sprinkling with water excavated areas of dirt or other materials prone to cause dust, and within one hour after the Engineer notifies Contractor that an airborne nuisance exists. The Engineer may direct that Contractor provide an approved water-spraying truck for this purpose. If the Engineer determines that the dust control is not adequate, City may have the work done by others and deduct the cost from the Contract Price. Contractor will immediately remove any excess excavated material from the Worksite and any dirt deposited on public streets.

(C) ***Clean up.*** Before discontinuing Work in an area, Contractor must clean the area and remove all rubbish and debris along with the construction equipment, tools, machinery, waste and surplus materials. Except as otherwise specified, all excess Project materials, and the materials removed from existing improvements on the Project site with no salvage value or intended reuse by City, will be Contractor's property.

(1) Hauling trucks and other vehicles leaving the Project site must be cleaned of exterior mud or dirt before traveling on City streets. Materials and loose debris must be delivered and loaded to prevent dropping materials or debris. Contractor must immediately remove spillage from hauling on any publicly traveled way. Streets affected by Work on the Project must be kept clean by street sweeping.

(2) If the Contract Documents include the Caltrans Standard Specifications, Contractor must comply with the Caltrans requirements for disposal of material outside of the highway right of way.

(D) ***Disposal.*** Contractor must dispose of all Project debris and waste materials in a safe and legal manner. Contractor may not burn or bury waste materials on the Project site. Contractor will not allow any dirt, refuse, excavated material, surplus concrete or mortar, or any associated washings, to be disposed of onto streets, into manholes or into City's storm drain system.

(E) ***Completion.*** At the completion of the Work, Contractor must remove from the Worksite all of its equipment, tools, surplus materials, waste materials and debris, presenting a clean and neat appearance. Before demobilizing from the Worksite, Contractor must ensure that all surfaces are cleaned, sealed, waxed, or finished as applicable, and that all marks, stains, paint splatters, and the like have been properly removed from the completed Work and the surrounding areas, leaving those areas in the condition originally found or better.

(F) ***Non-Compliance.*** If Contractor fails to comply with its maintenance and cleanup obligations or any City clean up order, City may, acting in its sole discretion, elect to suspend the Work until the condition(s) is corrected with no increase in the Contract Time or Contract Price, or undertake appropriate cleanup measures without further notice and the cost will be deducted from any amounts due or to become due to Contractor.

7.10 Instructions and Manuals. Contractor must provide to City three copies each of all instructions and manuals required by the Contract Documents, unless otherwise specified. These must be complete as to drawings, details, parts lists, performance data, and other information that may be required for City to easily maintain and service the materials and equipment installed for this Project.

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(A) ***Submittal Requirements.*** All manufacturers' application or installation instructions must be provided to City at least ten days prior to the first such application. The instructions and manuals, along with any required guarantees and warranties, must be delivered to City for review.

(B) ***Instruction of Personnel.*** Contractor or its Subcontractors must instruct City's personnel in the operation and maintenance of any complex equipment as a condition precedent to Final Completion, if required in the Contract Documents.

7.11 As-built Drawings. Contractor and its Subcontractors must maintain at the Project site a separate complete set of the Drawings which will be used solely for the purpose of recording changes made in any portion of the Work in order to create accurate record drawings at the end of the Project.

(A) ***Duty to Update.*** The as-built drawings must be updated as changes occur, on a daily basis if necessary. Progress payments may be delayed, in whole or in part, until the as-built drawings are brought up to date to the satisfaction of City. Actual locations to scale must be identified on the as-built drawings for all runs of mechanical and electrical work, including all site utilities installed underground, in walls, floors, or otherwise concealed. Deviations from the original Drawings must be shown in detail. The location of all main runs, whether piping, conduit, ductwork or drain lines, must be shown by dimension and elevation.

(B) ***Final Completion.*** Contractor must verify that all changes in the Work are depicted in the as-built drawings and must deliver the complete set of as-built drawings in PDF format to City for review and approval as a condition precedent to Final Completion.

7.12 Existing Utilities. As required by Government Code Section 4215, if, during the performance of the Work, Contractor discovers utility facilities not identified by City in the Contract Documents, Contractor must immediately provide written notice to City and the utility. City assumes responsibility for the timely removal, relocation, or protection of existing main or trunkline utility facilities located on the Project site if those utilities are not identified in the Contract Documents. Contractor will be compensated in accordance with the provisions of the Contract Documents for the costs of locating, repairing damage not due to Contractor's failure to exercise reasonable care, and removing or relocating such utility facilities not indicated in the Drawings or Specifications with reasonable accuracy, and for equipment on the Project necessarily idled during such work. Contractor will not be assessed liquidated damages for delay in completion of the Work, to the extent such delay was caused by City's failure to provide for removal or relocation of the utility facilities.

7.13 Notice of Excavation. Government Code Section 4216.2 requires that, except in an emergency, Contractor must contact the appropriate regional notification center, or Underground Services Alert ("USA") at 800-642-2444 (for Northern California), at least two working days but not more than 14 calendar days before starting any excavation if the excavation will be conducted in an area that is known, or reasonably should be known, to contain subsurface installations, and, if practical, Contractor must delineate with white paint or other suitable markings the area to be excavated. Contractor is required to contact USA before beginning Work on the Project, and take appropriate measures to avoid damaging or obstructing access to subsurface installations.

7.14 Trenching and Excavations of Four Feet or More. As required by Public Contract Code Section 7104, if the Work includes digging trenches or other excavations that

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extend deeper than four feet below the surface, the following provisions in this Section apply to the Work and the Project.

(A) ***Duty to Notify.*** Contractor must promptly, and before the following conditions are disturbed, provide written notice to City if Contractor finds any of the following conditions:

(1) Material that Contractor believes may be a hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with the provisions of existing law;

(2) Subsurface or latent physical conditions at the Worksite differing from those indicated by information about the Worksite made available to bidders prior to the deadline for submitting bids; or

(3) Unknown physical conditions at the Worksite of any unusual nature, materially different from those ordinarily encountered and generally recognized as inherent in work of the character required by the Contract Documents.

(B) ***City Investigation.*** City will promptly investigate the conditions and if City finds that the conditions do materially differ or do involve hazardous waste, and cause a decrease or increase in Contractor's cost of, or the time required for, performance of any part of the Work, City will issue a Change Order.

(C) ***Disputes.*** In the event that a dispute arises between City and Contractor regarding any of the conditions specified in subsection (A) above, Contractor will not be excused from any scheduled completion date provided for in the Contract Documents, but must proceed with all Work to be performed under the Contract. Contractor will retain any and all rights provided either by the Contract or by law which pertain to the resolution of disputes between Contractor and City.

7.15 Trenching of Five Feet or More. As required by Labor Code Section 6705, if the Contract Price exceeds $25,000 and the Work includes the excavation of any trench or trenches of five feet or more in depth, a detailed plan must be submitted to City for acceptance in advance of the excavation. The detailed plan must show the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation. If the plan varies from the shoring system standards, it must be prepared by a California registered civil or structural engineer. Use of a shoring, sloping, or protective system less effective than that required by the Construction Safety Orders is prohibited.

7.16 New Utility Connections. City will pay connection charges and meter costs for new permanent utilities required by the Contract Documents, if any. Contractor must notify City sufficiently in advance of the time needed to request service from each utility provider so that connections and services are initiated in accordance with the Project schedule.

7.17 Lines and Grades. Contractor is required to use any benchmark provided by the Engineer. Unless otherwise specified in the Contract Documents, Contractor must engage a California licensed surveyor to provide all lines and grades required to execute the Work. Contractor must also provide, preserve, and replace if necessary, all construction stakes required for the Project. All stakes or marks must be set by a California licensed surveyor or a California registered civil engineer. Contractor must

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notify the Engineer of any discrepancies found between Contractor's staking and grading and information provided by the Contract Documents. Upon completion, all Work must conform to the lines, elevations, and grades shown in the Plans.

7.18 Historic or Archeological Items.

(A) ***Contractor's Obligations.*** Contractor must ensure that all persons performing Work at the Project site are required to immediately notify the Project Manager, upon discovery of any potential historic or archeological items, including historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints or other archeological, paleontological or historical feature on the Project site (collectively, "Historic or Archeological Items").

(B) ***Discovery; Cessation of Work.*** Upon discovery of any potential Historic or Archeological Items, Work must be stopped within an 85-foot radius of the find and may not resume until authorized in writing by City. If required by City, Contractor must assist in protecting or recovering the Historic or Archeological Items, with any such assistance to be compensated as Extra Work on a time and materials basis under Article 6, Contract Modification. Any suspension of Work required due to discovery of Historic or Archeological Items will be treated as a suspension for convenience under Article 13.

7.19 Environmental Control. Contractor must not pollute any drainage course or its tributary inlets with fuels, oils, bitumens, acids, insecticides, herbicides or other harmful materials. Contractor must prevent the release of any hazardous material or hazardous waste into the soil or groundwater, and prevent the unlawful discharge of pollutants into City's storm drain system as required below. Contractor and its Subcontractors must at all times in the performance of the Work comply with all applicable federal, state, and local laws and regulations concerning pollution of waterways.

(A) ***Stormwater Permit.*** Contractor must comply with all applicable conditions of the State Water Resources Control Board National Pollutant Discharge Elimination System General Permit for Waste Discharge Requirements for Discharges of Stormwater Runoff Associated with Construction Activity ("Stormwater Permit").

(B) ***Contractor's Obligations.*** If required for the Work, a copy of the Stormwater Permit is on file in City's principal administrative offices, and Contractor must comply with the same without adjustment of the Contract Price or the Contract Time. Contractor must timely and completely submit required reports and monitoring information required by the conditions of the Stormwater Permit. Contractor also must comply with all other applicable state, municipal or regional laws, ordinances, rules or regulations governing discharge of stormwater, including applicable municipal stormwater management programs.

7.20 Noise Control. The noise level from Contractor's operations must not exceed 86 dBa at a distance of 50 feet at any time. In addition, Contractor must comply with all applicable noise control laws, ordinances, regulations and rules, including any noise mitigation requirements in an environmental document applicable to the Project, such as a mitigated negative declaration or environmental impact report. Noise control requirements apply to all equipment used for the Work or related to the Work, including trucks, transit mixers or transient equipment that may or may not be owned by Contractor.

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Article 8 - Payment

8.1 Schedule of Values. Prior to submitting its first application for payment, Contractor must prepare and submit to the Project Manager a schedule of values apportioned to the various divisions and phases of the Work, providing an itemized breakdown of all lump sum pricing previously provided in Contractor's Bid Proposal or Bid Schedule, including mobilization and demobilization. Each line item contained in the schedule of values must be assigned a value such that the total of all items equals the Contract Price. The items must be sufficiently detailed to enable accurate evaluation of the percentage of completion claimed in each application for payment, and the assigned value consistent with any itemized or unit pricing submitted with Contractor's bid.

(A) ***Measurements for Unit Price Work.*** Materials and items of Work to be paid for on the basis of unit pricing will be measured according to the methods stipulated in the Contract Documents. For progress payments, compensation for unit-priced items will be based on the actual quantities installed during the preceding month, with the exception of items identified by City as a "Final Pay" items on the Bid Schedule, which will be paid for based solely on City's estimated quantities, except as provided in Section 8.8, on Final Payment.

(B) ***Deleted or Reduced Work.*** Contractor will not be compensated for Work that City has deleted or reduced in scope, except for any labor, material or equipment costs for such Work that Contractor reasonably incurred before Contractor learned that the Work could be deleted or reduced. Contractor will only be compensated for those actual, direct and documented costs incurred, and will not be entitled to any mark up for overhead or lost profits.

8.2 Progress Payments. Following the last day of each month, or as otherwise required by the Special Conditions or Specifications, Contractor will submit to the Project Manager a monthly application for payment for Work performed during the preceding month based on the estimated value of the Work performed during that preceding month.

(A) ***Application for Payment.*** Each application for payment must be itemized to include labor, materials, and equipment incorporated into the Work, and materials and equipment installed in the Project, as well as authorized and approved Change Orders. Each pay application must be supported by Contractor's Bid Schedule or schedule of values and any other substantiating data required by the Contract Documents.

(B) ***Payment of Undisputed Amounts.*** City will pay the undisputed amount due within thirty (30) days after Contractor has submitted a complete and accurate payment application, subject to Public Contract Code Section 20104.50. City will deduct a percentage from each progress payment as retention, as set forth in Section 8.5, below, and may deduct additional amounts as set forth in Section 8.3, below.

8.3 Adjustment of Payment Application. City may adjust the amount requested, withhold disputed sums, or reject a payment application, including application for Final Payment, in whole or in part, based upon any of the circumstances listed below. Contractor will be notified in writing of the basis for the modification to the amount requested, and will be promptly paid if the basis for that modification has been remedied and no longer exists.

(A) Contractor's unexcused failure to perform the Work as required by the Contract Documents, including correction or completion of punch list items;

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(B) Loss or damage caused by Contractor or its Subcontractor(s) arising out of or relating to performance of the Work or any failure to protect the Worksite;

(C) Contractor's failure to pay its Subcontractors and suppliers when payment is due;

(D) Contractor's failure to timely correct rejected, nonconforming, or defective Work;

(E) Any unreleased stop notice, retained as 125% of the amount claimed;

(F) Contractor's failure to submit any required schedule or schedule update in the manner and within the time specified in the Contract Documents;

(G) Contractor's failure to maintain or submit as-built documents in the manner and within the time specified in the Contract Documents;

(H) Work performed without City review of Shop Drawings, when review of Shop Drawings is required before proceeding with the Work;

(I) Fines assessed under the Labor Code; or

(J) Any other costs or charges that may be offset against payments due, as provided in the Contract Documents, including liquidated damages.

8.4 Acceptance of Work. Neither City's payment of progress payments nor its partial or full use or occupancy of the Project constitutes acceptance of any part of the Work.

8.5 Retention. City will retain five percent of the amount due on each progress payment, or the percentage stated in the Notice Inviting Bids, whichever is greater, as retention to ensure full and satisfactory performance of the Work.

(A) ***Substitution of Securities.*** As provided by Public Contract Code Section 22300, Contractor may request in writing that it be allowed, at its sole expense, to substitute securities for the retention withheld by City. Any escrow agreement entered into pursuant to this provision must fully comply with Public Contract Code Section 22300, and will be subject to approval as to form by City's legal counsel.

(B) ***Release of Undisputed Retention.*** All undisputed retention, less any amounts that may be assessed as liquidated damages, retained for stop notices, or otherwise withheld under Section 8.3 or Section 8.6, will be released as Final Payment to Contractor no sooner than 35 days following recordation of the notice of completion, and no later than 60 days following acceptance of the Project by City's governing body or authorized designee pursuant to Section 11.1(D) below, or, if the Project has not been accepted, no later than 60 days after the Project is otherwise considered complete under Public Contract Code Section 7107(c).

8.6 Setoff. City is entitled to set off any amounts due from Contractor against any payments due to Contractor. City's entitlement to setoff includes progress payments as well as Final Payment and unreleased retention.

8.7 Payment to Subcontractors and Suppliers. Each month, Contractor must promptly pay each Subcontractor and supplier the value of the portion of labor, materials, and equipment incorporated into the Work or delivered to the Worksite by the Subcontractor or supplier during the preceding month. Such payments must be made in accordance

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with the requirements of the law, and those of the Contract Documents and applicable subcontract or supplier contract.

(A) ***Withholding for Stop Notice.*** Pursuant to Civil Code Section 9358, City will withhold 125% of the amount claimed by an unreleased stop notice, a portion of which may be retained by City for the costs incurred in handling the stop notice claim, including attorneys' fees and costs, as authorized by law.

(B) ***Joint Checks.*** City reserves the right to issue joint checks made payable to Contractor and its Subcontractors or suppliers. As a condition to release of payment by a joint check, the joint check payees may be required to execute a joint check agreement in a form provided or approved by City. The joint check payees will be jointly and severally responsible for the allocation and disbursement of funds paid by joint check. Payment by joint check will not be construed to create a contractual relationship between City and a Subcontractor or supplier of any tier beyond the scope of the joint check agreement.

8.8 Final Payment. Contractor's application for Final Payment must comply with the requirements for submitting an application for a progress payment as stated in Section 8.2, above. Adjustments to under-payment or over-payment in previous progress payments, including adjustments to payments for unit-priced items based on actual quantities, may be included in the calculation of Final Payment. However, compensation items for identified by City as a "Final Pay" item on the Bid Schedule (marked "F") will be based solely on the estimated quantities provided in the Bid Schedule. Only changes in quantities due to design changes will be measured and paid separately pursuant to a Change Order. The date of Final Payment is deemed to be effective on the date that City acts to release undisputed retention as final payment to Contractor, or otherwise provides written notice to Contractor of Final Payment. If the amount due from Contractor to City exceeds the amount of Final Payment, City retains the right to recover the balance from Contractor or its sureties.

8.9 Release of Claims. City may, at any time, require that payment of the undisputed portion of any progress payment or Final Payment be contingent upon Contractor furnishing City with a written release of all claims against City arising from or related to the portion of Work covered by those undisputed amounts, in accordance with Civil Code Section 8120, et seq. Any disputed amounts may be specifically excluded from the release.

8.10 Warranty of Title. Contractor warrants that title to all work, materials, or equipment incorporated into the Work and included in a request for payment will pass over to City free of any claims, liens, or encumbrances upon payment to Contractor.

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Article 9 - Labor Provisions

9.1 Discrimination Prohibited. Discrimination against any prospective or present employee engaged in the Work on grounds of race, color, ancestry, national origin, ethnicity, religion, sex, sexual orientation, age, disability, or marital status is strictly prohibited. Contractor and its Subcontractors are required to comply with all applicable federal and California laws, including the California Fair Employment and Housing Act (Government Code Sections 12900 et seq.), Government Code Section 11135, and Labor Code Sections 1735, 1777.5, 1777.6, and 3077.5.

9.2 Labor Code Requirements.

(A) ***Eight Hour Day.*** Under Labor Code Section 1810, eight hours of labor constitute a legal day's work under this Contract.

(B) ***Penalty.*** Under Labor Code Section 1813, Contractor will forfeit to City as a penalty, the sum of $25.00 for each day during which a worker employed by Contractor or any Subcontractor is required or permitted to work more than eight hours in any one calendar day or more than 40 hours per calendar week, except if such workers are paid overtime under Labor Code Section 1815.

(C) ***Apprentices.*** Contractor is responsible for compliance with the requirements governing employment and payment of apprentices, as set forth in Labor Code Section 1777.5, which is fully incorporated by reference.

(D) ***Notices.*** Under Labor Code Section 1771.4, Contractor is required to post all job site notices prescribed by law or regulation.

9.3 **Prevailing Wages.** Each worker performing Work under this Contract that is covered under Labor Code Section 1720 or 1720.9, including cleanup at the Project site, must be paid at a rate not less than the prevailing wage as defined in Sections 1771 and 1774 of the Labor Code. The prevailing wage rates are available online at http://www.dir.ca.gov/dlsr. Contractor must post a copy of the applicable prevailing rates at the Worksite.

(A) ***Penalties.*** Under Labor Code Section 1775, Contractor and any Subcontractor will forfeit to City as a penalty up to $200.00 for each calendar day, or portion a day, for each worker paid less than the applicable prevailing wage rate. Contractor must also pay each worker the difference between the applicable prevailing wage rate and the amount actually paid to that worker.

(B) ***Federal Requirements.*** If this Project is subject to federal prevailing wage requirements in addition to California prevailing wage requirements, Contractor and its Subcontractors are required to pay the higher of the current applicable prevailing wage rates under federal law, available online at http://www.access.gpo.gov/davisbacon/ca.html.

9.4 **Payroll Records.** Contractor must comply with the provisions of Labor Code Sections 1776 and 1812 and all implementing regulations, which are fully incorporated by this reference, including requirements for electronic submission of payroll records.

(A) ***Contractor and Subcontractor Obligations***. Contractor and each Subcontractor must keep accurate payroll records, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed in connection with the Work. Each payroll record must contain or be verified by a written declaration that it is made under penalty of perjury, stating both of the following:

(1) The information contained in the payroll record is true and correct; and

(2) Contractor or the Subcontractor has complied with the requirements of Labor Code Sections 1771, 1811, and 1815 for any Work performed by its employees on the Project.

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(B) ***Certified Record.*** A certified copy of an employee's payroll record must be made available for inspection or furnished to the employee or his or her authorized representative on request, to City, to the Division of Labor Standards Enforcement, to the Division of Apprenticeship Standards of the Department of Industrial Relations, and as further required by the Labor Code.

(C) ***Enforcement.*** Upon notice of noncompliance with Labor Code Section 1776, Contractor or Subcontractor has ten days in which to comply with requirements of this section. If Contractor or Subcontractor fails to do so within the ten day period, Contractor or Subcontractor will forfeit a penalty of $100.00 per day, or portion a day, for each worker for whom compliance is required, until strict compliance is achieved. Upon request by the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement, these penalties will be withheld from progress payments then due.

9.5 **Labor Compliance.** Under Labor Code section 1771.4, the Contract for this Project, if awarded on or after January 15, 2015, is subject to compliance monitoring and enforcement by the California Department of Industrial Relations.

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Article 10 - Safety Provisions

10.1 **Safety Precautions and Programs.** Contractor and its Subcontractors are fully responsible for safety precautions and programs, and for the safety of persons and property in the performance of the Work. Contractor and its Subcontractors must comply with all applicable safety laws, rules and regulations and seek to avoid injury, loss, or damage to persons or property by taking reasonable steps to protect its employees and other persons at the Worksite, materials and equipment stored on or off site, and property at or adjacent to the Worksite.

(A) ***Reporting Requirements.*** Contractor must immediately provide a written report to City of all recordable accidents and injuries occurring at the Worksite. If Contractor is required to file an accident report with a government agency, Contractor will provide a copy of the report to City.

(B) ***Legal Compliance.*** Contractor's safety program must comply with the applicable legal and regulatory requirements. Contractor must provide City with copies of all notices required by law or regulation.

(C) ***Contractor's Obligations.*** Any damage or loss caused by Contractor arising from the Work which is not insured under property insurance must be promptly remedied by Contractor.

(D) ***Remedies.*** If City determines, in its sole discretion, that any part of the Work or Worksite is unsafe, City may, without assuming responsibility for Contractor's safety program, require Contractor or its Subcontractor to cease performance of the Work or to take corrective measures to City's satisfaction. If Contractor fails to promptly take the required corrective measures, City may perform them and deduct the cost from the Contract Price. Contractor agrees it is not entitled to submit a Claim for damages, for an increase in Contract Price, or for a change in Contract Time based on Contractor's compliance with City's request for corrective measures pursuant to this provision.

10.2 **Hazardous Materials.** Unless otherwise specified in the Contract Documents, this Contract does not include the removal, handling, or disturbance of any asbestos or other Hazardous Materials. If Contractor encounters materials on the Worksite that Contractor

reasonably believes to be asbestos or other Hazardous Materials, and the asbestos or other Hazardous Materials have not been rendered harmless, Contractor may continue Work in unaffected areas reasonably believed to be safe, but must immediately cease work on the area affected and report the condition to City. No asbestos, asbestos-containing products or other Hazardous Materials may be used in performance of the Work.

10.3 Material Safety. Contractor is solely responsible for complying with Section 5194 of Title 8 of the California Code of Regulations, including by providing information to Contractor's employees about any hazardous chemicals to which they may be exposed in the course of the Work. A hazard communication program and other forms of warning and training about such exposure must be used. Contractor must also maintain Material Safety Data Sheets ("MSDS") at the Worksite, as required by law, for materials or substances used or consumed in the performance of the Work. The MSDS will be accessible and available to Contractor's employees, Subcontractors, and City.

(A) ***Contractor Obligations.*** Contractor is solely responsible for the proper delivery, handling, use, storage, removal, and disposal of all materials brought to the Worksite and/or used in the performance of the Work. Contractor must notify the Engineer if a specified product or material cannot be used safely.

(B) ***Labeling.*** Contractor must ensure proper labeling on any material brought onto the Worksite so that any persons working with or in the vicinity of the material may be informed as to the identity of the material, any potential hazards, and requirements for proper handling, protections, and disposal.

10.4 Hazardous Condition. Contractor is solely responsible for determining whether a hazardous condition exists or is created during the course of the Work, involving a risk of bodily harm to any person or risk of damage to any property. If a hazardous condition exists or is created, Contractor must take all precautions necessary to address the condition and ensure that the Work progresses safely under the circumstances. Such conditions may result from, but are not limited to, use of specified materials or equipment, the Work location, the Worksite condition, the method of construction, or the way any Work must be performed.

Article 11 - Completion and Warranty Provisions

11.1 Final Completion.

(A) ***Final Inspection.*** When the Work required by this Contract is fully performed, Contractor must provide written notification to City requesting final inspection. Based on that inspection, City will prepare a punch list of items that are incomplete, incorrectly installed, or not operating as required by the Contract Documents. The omission of any such item from this punch list will not relieve Contractor from fulfilling all requirements of the Contract Documents.

(B) ***Punch List.*** City will deliver the punch list to Contractor and will specify the time by which all of the punch list items must be completed or corrected. The punch list may include City's estimated cost to complete each punch list item if Contractor fails to do so within the specified time. Following the final inspection, City will charge Contractor for City's staff time and any other costs incurred for City's additional inspection(s) and review(s) of incomplete or unacceptable punch list Work.

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(C) ***Requirements for Final Completion.*** Final Completion will be achieved upon completion or correction of all punch list items, as verified by City inspection, and upon satisfaction of all other Contract requirements, including any commissioning required under the Contract Documents and submission of all final submittals, including a warranty bond if required, instructions and manuals as required under Section 7.10, and as-built drawings as required under Section 7.11, all to City's satisfaction.

(D) ***Acceptance.*** The Project will be considered accepted upon the date specified in the Engineer's written memorandum of acceptance. With the exception of warranty work, City's acceptance, subject to any express exceptions, terminates Contractor's duty to perform the Work.

(E) ***Final Payment.*** Final Payment and release of retention, less any sums withheld pursuant to the provisions of the Contract Documents, will not be made sooner than 35 days after recordation of the notice of completion. If Contractor fails to complete all of the punch list items within the specified time, City may elect to accept the Project and record the notice of completion, and withhold up to 150% of City's estimated cost to complete the remaining items from Final Payment.

11.2 Warranty.

(A) ***General.*** Contractor warrants that all materials and equipment will be new unless otherwise specified, of good quality, in conformance with the Contract Documents, and free from defective workmanship and materials. Contractor further warrants that the Work will be free from material defects not intrinsic in the design or materials required in the Contract Documents. At City's request, Contractor must furnish satisfactory evidence of the quality and type of materials and equipment furnished. Contractor's warranty does not extend to damage caused by normal wear and tear, or improper use or maintenance.

(B) ***Warranty Period.*** Contractor's warranty must guarantee its Work for a period of City's acceptance of the Project pursuant to Section 11.1(D) (the "Warranty Period"), except when a longer guarantee is provided by a supplier or manufacturer or is required by the Specifications or Special Conditions. Contractor must obtain from its Subcontractors, suppliers and manufacturers any special or extended warranties required by the Contract Documents.

(C) ***Warranty Documents.*** As a condition precedent to acceptance, Contractor must supply City with all warranty and guarantee documents relevant to equipment and materials incorporated into the Work and guaranteed by their suppliers or manufacturers.

(D) ***Subcontractors.*** The warranty obligations in the Contract Documents apply to Work performed by Contractor and its Subcontractors, and Contractor expressly agrees to act as co-guarantor of such Work.

(E) ***Contractor's Obligations.*** Upon written notice from City to Contractor of any defect in the Work discovered during the Warranty Period, Contractor or its responsible Subcontractor must promptly correct the defective Work at its own cost. Contractor's obligation to correct defects discovered during the Warranty Period will continue past the expiration of the Warranty Period as to any defects in Work for which Contractor was notified prior to expiration of the Warranty Period.

(F) ***City's Remedies.*** If Contractor or its responsible Subcontractor fails to correct defective Work within ten days following notice by City, or sooner if required by the circumstances, Contractor expressly agrees that City may correct the defects to conform

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with the Contract Documents at Contractor's sole expense. Contractor must reimburse City for its costs within 30 days following City's submission of a demand(s) for payment pursuant to this provision. If City is required to initiate legal action to compel Contractor's compliance with this provision, and City is the prevailing party in such action, Contractor and its surety are solely responsible for all of City's attorney's fees and legal costs expended to enforce Contractor's warranty obligations herein in addition to any and all costs City incurs to correct the defective Work.

(G) ***Emergency Repairs.*** In cases of emergency where any delay in correcting defective Work could cause harm, loss or damage, Contractor expressly agrees that City may immediately correct the defects to conform with the Contract Documents at Contractor's sole expense. Contractor must reimburse City for its costs within 30 days following City's submission of a demand(s) for payment pursuant to this provision. If City is required to initiate legal action to compel Contractor's compliance with this provision, and City is the prevailing party in such action, Contractor and its surety are solely responsible for all of City's attorney's fees and legal costs expended to enforce Contractor's warranty obligations herein in addition to any and all costs City incurs to immediately correct the defective Work, including any associated overtime charges.

11.3 **Use Prior to Final Completion.** City reserves the right to occupy or make use of the Project, or any portions of the Project, prior to Final Completion if City has determined that the Project or portion of it is in a condition suitable for the proposed occupation or use, and that it is in its best interest to occupy or make use of the Project, or any portions of it, prior to Final Completion. City will notify Contractor in writing of its intent to occupy or make use of the Project or any portions of the Project, pursuant to this provision.

(A) ***Non-Waiver.*** Occupation or use prior to Final Completion will not operate as acceptance of the Work or any portion of it, nor will it operate as a waiver of any of City's rights or Contractor's duties pursuant to these Contract Documents, and will not affect nor bear on the determination of the time of substantial completion with respect to any statute of repose pertaining to the time for filing an action for construction defect.

(B) ***City's Responsibility.*** City will be responsible for the cost of maintenance and repairs due to normal wear and tear with respect to those portions of the Project that are being occupied or used before Final Completion. The Contract Price or the Contract Time may be adjusted pursuant to the applicable provisions of these Contract Documents if, and only to the extent that, any occupation or use under this Section actually adds to Contractor's cost or time to perform the Work.

11.4 **Substantial Completion.** For purposes of determining "substantial completion" with respect to any statute of repose pertaining to the time for filing an action for construction defect, "substantial completion" is deemed to mean the last date that Contractor or any Subcontractor performs Work on the Project prior to recordation of the notice of completion, except for warranty work performed under this Article.

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Article 12 - Dispute Resolution

12.1 **Claims.** This Article applies to and provides the exclusive procedures for any Claim arising from or related to the Contract or performance of the Work.

(A) ***Definition.*** "Claim" means a separate demand by Contractor, submitted in writing by registered or certified mail with return receipt requested, for change in the Contract Time, including a time extension or relief from liquidated damages, or a change

in the Contract Price, that has previously been submitted to City in accordance with the requirements of the Contract Documents, and which has been rejected or disputed by City, in whole or in part.

(B) ***Limitations.*** A Claim may only include the portion of a previously rejected demand that remains in dispute between Contractor and City. With the exception of any dispute regarding the amount of money actually paid to Contractor as Final Payment, Contractor is not entitled to submit a Claim demanding a change in the Contract Time or the Contract Price, which has not previously been submitted to City in full compliance with Article 5 and Article 6, and subsequently rejected in whole or in part by City.

(C) ***Scope of Article.*** This Article is intended to provide the exclusive procedures for submission and resolution of Claims of any amount, and applies in addition to the provisions of Public Contract Code Section 9204 and Sections 20104 et seq., which are incorporated by reference herein.

(D) ***No Work Delay.*** Notwithstanding the submission of a Claim or any other dispute between the parties related to the Project or the Contract Documents, Contractor must perform the Work and may not delay or cease Work pending resolution of the Claim or other dispute, but must continue to diligently prosecute the performance and timely completion of the Work, including the Work pertaining to the Claim or other dispute.

12.2 Claims Submission. The following requirements apply to any Claim subject to this Article:

(A) ***Substantiation.*** The Claim must be submitted to City in writing, clearly identified as a "Claim" submitted pursuant to this Article 12, and must include all of the documents necessary to substantiate the Claim including the Change Order request that was rejected in whole or in part, and a copy of City's written rejection that is in dispute. The Claim must clearly identify and describe the dispute, including relevant references to applicable portions of the Contract Documents, and a chronology of relevant events. Any Claim for additional payment must include a complete, itemized breakdown of all labor, materials, taxes, insurance, and subcontract, or other costs. Substantiating documentation such as payroll records, receipts, invoices, or the like, must be submitted in support of each claimed cost. Any Claim for an extension of time or delay costs must be substantiated with schedule analysis and narrative depicting and explaining claimed time impacts.

(B) ***Claim Format.*** A Claim must be submitted in the following format:

(1) General introduction, specifically identifying the submission as a "Claim" submitted under this Article 12.

(2) Relevant background information, including identification of the specific demand at issue, and the date of City's rejection of that demand.

(3) Detailed explanation of the issue(s) in dispute. For multiple issues, separately number and identify each issue and include the following for each separate issue:

(a) The background of the issue, including references to relevant provisions of the Contract Documents;

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(b) A succinct statement of the matter in dispute, including Contractor's position and the basis for that position;

(c) A chronology of relevant events;

(d) The identification and attachment of all supporting documents (see subsection (A), above, on Substantiation); and

(e) Use of a separate page for each issue.

(4) Summary of issues and damages.

(5) The following certification, executed by Contractor's authorized representative:

"The undersigned Contractor certifies under penalty of perjury that its statements and representations in this Claim are true and correct. Contractor warrants that this Claim is comprehensive and complete as to the matters in dispute, and agrees that any costs, expenses, or delay claim not included herein are deemed waived. Contractor understands that submission of a Claim which has no basis in fact or which Contractor knows to be false may violate the False Claims Act (Government Code Section 12650 et seq.)."

(C) ***Submission Deadlines.***

(1) A Claim must be submitted within 15 days following the date that City notified Contractor in writing that a request for a change in the Contract Time or Contract Price, duly submitted in compliance with Article 5 and Article 6, has been rejected in whole or in part.

(2) With the exception of any dispute regarding the amount of Final Payment, any Claim must be filed on or before the date of Final Payment, or will be deemed waived.

(3) A Claim disputing the amount of Final Payment must be submitted within 15 days of the effective date of Final Payment, under Section 8.8, above.

(4) Strict compliance with these Claim submission deadlines is necessary to ensure that any dispute may be mitigated as soon as possible, and to facilitate cost-efficient administration of the Project. ***Any Claim that is not submitted within the specified deadlines will be deemed waived by Contractor.***

12.3 City's Response. City will respond within 45 days of receipt of the Claim with a written statement identifying which portion(s) of the Claim are disputed, unless the 45-day period is extended by mutual agreement of City and Contractor or as otherwise allowed under Public Contract Code section 9204. However, if City determines that the Claim is not adequately documented, City may first request in writing, within 30 days of receipt of the Claim, any additional documentation supporting the Claim or relating to defenses to the Claim that City may have against the Claim. If Contractor fails to submit the additional documentation to City within 15 days of receipt of City's request, the Claim will be deemed waived.

(A) ***Additional Information.*** If additional information is thereafter required, it may be requested and provided upon mutual agreement of City and Contractor.

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(B) ***Non-Waiver.*** Any failure by City to respond within the times specified above may not be construed as acceptance of the Claim in whole or in part, or as a waiver of any provision of these Contract Documents.

12.4 Meet and Confer. If Contractor disputes City's written response, or City fails to respond within the specified time, within 15 days of receipt of City's response, or within 15 days of City's failure to respond within the applicable 45-day time period under Section 12.3, respectively, Contractor may notify City of the dispute in writing of the sent by registered or certified mail, return receipt requested, and demand an informal conference to meet and confer for settlement of the issues in dispute. If Contractor fails to dispute City's response in writing within the specified time, Contractor's Claim will be deemed waived.

(A) ***Schedule Meet and Confer.*** Upon receipt of the demand to meet and confer, City will schedule the meet and confer conference to be held within 30 days, or later if needed to ensure the mutual availability of each of the individuals that each party requires to represent its interests at the meet and confer conference.

(B) ***Location for Meet and Confer.*** The meet and confer conference will be scheduled at a location at or near City's principal office.

(C) ***Written Statement After Meet and Confer.*** Within ten working days after the meet and confer has concluded, City will issue a written statement identifying which portion(s) of the Claim remain in dispute, if any.

(D) ***Submission to Mediation.*** If the Claim or any portion remains in dispute following the meet and confer conference, within ten working days after the City issues the written statement identifying any portion(s) of the Claim remaining in dispute, the disputed portion(s) will be submitted for mediation, as set forth below.

12.5 Mediation and Government Code Claims.

(A) ***Mediation.*** Within ten working days after the City issues the written statement identifying any portion(s) of the Claim remaining in dispute following the meet and confer, City and Contractor will mutually agree to a mediator, as provided under Public Contract Code section 9204. Mediation will be scheduled to ensure the mutual availability of the selected mediator and all of the individuals that each party requires to represent its interests. The parties will share the costs of mediation equally, except costs incurred by each party for its representation by legal counsel or any other consultants.

(B) ***Government Code Claims***.

(1) Timely presentment of a Government Code Claim is a condition precedent to filing any legal action based on or arising from the Contract.

(2) The time for filing a Government Code Claim will be tolled from the time Contractor submits its written Claim pursuant to Section 12.2, above, until the time that Claim is denied in whole or in part at the conclusion of the meet and confer process, including any period of time used by the meet and confer process. However, if the Claim is submitted to mediation, the time for filing a Government Code Claim will be tolled until conclusion of the mediation, including any continuations, if the Claim is not fully resolved by mutual agreement of the parties during the mediation or any continuation of the mediation.

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12.6 **Tort Claims.** This Article does not apply to tort claims and nothing in this Article is intended nor will be construed to change the time periods for filing tort-based Government Code Claims.

12.7 **Arbitration.** It is expressly agreed, under California Code of Civil Procedure Section 1296, that in any arbitration to resolve a dispute relating to this Contract, the arbitrator's award must be supported by law and substantial evidence.

12.8 **Damages.** Contractor bears the burden of proving entitlement to and the amount of any claimed damages. Contractor is not entitled to damages calculated on a total cost basis, but must prove actual damages. Contractor is not entitled to recovery of any alleged home office overhead. The Eichleay Formula or similar formula may not be used for any recovery under the Contract. Contractor is not entitled to consequential damages, including home office overhead or any form of overhead not directly incurred at the Worksite; lost profits; loss of productivity; lost opportunity to work on other projects; diminished bonding capacity; increased cost of financing for the Project; extended capital costs; non-availability of labor, material or equipment due to delays; or any other indirect loss arising from the Contract.

12.9 **Multiple Claims.** In the interest of efficiency, City, acting in its sole discretion, may elect to process multiple Claims concurrently, in which case the applicable procedures above will be based on the total amount of such Claims rather than the amount of each individual Claim. Any such election will not operate to change or waive any other requirements of this Article.

12.10 **Other Disputes.** The procedures in this Article 12 will apply to any and all disputes or legal actions, in addition to Claims, arising from or related to this Contract, unless and only to the extent that compliance with a procedural requirement is expressly and specifically waived by City. Nothing in this Article is intended to delay suspension or termination under Article 13.

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Article 13 - Suspension and Termination

13.1 **Suspension for Cause.** In addition to all other remedies available to City, if Contractor fails to perform or correct work in accordance with the Contract Documents, City may immediately order the Work, or any portion of it, suspended until the cause for the suspension has been eliminated to City's satisfaction.

(A) ***Failure to Comply.*** Contractor will not be entitled to an increase in Contract Time or Contract Price for a suspension occasioned by Contractor's failure to comply with the Contract Documents.

(B) ***No Duty to Suspend.*** City's right to suspend the Work will not give rise to a duty to suspend the Work, and City's failure to suspend the Work will not constitute a defense to Contractor's failure to comply with the requirements of the Contract Documents.

13.2 **Suspension for Convenience.** City reserves the right to suspend, delay, or interrupt the performance of the Work in whole or in part, for a period of time determined to be appropriate for City's convenience, and not due to any act or omission by Contractor or its Subcontractors. Upon notice by City pursuant to this provision, Contractor must immediately suspend, delay, or interrupt the Work as directed by City. The Contract Price and the Contract Time will be equitably adjusted by Change Order to reflect the cost and delay impact occasioned by such suspension for convenience.

13.3 Termination for Default. Contractor may be deemed in default for any material breach of or inability to perform the Contract, including Contractor's: refusal or failure to supply sufficient skilled workers, proper materials, or equipment to perform the Work within the Contract Time; refusal or failure to make prompt payment to its employees, Subcontractors, or suppliers; refusal or failure to correct rejected Work or replace or repair any damage caused by Contractor, its agents, or Subcontractors; disregard of laws, regulations, ordinances, rules, or orders of any public agency with jurisdiction over the Project; lack of financial capacity to complete the Work within the Contract Time; abandonment of the Work; or responsibility for any other material breach of the Contract requirements.

(A) ***Notice of Default.*** Upon City's determination that Contractor is in default, City may provide Contractor and its surety a written notice of default. The notice may, in City's sole discretion: provide an opportunity for Contractor to immediately cure the default; inform Contractor of City's intent to cure the default; or inform Contractor of City's intent to terminate the Contract as set forth below.

(B) ***City's Right to Cure.*** City may choose to cure the default through use of its own forces and charge Contractor for all resulting expenses. Such expenses may include charges for all City staff time spent and charges for any replacement contractor(s) engaged to cure the default, and any associated expenses such as for City administrative staff time, consultant fees and attorney's fees. Interest on all expenses will also be charged, in the amount of seven percent per annum from the date of payment for each expense. City may deduct all such expenses and costs from amounts otherwise payable to Contractor under the Contract.

(C) ***Notice of Termination.*** Within seven calendar days after the written notice of default has been given, unless the default is otherwise cured or arrangements to cure the default have been made and memorialized in writing to City's satisfaction, City may terminate the Contract by providing written notice thereof to Contractor with a copy to Contractor's surety.

(D) ***Waiver.*** Time being of the essence in the performance of the Work, if Contractor's surety fails to, within seven calendar days from the date of City's notice of termination, arrange for completion of the Work in accordance with the Performance Bond, Contractor's surety will be deemed to have waived its right to complete the Work under the Contract, and City may immediately make arrangements for the completion of the Work through use of its own forces. City may use City staff or hire a replacement contractor(s), or use any other means that City determines advisable under the circumstances. Contractor and its surety will be jointly and severally liable for any additional expenses and costs incurred by City to complete the Work following termination. Such expenses may include charges for all City staff time spent and charges for any replacement contractor(s) engaged to complete the Work, and any associated expenses such as for City administrative staff time, consultant fees, and attorney's fees. Interest on all expenses will also be charged, in the amount of seven percent per annum from the date of payment for each expense. In addition, City will have the right to use any materials, supplies, and equipment belonging to Contractor and located at the Worksite for the purposes of completing the remaining Work.

(E) ***Other Rights and Remedies.*** No Contract termination by City, or other action City takes following such termination, will prejudice, limit or extinguish any other rights or remedies that will remain available to City by law or under the Contract Documents upon

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such termination. City may proceed against Contractor following Contract termination to recover all losses and costs City has suffered or incurred relating to Contractor's default.

(F) ***Wrongful Termination.*** If a court of competent jurisdiction or an arbitrator later determines that the termination for default was wrongful, the termination will be deemed to be a termination for convenience, and Contractor's damages will be strictly limited to the compensation provided for termination for convenience under Section 13.4, below. Contractor waives any claim for any other damages for wrongful termination including consequential damages, lost opportunity costs or lost profits.

13.4 Termination for Convenience. City reserves the right to terminate all or part of the Contract for convenience upon written notice to Contractor. Upon receipt of such notice, Contractor must: immediately stop the Work, including under any terms or conditions that may be specified in the notice; comply with City's instructions to protect the completed Work and materials; and use its best efforts to minimize further costs. Subject to City's directions in the notice, Contractor must not place further orders or enter into new subcontracts for materials, equipment, services or facilities, except as may be necessary to complete any portion of the Work that is not terminated. Contractor must also promptly cancel, on the most favorable terms possible, all existing subcontracts that relate to performance of the discontinued Work.

(A) ***Compensation to Contractor.*** In the event of City's termination for convenience, Contractor waives any claim for damages, including for loss of anticipated profits from the Project. The following will constitute full and fair compensation to Contractor, and Contractor will not be entitled to any additional claim or compensation:

(1) *Completed Work.* The value of its Work satisfactorily performed to date, based on Contractor's schedule of values and unpaid costs for items delivered to the Project site that were fabricated for incorporation in the Work;

(2) *Demobilization.* Actual and substantiated demobilization costs; and

(3) *Markup.* Five percent of the total value of the Work performed as of the date of notice of termination or five percent of the value of the Work yet to be completed, whichever is less, which is deemed to cover all overhead and profit to date.

13.5 Effect of Any Contract Termination. Upon any termination pursuant to this Article, City may enter upon and take possession of the Project and the Work. City may also take possession of, for the sole purpose of completing the Work, all of Contractor's tools, equipment and appliances, and all materials on the Work site or stored off the Work site that will be incorporated in the Work. Regardless of any Contract termination, Contractor's obligations for portions of the Work already performed will continue and the provisions of the Contract Documents will remain in effect as to any claim, indemnity obligation, warranties, guarantees, submittals of as-built drawings, instructions, or manuals, or other such rights and obligations arising prior to the termination date.

Article 14 - Miscellaneous Provisions

14.1 Assignment of Unfair Business Practice Claims. Under Public Contract Code Section 7103.5, Contractor and its Subcontractors agree to assign to City all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15

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U.S.C. Section 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the Contract or any subcontract. This assignment will be effective at the time City tenders Final Payment to Contractor, without further acknowledgement by the parties.

14.2 **Provisions Deemed Inserted.** Every provision of law required to be inserted in the Contract Documents is deemed to be inserted, and the Contract Documents will be construed and enforced as though such provision has been included. If it is discovered that through mistake or otherwise that any required provision was not inserted, or not correctly inserted, the Contract Documents will be deemed amended accordingly.

14.3 **Waiver.** City's waiver of a breach, failure of any condition, or any right or remedy contained in or granted by the provisions of the Contract Documents will not be effective unless it is in writing and signed by City. City's waiver of any breach, failure, right, or remedy will not be deemed a waiver of any other breach, failure, right, or remedy, whether or not similar, nor will any waiver constitute a continuing waiver unless specified in writing by City.

14.4 **Titles, Headings, and Groupings.** The titles and headings used and the groupings of provisions in the Contract Documents are for convenience only and may not be used in the construction or interpretation of the Contract Documents or relied upon for any other purpose.

14.5 **Statutory and Regulatory References.** With respect to any amendments to any statutes or regulations referenced in these Contract Documents, the reference is deemed to be the version in effect on the date that that bids were due.

END OF GENERAL CONDITIONS

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SPECIAL CONDITIONS

SECTION 01 00 00 Supplemental to the General Conditions

1.01 INTENTION

A. Each section of these Special Provisions shall be considered to include everything necessary and reasonably incidental to the completion of the work of that section as shown and construction as specified on the plans or mentioned herein. These General Requirements and General Conditions of the Contract shall apply to each separate section of these Special Provisions and to each separate trade or contract.

1.02 CONTENTS WITHIN THIS SECTION

1.01 Intention

1.02 Contents Within this Section

1.03 Order Of Work

1.04 Submittals

1.05 Permits, Fees And License

1.06 Verification Of Conditions

1.07 Cooperation

1.08 Maintaining Traffic and Public Safety

1.09 Obstructions

1.10 Watering

1.11 Testing

1.12 Sawcutting

1.13 Supplemental

1.14 Clean-Up

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1.03 ORDER OF WORK

A. Refer to Article 5 of the General Conditions – Contract Time.

B. As described in Article 5.2.A, after approval of the project progress schedule, the Contractor may place temporary construction fencing. Work shall commence within 10 days of installing any Temporary Construction Fence. Temporary construction fencing must be complete and in place before all other phases of work can commence. Failure to begin work within 10 days of placing temporary construction fencing shall be deemed breach of contract.

C. Refer to “Temporary Construction Fencing” found elsewhere in this section for additional information on acceptable fencing and payment.

D. At least ten (10) working days prior to the beginning of work, The Contractor shall submit traffic control handling plans for approval. Updated traffic handling plans as required should be submitted prior to each subsequent stage of traffic handling a minimum of ten (10) working days prior to the beginning of work on that stage. Attention is directed to the “Maintaining Traffic” section of these special provisions.

E. At least five (5) working days prior to the beginning of work, the Contractor shall notify local authorities, including the City of Fremont Police Department of his intent to begin work. The Contractor shall cooperate with the Engineer relative to handling traffic through the area and shall make his own arrangements relative to keeping the working area clear of parked vehicles. The following contact information is provided for the Contractors information only. Contractor is responsible for contacting and coordinating with local authorities and agencies.

1.	Fremont Police Department – Dispatch	(510) 790-6800
2.	Fremont Fire Department - Dispatch	(925) 422-7594
3.	Paramedic Plus - Operations	(510) 746-5700
4.	Paramedic Plus - Dispatch	ph: (925) 422-7595
		fax: (510) 625-1486
5.	U.S. Postal Service - Fremont Main Post Office	(510) 792-8655
6.	A.C. Transit - Dispatch	(510) 891-4901
7.	East Bay Para Transit	(510) 446-2008
8.	Fremont Unified School District – Dispatch	(510) 657-1450
		x13147
9.	Republic Services “Allied Waste” (Garbage Pickup)	(510) 657-3500
10.	BLT – Fremont Recycling Transfer Station	(510) 252-0500

F. The Contractor shall commence construction of the project on the first chargeable work day as specified on the Notice to Proceed, which will be issued on the day of the preconstruction conference.

G. **24 Hour Contact Number** - The Contractor shall assign a Project Superintendent who has the complete authority to make decisions on behalf of the Contractor. The Project Superintendent shall have the ability to speak, read and write in English. The Project Superintendent shall be on the job at all times during the construction and shall be available and on call 24 hours a day for the duration of the project. The Project Superintendent shall meet with the Engineer at least once per day while the project is actively under construction. Additionally, the Project Engineer shall attend all regularly scheduled job progress meetings. The Contractor shall provide to the Engineer and the Fremont Police Department a 24-hour contact number for the Project Superintendent. This number shall not direct calls to a recorder or other message taking service.

H. **Advance Public Notification** – Not less than two (2) weeks prior to beginning work, the Contractor shall deliver written notice to all adjoining residents, businesses, tenants and other applicable parties listed above. Written notice shall include posting of Notices at affected court areas for the park and court users. Notice shall be given for general construction activity to occur, as well as specific activities that will, in any way, inconvenience residents/property owners/tenants or affect their operations or access to their properties. Such notice shall include the expected date for the start of construction, a general description of the construction activities that will take place, expected duration, and the name, address, and contact number of the Contractor’s Project Superintendent and of the City’s Project Engineer. A follow up notice shall then also be distributed no later than three (3) days prior to the start of

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construction. The follow-up notice from the Contractor should include the specific location and dates of when the work will be done, in accordance with the approved schedule. Copies of both notices shall be provided to the Engineer for approval five (5) working days prior to the initial distribution dates of each notice.

1.04 SUBMITTALS

A. Refer to Article 2.5 of the General Conditions and Section 01 30 00 "Submittals" for additional information for those submittals required at the pre-construction meeting.

B. Contractor should note that the submittal process shall begin upon issuance of award by City Council, and prior to the issuance of the notice beginning of the Contract Time.

C. The City **WILL** provide a written notice indicating the Council award and requesting for submittals to begin. It is the contractor's responsibility to provide submittals as required, and described, in each section of the special provisions.

D. The intent of beginning the submittal process upon City Council award is to expedite this process and allow the Contractor the ability to begin the order and purchase of materials, especially for long lead-time items, in order to complete the contract work within the stated contract time.

1.05 PERMITS, FEES AND LICENSE

A. Refer to Article 7.1 of the General Conditions – General Construction Provisions

B. All permits must be obtained by the contractor prior to the City scheduling a pre-construction meeting. At the pre-construction meeting, the contractor shall bring the permit and permitted set of drawings to the meeting.

C. City of Fremont Business Tax / License: General Contractor and all subcontractors shall have and maintain a current City of Fremont business license, demonstrating evidence of valid workers compensation insurance and valid contractor's license; and will have demonstrated payment of current business license fees to conduct business within the City of Fremont prior to the commencement of the work.

D. Failure to secure and obtain the appropriate permits does not stop working days from being counted, nor will it be deemed fault of the City for allow the contractor to proceed with work that is subsequently delayed due to lack of the appropriate permits.

E. The Business Tax/License Dept. of the City of Fremont can be reached at 494-4790. Office hours are Monday through Friday 8 AM to 4 PM. The address is 39550 Liberty Street, at the corner of Liberty and Kearney. If you have questions about what types of businesses are allowed in residential or commercial locations, please contact the City of Fremont Planning Division at 510-494-4440. The City of Fremont uses the term *business tax* instead of *business license.* If you are a business located outside of Fremont and you will be physically coming into Fremont to conduct business, completion of an Out-of-Town Business Tax Application Form is required by the City of Fremont. Applications are available at the Development Services Center at 39550 Liberty Street at the corner of Liberty and Kearney Streets, one block from Stevenson Blvd. Office hours are Monday through Friday, 8 AM to 4PM. Applications can also be downloaded from: http://www.ci.fremont.ca.us/business/outoftown.html.

1.06 VERIFICATION OF CONDITIONS

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A. The Contractor shall verify all existing conditions before commencing work. All discrepancies between the plans and actual field conditions shall be immediately reported to the Engineer who shall determine if modifications in the work are necessary. The Contractor shall not modify the work without prior authorization from the Project Landscape Architect.

1.07 COORDINATION AND COOPERATION

A. Refer to Article 2.4 of the General Conditions – Coordination of Work.

B. The work shall be conducted under the general observation of the Engineer and shall be subject to inspection by the City of their representatives to assure strict compliance with the requirements of the Contract Documents, and all applicable building codes and other regulations. The authorized representative of the Engineer on the project site shall be those representatives or consultants designated by the Engineer to act on behalf of the City.

C. One or more Inspectors shall periodically review the Contractor's work as the project progresses to verify conformance with the Contract Documents. The presence of the Inspectors, however, shall not relieve the Contractor of the responsibility for the proper execution of the work in accordance with all requirements of the Contract Documents and applicable building codes or other regulations. Compliance is distinctly a duty of the Contractor, and said duty shall not be avoided by any act or omission on the part of the Inspector(s).

D. All materials and articles furnished by the Contractor shall be subject to exhaustive inspection, and no material or articles shall be used in the work until it has been inspected and accepted by the Engineer.

E. The Contractor shall be responsible for the coordination of all the work and the coordination of the work of the subcontractors. The Contractor shall not delegate coordination to any subcontractor. The Contractor's on-site supervisory person shall be present and represent the Contractor whenever a meeting is held that involves any interface between the City and any subcontractors or suppliers. The Contractor shall resolve differences or disputes between subcontractors concerning coordination, interfaces, or extent or work.

F. The Contractor shall coordinate all inspections governed by permits obtained in conjunction with the work. The Contractor shall schedule all inspections with adequate advance notice, and in accordance with the requirements of the permit issuer, to assure no delays while waiting for an inspector to review the work before proceeding.

G. It shall be the responsibility of the Contractor to coordinate all necessary utility work with the appropriate utility company. The request for work to be done by the utility company affected shall be made in sufficient time so that the utility company may perform their work in time to prevent delays to the project schedule.

H. The Contractor shall cooperate fully with all utility forces of the City or forces of other public or private agencies engaged in the relocation, altering, or otherwise rearranging of any facilities which interfere with the progress of the Work, and shall schedule the Work so as to minimize interference with said relocation, altering, or other rearranging of facilities.

1.08 MAINTAINING TRAFFIC AND PUBLIC SAFETY

A. Refer to Section 01 55 27 "Maintenance of Traffic and Access" found in Article 15

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herein.

1.09 OBSTRUCTIONS

A. Attention is directed to Sections 8-1.10, “Utility and Non-Highway Facilities,” and 15, “Existing Highway Facilities,” of the Standard Specifications and these Special Provisions.

B. The sixth paragraph of Section 8-1.10, “Utility and Non-Highway Facilities,” of the Standard Specifications is amended to read:

The Contractor shall verify all existing conditions before commencing work. All discrepancies between the plans and actual field conditions shall be immediately reported to the Engineer, who shall determine if modifications to the work are necessary. The Contractor shall not modify the work without prior authorization from the Engineer. Any removal, repair, or replacement caused by the Contractor’s failure to recognize or report unsuitable conditions shall be performed by the Contractor at the Contractor’s sole cost and expense.

C. Protection and repair of damage of laterals and appurtenances shall be the responsibility of the Contractor.

D. In the event that water services are broken or damaged between the meter and the point of service, the Contractor shall immediately at his own expense, repair such damage, in a manner satisfactory to the Engineer, in order that the water supply will not be interrupted for a period greater than one hour. If such interruption is sustained, it shall be the Contractor’s responsibility to notify the occupants of the premises to which said services are connected so that no damage will occur on said premises. Whenever damage is done to water meters, services between the Water District mains and said meters, fire hydrants or other appurtenances, the Water District forces shall make such needed repairs at the Contractor’s expense.

E. In the event damage is done to any gas, electric, or telephone facility by the Contractor, he shall notify the respective utility company. Repairs shall be made by the utility company at the Contractor’s expense.

F. In the event that sanitary sewer laterals are broken or damaged between the point of service and the sanitary main, the Contractor shall immediately, at his own expense, repair such damage, in a temporary manner satisfactory to the Engineer, in order that service will not be interrupted for a period greater than one hour. When such interruption occurs, it shall be the Contractor's responsibility to notify the occupants of the premises to which said service is connected so that no damage will occur on said premises and to notify Union Sanitary District so that permanent repairs may be made at the Contractor’s expense.

G. The Contractor shall take precautions to prevent any damages to existing improvements and landscaping, which is to remain in place, in the work area on both public and private properties. If the existing improvements or landscaping on public or private property are damaged, the Contractor shall repair such damage, at his own expense, to the satisfaction of the Engineer.

H. The Contractor shall verify the exact location of all existing utilities and shall notify the Engineer and the regional notification center for operator of subsurface installations at least two working days, but not more than 14 calendar days, prior to performing any excavation or other work close to any underground pipeline, conduit, duct, wire, or to the structure. The regional notification center is:

UNDERGROUND SERVICE ALERT (USA) TEL: 1-800-227-2600

CITY COUNCIL REFERENCE ONLY

I. At those sites not serviced by Underground Service Alert, the Contractor shall be responsible for locating all existing utilities prior to commencing any work. Contractor shall pothole utilities to determine approximate depths of utilities.

J. Measurement and Payment: Payment for conforming to the provisions in this section "Obstructions" not otherwise provided for, shall be considered as included in the prices paid line for the various items of work involved and no additional compensation will be allowed therefor.

1.10 WATERING

A. It shall be the responsibility of the contractor to contact the local utility district in order to obtain a temporary water meter, and provide their own source of water for all elements of work in this project. The City shall not provide a source of water.

B. If the Contractor uses non-potable water on the project, the sources and discharge of non-potable water shall meet the California Department of Health Services water reclamation criteria and the Regional Water Quality Control Board requirements. The Contractor shall obtain either a waste water discharge permit or a waiver from the Regional Water Quality Control Board. Copies of permits or waivers from the Regional Water Quality Control Board shall be delivered to the Engineer before using non-potable water on the project.

C. Non-potable water, if used, shall not be conveyed in tanks or drain pipes which will be used to convey potable water. There shall be no connection between non-potable water supplies and potable water supplies. Non-potable water supply, tanks, pipes, and other conveyances of non-potable water shall be labeled:

NONPOTABLE WATER

DO NOT DRINK

CITY COUNCIL REFERENCE ONLY

1.11 TESTING

A. Testing is not a duty of the City and is solely at the discretion of the Engineer. Non-testing by the City does not release the Contractor from their responsibility to perform all work in conformance to the Standard Specifications and these Special Provisions.

1.12 SAWCUTTING

A. All existing pavement edges shall be saw cut as noted on the plans and as directed by the Engineer.

B. Where a portion of the existing pavement surfacing is to be removed, the outline of the area to be removed shall be cut on a neat line with a power driven saw to a minimum depth of one third foot (0.33 foot) before removing the surfacing. Surfacing and base shall be removed without damage to surfacing that is to remain in place. At the Contractor's expense, damage to the surfacing which is to remain in place shall be repaired or replaced if ordered by the Engineer to a condition satisfactory to the Engineer.

C. All required sawcutting of concrete to be removed shall be in a straight line to a minimum depth of one inch completely across the width of the concrete to be removed. The portion being removed shall be taken out in such a manner as to leave an even edge with no chips.

1.13 SUPPLEMENTAL WORK

A. This item is provided on the Bid Schedule to account for new and unforeseen work not specifically provided for on the plans or in the special provisions, or for measured quantities that go over or under the estimated quantity in the bid schedule.

B. The dollar amount listed in the Estimate of Quantities is an estimate only and will be included in each bidder's proposal.

C. Supplemental work shall be performed only upon direct authorization from the Engineer. Daily extra work reports will be required if the work is to be paid for on a force account basis. Agreed price or unit price may be used as an alternate method of payment, if directed by the Engineer.

1.14 CLEAN-UP

A. Remove all debris, waste material, tools, equipment, etc., from the project site. All materials removed shall be disposed of in accordance with the provisions in Section 7-1.13, “Disposal of Material Outside of the Highway Right-of-Way,” of the Standard Specifications.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 01 01 00 Project Progress Schedule

1.01 RELATED SECTION

A. General Conditions, Part 5.2 “Schedule Requirements”.

1.02 INTENTION

A. Baseline (As-Planned) Schedule: The Project is to be substantially complete, with temporary occupancy, within a total maximum of **120 working days** after the date specified in the City’s Notice To Proceed. Final Completion and final occupancy must be achieved within **150 working** days after the date specified in the City’s Notice to Proceed, including all punch list items, and acceptance by the City. Refer to Section 3 of the Notice Inviting Sealed Bids for Contract Time.

1. Progress Schedule shall be the basis for evaluating job progress, payment requests, and time extension requests. Responsibility for developing Critical Path Method (CPM) schedule and monitoring actual progress as compared to Progress Schedule rests with Contractor.

2. The progress schedule shall clearly show sequence and duration of major construction activities, interim milestones or completion dates required in the Contract, and the controlling operation or operations.

3. Failure of Progress Schedule to include any element of the Work or any inaccuracy in Progress Schedule will not relieve Contractor from responsibility for accomplishing the Work in accordance with the Contract. City's acceptance of schedule shall be for its use in monitoring and evaluating job progress, payment requests, and time extension requests, and shall not, in any manner, impose a duty of care upon City, or act to relieve Contractor of its responsibility for means and methods of construction.

B. City Review of Schedules: Refer to General Conditions, Part 5.2.B

1. A schedule must not show completion dates beyond the Contract requirements for the interim target dates, milestones or Contract completion. The Contract completion date shall be based on the working days designated in the Contract and not on a proposed early completion shown in the schedule.

2. The schedule submitted shall meet, in all respects, the time and order of work requirements of the Contract. The work shall be executed in the sequence indicated in the schedule and subsequent updates and revisions. The Contractor shall be responsible for assuring that all work sequences are logical and the schedule shows a coordinated plan for complete performance of the work. Failure of the Contractor to include any element of the work required for the performance of the Contract in the network shall not relieve the Contractor from completing all work within the time limit specified for completion of the Contract. If the Contractor fails to define any element of work, activity, or logic, and the omission of error is discovered by either the Contractor or Engineer, it shall be corrected by the Contractor at the next scheduled monthly

CITY COUNCIL REFERENCE ONLY

update or revision.

3. The Contractor shall allow fifteen (15) days for the Engineer to review the schedule and provide any comments, a favorable review of the schedule, or request a meeting to review the schedule. When completed, the agreed upon Progress Schedule shall be the one used by the Contractor for planning, organizing, and directing the work, and for reporting progress. Upon agreement, this will be deemed the Original Progress Schedule and shall be updated to reflect the current status of work.

C. Progress Schedule: Shall include or comply with following requirements:

1. Time scaled, cost and resource (labor and major equipment) loaded CPM schedule.
2. Identify the activities which constitute the controlling operations or critical path.
3. Individual activities that are not significant in themselves and create a series of parallel paths shall be grouped within major activities or combined to form a more general major activity. The actual number of activities shall be sufficient to assure adequate planning of the project and to permit monitoring and evaluation of progress and analysis of time impacts and not to primarily manage the various resources that may be used by the Contractor.
4. Major activities are defined as single activities or groups of activities that create a significant portion of the project due to location, related type of work, or common completion dates.
5. Major activities shall have durations of not less than five (5) nor more than twenty (20) working days. Milestone of transitional activities may have a duration of less than five (5) days. Isolated major activities, concurrent, or combined activities may have more than twenty (20) working days when approved by the Engineer.
6. Activity durations shall be total number of actual work days required to perform that activity.
7. The start and completion dates of all items of Work, their major components, and milestone completion dates, if any.
8. City-furnished materials and equipment, if any, identified as separate activities.
9. Activities for maintaining Project Record Documents.
10. Dependencies (or relationships) between activities.
11. Processing/approval of submittals and shop drawings for all Contract-required material and equipment. Activities that are dependent on submittal acceptance or material delivery shall not be scheduled to start earlier than expected acceptance or delivery dates.
    a. Include time for submittals, re-submittals, and reviews by City. Coordinate with accepted schedule for submission of shop drawings, samples and other submittals.
    b. Contractor shall be responsible for all impacts resulting from re-submittal of shop drawings and submittals.

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12. Procurement of major equipment, through receipt and inspection at jobsite, identified as separate activity.
    a. Include time for fabrication and delivery of manufactured products for the Work.
    b. Show dependencies between procurement and construction.
13. Activity description; what Work is to be accomplished and where.
14. The total cost of performing each activity shall be total of labor, material, equipment, including overhead and profit of Contractor.
15. Responsibility code for each activity corresponding to Contractor or Subcontractor responsible for performing the Work.
16. Interface with the work of other contractors, City, and agencies such, as but not limited to, utility companies.
17. Show detailed Subcontractor Work activities. In addition, furnish copies of Subcontractor schedules upon which CPM was built.
    a. Also furnish for each Subcontractor, as determined by City, submitted on Subcontractor letterhead a statement certifying that Subcontractor concurs with Contractor's Original CPM Schedule and that Subcontractor's related schedules have been incorporated, including activity duration, cost and resource loading.
    b. Subcontractor schedules shall be independently derived and not a copy of Contractor's schedule.
    c. In addition to Contractor's schedule and resource loading, obtain from electrical, mechanical and plumbing Subcontractors, and other subcontractors as required by City, productivity calculations common to their trades, such as units per person day, feet of pipe per day per person, feet of wiring per day per person, and similar information.
    d. Furnish schedule for Contractor/Subcontractor CPM schedule meetings which shall be held prior to submission of Original CPM schedule to City. City shall be permitted to attend scheduled meetings as an observer.
18. Activity durations shall be in Work days with the exception of the Plant Establishment Period.
19. Any such agreement shall be formalized by a Change Order. The City shall not pay for acceleration if the contractor requests an earlier (Advanced) time of completion.
20. The City is not required to accept an earlier (advanced) schedule, i.e., one that shows early completion dates for the Contract Working Days.
21. The Contractor shall not be entitled to extra compensation in the event agreement is reached on an earlier (advanced) schedule and Contractor completes his Work, for whatever reason, beyond completion date shown in earlier (advanced) schedule but within the Contract Times.
22. A schedule showing the work completed in less than the Contract Times, which has been accepted by City, shall be considered to have Project Float. The Project Float is the time between the scheduled completion of the work and Contract Substantial Completion. Project Float is a

CITY COUNCIL REFERENCE ONLY

resource available to both City and the Contractor.

23. Float Ownership: Refer to 5.2.C (1) of the General Conditions. The Project owns the float. As such, liability for delay of the Completion Date rests with the party whose actions, last in time, actually cause delay to the Completion Date.

    a. For example, if Party A uses some, but not all of the float and Party B later uses remainder of the float as well as additional time beyond the float, Party B shall be liable for the time that represents a delay to the Completion Date.

    b. Party A would not be responsible for the time since it did not consume all of the float and additional float remained; therefore, the Completion Date was unaffected.

D. Recovery Schedule: Refer to General Conditions, Part 5.2.D

E. Effect of Acknowledgement: Refer to General Conditions, Part 5.2.E

F. Posting: Refer to General Conditions, Part 5.2.F

G. Reservation of Rights: Refer to General Conditions, Part 5.2.G

1. The City reserves the right to require additional submittals from the Contractor, to be submitted at the pre-construction meeting, that are not specifically identified herein. If so requested, the Contractor shall provide the Engineer with six (6) copies of any additional submittals, or if directed, provide all submittal electronically, if they do not coincide with a physical product material.

H. Authorized Working Days and Times: Refer to General Conditions, Part 5.2.H

I. Additional requirements for Work Schedules:

1. Progress Schedule Updates: An update is defined as a regular monthly submittal and review of the schedule to incorporate actual progress to date by activity; any approved time adjustments, anticipated changes to planned activities, and projected completion dates. A revision is defined as a change in the future portion of the schedule that modifies logic, adds or deletes activities, or alters activities, sequences or durations.

2. When the monthly update is completed, the Contractor shall meet with the Engineer to review Contract progress. At that meeting, the Contractor shall identify and discuss potential problem areas; current and anticipated delaying factors and their impacts; actions taken or proposed; proposed changes in schedule; out of sequence work; and any other topics related to job progress or scheduling. The Contractor shall update the most recent schedule to incorporate all current schedule information, including actual progress, approved adjustments of time and proposed changes in sequence and logic.

3. The Engineer may use these and other information in evaluating the effect of the changes, delays, or time savings on the accepted schedule current at the time to determine the applicable adjustment of time, if any to any target date or completion date due to the changes, delays, or time savings.

1.03 <u>MEASUREMENT AND PAYMENT</u>

CITY COUNCIL REFERENCE ONLY

A. Full compensation for conforming to the provisions of this section shall be considered as included in prices paid for various contract items of work involved and no additional compensation will be allowed therefore, unless specified otherwise.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 01 06 00 Regulatory Requirements

PART 1 GENERAL

1.01 SUMMARY

This section includes regulatory and environmental requirements applicable to Contract.

1.02 SECTION INCLUDES

A. This Section provides terms associated with the Contract environmental requirements

B. Federal Water Pollution Control Act, refer to Section 01 57 19

C. Chemicals, refer to Section 01 57 19

D. Hazardous Substances Waste Materials and Asbestos, refer to Article 10.2 of the General Conditions and Section 01 57 19 elsewhere herein

E. Cultural Resources, refer to Section 01 57 19

F. References to Regulatory Requirements

G. Compliance with Americans with Disabilities Act

1.03 RELATED SECTIONS

H. Section 01 06 10 Hazardous Waste

I. Section, 01 57 19, Temporary Environmental Controls

J. Section 01 57 23, Temporary Strom Water Pollution Controls

K. Section 01 56 39, Tree Protection Fencing

L. Section, 31 10 00, Site Clearing

1.04 REGULATORY REQUIREMENTS

A. Summary

1. This section includes regulatory requirements applicable to Contract.

B. References to Regulatory Requirements

1. Codes, laws, ordinances, rules and regulations applicable to the Work shall have full force and effect as though printed in full in the Contract. Codes, laws, ordinances, rules and regulations are not furnished to Contractor, since Contractor is assumed to be familiar with their requirements. The listing herein of applicable codes, laws and regulations for hazardous waste abatement work is supplied to Contractor as a courtesy and shall not limit Contractor's responsibility for complying with all applicable laws, regulations or ordinances having application to the Work. Where conflict among the requirements or with these specifications exists, the most stringent requirements shall be used.

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2. Contractor's work shall conform to all applicable codes, laws, ordinances, rules and regulations which are in effect on date of contracting.

3. References on the Drawings or in the Specifications to "code" or "building code" not otherwise identified shall mean the codes specified below, together with all additions, amendments, changes, and interpretations adopted by code authorities of the jurisdiction.

C. Codes which apply to Contract include, but are not limited to, the following:

1. California Building Code (Part 2, Title 24, C.C.R., including, without means of limitation, sections 11A, 11B, 16A, 102A.23, 308, 420A, 504-506, 904.2.6, 1019 and 1604)

2. California Electrical Code (Part 3, Title 24, C.C.R.)

3. California Mechanical Code (Part 4, Title 24, C.C.R.)

4. California Plumbing Code (Part 5, Title 24, C.C.R),

5. National Electrical Code

D. Laws, Ordinances, Rules and Regulations

1. During prosecution of Work to be done under Contract, comply with applicable laws, ordinances, rules and regulations, including, but not limited to, the following:

2. Federal

a. Americans with Disabilities Act

b. Federal Water Pollution Control Act

c. 29 CFR, Section 1910.1001, Asbestos

d. 40 CFR, Subpart M, National Emission Standards for Asbestos

3. Executive Order 11246

4. State of California

a. California Code of Regulations, Titles 5, 8, 19, 21, 22, 24 and 25

b. California Education Code

c. California Public Contract Code

d. California Health and Safety Code

e. California Government Code

f. California Labor Code

g. California Civil Code

h. California Code of Civil Procedure

i. CPUC General Order 95, Rules for Overhead Electric Line Construction

j. CPUC General Order 128, Rules for Construction of Underground Electric Supply and Communications Systems

k. California Occupational Safety and Health Administration (Cal OSHA)

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l. Occupational Safety and Health Administration (OSHA): Hazard Communications Standards.

5. State of California Agencies

a. State and Consumer Services Agency

b. Office of the State Fire Marshall

c. Office of Statewide Health Planning and Development

6. Local Agencies:

a. Bay Area Air Quality Management District

b. California Green Building Standard

c. City of Fremont

d. County of Alameda

7. Other Requirements:

a. National Fire Protection Association (NFPA): Pamphlet 101, Life Safety.

b. Energy Efficient Standards

8. City of Fremont:

a. Per the City of Fremont Municipal Code

CITY COUNCIL REFERENCE ONLY

1.05 REFERENCES TO REGULATORY REQUIREMENTS

A. Codes, laws, ordinances, rules and regulations applicable to the Work shall have full force and effect as though printed in full in the Contract. Codes, laws, ordinances, rules and regulations are not furnished to Contractor, since Contractor is assumed to be familiar with their requirements. The listing herein of applicable codes, laws and regulations for hazardous waste abatement work is supplied to Contractor as a courtesy and shall not limit Contractor's responsibility for complying with all applicable laws, regulations or ordinances having application to the Work. Where conflict among the requirements or with these specifications exists, the most stringent requirements shall be used.

B. Contractor's work shall conform to all applicable codes, laws, ordinances, rules and regulations which are in effect on date of contracting.

C. References on the Drawings or in the Specifications to "code" or "building code" not otherwise identified shall mean the codes specified below, together with all additions, amendments, changes, and interpretations adopted by code authorities of the jurisdiction.

1.06 COMPLIANCE WITH AMERICANS WITH DISABILITIES ACT

Contractor acknowledges that, pursuant to the Americans with Disabilities Act (ADA), programs, services and other activities provided by a public entity to the public, whether directly or through a contractor, must be accessible to the disabled public. Contractor shall provide the services specified in this Agreement in a manner that complies with the ADA and any and all other applicable federal, state and local disability rights legislation. Contractor agrees not to discriminate against disabled persons in the provision of services, benefits or activities provided under this Agreement and further agrees that any

violation of this prohibition on the part of Contractor, its employees, agents or assigns shall constitute a material breach of this Agreement.

PART 2 PRODUCTS

Not applicable to this section.

PART 3 EXECUTION

3.01 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions of this section shall be considered as included in prices paid for various contract items of work involved and no additional compensation will be allowed therefore, unless specified otherwise.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 01 06 10 Regulatory Requirements – Hazardous Waste

PART 1 GENERAL

A.01 SUMMARY

A. Contrary to Article 10.2 of the General Conditions, this site does contain lead based paint components and asbestos building components. Contractor is referred Appendix D – Pre-demolition/Renovation Asbestos and Lead Survey and Evaluation, dated March 29, 2013, by The Consulting Group for a full list of hazardous materials.

B. This section supplements Section 01 06 00 and the work specific listings of applicable regulatory requirements elsewhere in the specifications.

C. This section includes regulatory requirements applicable to Contract work in connection with hazardous waste abatement and disposal, including, but not limited to, asbestos and asbestos containing materials, lead based paint, polychlorinated biphenyls, petroleum contaminated soils and materials, construction and demolition debris and any other hazardous substance or hazardous waste.

D. Principal items specified herein are:

1. Hiring of specialty contractor for removal of Asbestos containing building material and lead base paint components.

E. Handling and Disposal of Asbestos and lead based building material at an approved waste handling facility.

1.02 RELATED SECTIONS

A. Section 01 06 00 Regulatory Requirements

B. Section 02 82 00 Asbestos Remediation

C. Section 02 83 00 Lead Remediation

1.03 HAZARDOUS SUBSTANCES, WASTE MATERIALS, LEAD AND ASBESTOS

A. Refer to Section 01 63 00 “Project Coordination” and the various reports attached herein performed by The Consulting Group for Lead and Asbestos abatement.

B. Refer to the Special Provisions herein, Part 7-1.23 Removal of Asbestos and Hazardous Substances. The City's liability for the discovery of unforeseen deposits of hazardous substances, waste materials, and asbestos, shall be limited to the provisions of these Special Provisions, Caltrans Standard Specifications, and Section 25914.1 of the Health and Safety Code.

C. The Contractor shall bear full and exclusive responsibility for any release of hazardous or non-hazardous chemicals or substances during the course of performance of this Contract. The Contractor shall immediately report any such release to the Construction Manager. The Contractor shall be solely responsible for all claims and expenses associated with the response to, removal and remediation of the release, including, without limit, payment of any fines or penalties levied against the City by any agency as a result of such release, and shall hold harmless, indemnify and defend the City from any claims arising from such release. For purposes of this section only, the term "claims" shall include

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(i) all notices, orders, directives, administrative or judicial proceedings, fines, penalties, fees or charges imposed by any governmental agency with jurisdiction, and (ii) any proceeding brought against the City, its council members, officers or employees, or for any loss, cost (including reasonable attorney's fees), damage or liability, sustained or suffered by any person or entity, including the City."

D. If the performance of the work outlines by these contract specifications creates any hazardous wastes, those wastes shall be properly disposed of according to Federal, State and local laws, at the expense of the Contractor. The Contractor shall dispose of the wastes under its own EPA Generator Number or the City's EPA generator number if appropriate. The Contractor shall notify the Construction Manager of any such hazardous wastes and the City reserves the right to a copy of any tests conducted on the wastes and, at its cost, to perform additional tests or examination of those wastes, prior to its disposition. The Contractor shall hold harmless, indemnify and defend the City from any claims arising from the disposal of the hazardous wastes, regardless of the absence of negligence or other malfeasance by Contractor.

E. Contractor shall notify the City's Hazardous Waste Management Coordinator to coordinate disposal and recording of said disposals – Kate Shonk 510-979-5715.

1.04 REFERENCES TO REGULATORY REQUIREMENTS

A. Refer to 01 06 00 - Regulatory Requirements - Environmental Protection.

1.05 REFERENCED CODES AND SPECIFICATIONS

The work performed shall conform to the following regulations:

A. California Code of Regulations (CCR), Title 8 "Industrial Relations," Subchapter 4 "Construction Safety Orders." § 1529, "Asbestos"

B. Title 22, Division 4 Chapter 30 of the California Code of Regulations (CCR).

C. National Emissions Standards for Hazardous Air Pollutants (NESHAP).

D. Division of Occupational Safety and Health (CALOSHA).

E. Bay Area Air Quality Management District (BAAQMD).

1.06 LAWS, ORDINANCES, RULES AND REGULATIONS

A. During prosecution of Work under Contract, Contractor shall comply with applicable laws, ordinances, rules and regulations, including, but not limited to, those listed below.

B. Federal:

1. Statutory Requirements:

a. Resource Conservation and Recovery Act, 42 U.S.C. " 6901 et seq.

b. Toxic Substances Control Act of 1976, 15 U.S.C. " 2601 et seq.

c. Hazardous Materials Transportation Act of 1975, 49 U.S.C. " 1801 et seq.

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d. Clean Water Act, 33 U.S.C. " 1251 et seq.

e. Safe Drinking Water Act, 42 U.S.C. "3001 et seq.

f. Clean Air Act, section 112, 42 U.S.C. '7412

g. Occupational Safety and Health Act of 1970, 29 U.S.C. " 651 et seq.

h. The Emergency Planning and Community Right to Know Act of 1986, 42 U.S.C. " 11001 et seq.

2. Environmental Protection Agency (EPA):

a. 40 C.F.R. Parts. 260, 264, 265, 268, 270

b. 40 C.F.R. Parts 258 et seq.

c. 40 C.F.R. Part 761

d. 40 C.F.R. Parts 122-124

3. Occupational Safety and Health Administration (OSHA):

a. OSHA Worker Protection Standards, Title 29 CFR Part 1926.58, Construction Standards and 29 CFR 1910.1001 General Industry Standard

b. OSHA, 29 C.F.R. Part 1926.1101, Construction Standards for Asbestos

c. OSHA, Lead Exposure in Construction: Interim Final Rule, 29 C.F.R. 1926.62

d. National Emission Standard for Hazardous Air Pollutants, Title 40 CFR Part 61

e. Asbestos Hazardous Emergency Response Act, Title 40 C.F.R. 763

4. Department of Transportation:

a. Title 49 C.F.R. 173.1090

b. Title 49 C.F.R. 172

c. Title 49 C.F.R. 173

d. DOT, HM 181 and MH126f

C. State of California Requirements:

1. Statutory Law:

a. The Carpenter-Presley-Tanner Hazardous Substance Account Act, California Health & Safety Code 25300 et seq.

b. Health and Safety Code 25359.4

c. Hazardous Waste Control Law, Health & Safety Code 25100 et seq.

d. Porter Cologne Water Quality Control Act, California Water Code 13000 et seq.

e. Health and Safety Code 25915-25924.

f. California Labor Code Chapter 6, including, without limitation,

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6382, 6501.5-6501.9, 6503.5, 9021.5, 9080.

g. California Business and Professions Code, including without limitation, 7058.5, 7065.01, 7118.5.

h. Underground Storage of Hazardous Substance Act, Health & Safety Code 25280 et seq.

i. Petroleum Underground Storage Tank Cleanup, Health and Safety Code 25299.10 et seq.

j. Safe Drinking Water and Toxic Enforcement Act of 1986, Health & Safety Code 25249.5 et seq. (Proposition 65).

k. Above Ground Petroleum Storage Act, Health and Safety Code 25270 et seq.

l. Hazardous Materials Release Response Plans and Inventory, Health and Safety Code Chapter 6.95.

2. Administrative Code and Regulations:

a. Title 22 C.C.R. Division 4.5, Environmental Health Standards for the Management of Hazardous Waste 6600 et seq.

b. Cal OSHA Worker Protection Standards, Title 8 C.C.R. 1529, 5208.

c. Title 8 C.C.R. 1532.1, Lead in Construction Title 23 C.C.R. 2610 et seq.

3. Local Agency Requirements:

a. Bay Area Air Quality Management District, Fugitive Dust Rules.

b. Bay Area Air Quality Management District Regulation 11-2-303.

c. State Water Resource Control Board, Statewide General Construction Permit Requirements (Order 99-O8 DWQ).

4. City and County Requirements:

a. City Fremont Ordinances.

b. Alameda County ordinances.

CITY COUNCIL REFERENCE ONLY

1.07 PERMITS

A. Contractor shall comply with, implement and acknowledge effectiveness of all the permits applicable to the Work, and initiate and cooperate in securing all required notifications or approvals therefore, including but not limited to permits affecting environmental work.

1.08 DEFINITIONS

A. Adequately Wet: Penetration of the pipe wall, with liquid to prevent release of particulates.

B. Asbestos-Cement Pipe: Also commonly referred to as AC Transit Pipe or ACP. Pipe that is generally composed of cement and asbestos fibers.

C. Competent Person: A trained worker who is capable of identifying existing and predictable asbestos hazards, perform exposure assessment and monitoring, is

qualified to train other workers, and has the authority to take immediate corrective action to eliminate a hazardous exposure.

D. Non-Friable Asbestos-Containing Material (NACM): Material containing more than 1 percent asbestos, that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

E. Regulated Asbestos-Containing Material (RACM): Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder in the course of work.

1.09 RESPONSIBILITIES AND SAFETY

The Contractor is responsible for complying with California Code of Regulations (CCR) governing this work and shall conduct an Initial Exposure Assessment (IEA) of the work, as provided in Section (f) "Exposure Assessments and Monitoring" subsection 2, "Initial Exposure Assessment" of §1529, "Asbestos," of the CCR.

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PART 2 PRODUCTS

Not applicable

PART 3 EXECUTION

3.01 NOTIFICATIONS

A. 24 hours prior to removal operations, Contractor shall notify CALOSHA.

B. Contractor shall notify City, three (3) working days in advance of commencing asbestos and lead abatement.

3.02 WORK AREA

A. Establish a regulated work area, using at a minimum, construction warning tape to establish limits of work area for the ACP removal.

B. On site stockpiling or storage of ACP designated for disposal shall not be allowed. Upon removal of each pipe segments and all connecting parts, it will be directly stored in the environmental bin provided by the contractor used for hauling by the Contractor. The location of disposal bin shall be determined by the contractor and approved by the City of Fremont.

C. Contractor's shall provide a 40 cubic yard disposal bin for the purposes of storing ACP pipe removed from the trench for this project only. Upon the delivery of the disposal bin to the work site, Contractor shall perform the following:

1. Contractor shall install, at a minimum, a security fence around the disposal bin. It shall be the Contractor's responsibility to use all means necessary to prevent access to the disposal bin by others during non-work hours of operation.

2. Line the entire bin with 6-mil poly wrap plastic wrap prior to placing any AC in bin.

3. Label bin in accordance with CCR, title 8, Section 5208 or NESHAP, 40CFR 61.152 (b) (1) (iv) (7/1/86 edition).

4. Contractor may not use storage bin until all the requirements of this section are satisfactorily completed.

3.03 SAFETY

A. Conduct an IEA.

B. Provide a hand/face wash station.

3.04 EXCAVATION OF ACP

A. Machine excavates to expose ACP.

B. Hand excavates areas under pipe where breaks are planned.

C. Pipe shall be pre-wetted prior to any breaks being made.

D. Pipe shall be snapped using mechanical snapping methods.

3.05 AC PIPE REMOVAL

A. Pipe removal shall be by trained employees in conformance with Section (g) Methods of Compliance, of CCR, Title 8, § 1529, "Asbestos," mandating wet methods, vacuum cleaner with HEPA filters to collect debris and prompt cleanup.

B. All required pipe breaking operations shall require adequate pre-wetting with potable water.

C. The Contractor shall make every effort to minimize the number of pipe breaks. Wherever possible, the pipe should be removed by pulling the pipe out of the pipe joint collars.

D. Remove sections of ACP intact at joint collars by mechanical snapping methods between collars.

E. Wet and containerize waste materials as removed from the trench. Use lifting straps and methods that do not further damage the pipe.

F. Sections of ACP that become cut or have broken edges shall be wet at exposed fractures and immediately wrapped. The pipe ends shall be sealed using a minimum 6-mil poly film wrap, which is securely fastened, taped to close the pipe end and shall have conspicuous, legible labeling that has the following or equivalent labeling:

CAUTION: CONTAINS ASBESTOS FIBERS - BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM

G. ACP sections shall not be left exposed in public view, either in trench or in disposal area.

H. All connecting parts of pipe, rubber gaskets, and pipe couplings shall be discarded with pipe.

I. Sections designated to be abandoned in place shall be backfilled with slurry to prevent collapse during rough grading and rock placement activity. Pipe shall be capped at one end and a hole drilled into that end to allow for air to escape during pumping operations. Slurry shall be pumped from the high end to low end, or other method as determined by the contractor.

J. ACP from this project only, shall be placed in the bin. No other construction waste within project limit shall be placed in the bin.

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3.06 LEGAL DISPOSAL

A. Removal of filled bin shall be coordinated with the City inspector. Contractor shall give City 48 hours notice prior to removing filled bin and providing for the delivery of a replacement bin.

B. Contractor shall remove disposal bin from the job site within two (2) working days after notification to the City to do so. The bin shall be transported to an authorized legal dump site for legal disposal by others.

3.07 SLURRY BACKFILL AND TRENCH BACKFILL

A. After ACP is removed from trench and placed in disposal bin, remaining sections in the ground, if abandoned in place, shall be slurry-filled to prevent future collapse.

B. Contractor shall backfill the trench with on-site clean fill or City Standard trench backfill.

3.08 MEASUREMENT AND PAYMENT

The price paid for "Regulatory Requirements – Hazardous Waste**"**. Including legal disposal, is considered included in the contract unit price paid for ""**Demolition – Existing Buildings**" and no additional price will be paid therefor.

END OF SECTION

END OF SECTION

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SECTION 01 30 00 Submittals

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. General

Drawings and General Conditions of the Contract, including Division 1 Specifications, apply to this Section.

1. Refer to General Conditions, Part 2.5
2. Section 01 60 00 “Product Requirements” for Product Options
3. Section 01 63 00 “Product Substitution Procedures” for product substitutions.

B. Timing and Manner of Submission:

1. Submittals shall begin to be provided to the City immediately after award of contract by City Council. Do not submit all at one time. Submit in accordance with the sequence of procurement, fabrication and construction.
2. Make submittals far enough in advance of scheduled dates of installation to allow the time required for reviews, for securing necessary approvals, for possible revision and re-submittal, and for placing orders and securing delivery.
3. For items with long lead times, those items will be submitted first in order to get review and approvals, and submit for requisition of those items.4.

   Submittal quantities:

   a. If submitted electronically, provide 1 copy in .pdf format, and all electronic .pdf submittals must be followed up with 1 hard copy mailed to the City to ensure the submittal is received.
   b. If hard copies are submitted, provide six (6) hard copy submittals.
   c. Samples: Provide 1 product sample at the required dimensions described elsewhere in these specifications, for the appropriate products.

C. Required Content

1. Identify each submittal and re-submittal with the following information:
   a. Project name and address as they appear on the Contract Documents.
   b. Contract name and number.
   c. Contractor's name and address.
   d. Date of submission.
   e. Numbering System: Submittals shall be identified by sequential numbering (ie, 001, 002, 003, etc.) Any re-submittals shall be numbered sequentially according to the original submittal number, followed by the subscript ".1, .2, .3” (ie, 001.1, 001.2, etc.). Submittals and re-submittals shall be kept intact with the original number. Do not add new drawing or information outside the scope of the original submittal, unless specifically requested. Do not assign a new number for a re-submittal.
   f. Reference: List Specification Section number and product reference as a cross reference for each submittal.

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g. Do not submit separate submittals for items that can be in combined submittals. Only provide separate submittals if specific items in question require re-submittal due to a “revise and resubmit” request.

2. Identify each submittal with the following additional identification:

a. Contractor's stamp with initials or signature, certifying to review of submittal, compliance with Contract Documents, coordination with other impacted work, and verification of field measurements.

b. Drawing and Specification Section numbers to which the submittal applies.

c. Subcontractor's or supplier's name and address.

d. Name and telephone number of the individual to contact for additional information regarding the submittal.

e. Whether it is an original or a re-submittal.

3. Coordination of Submittals: Prior to submittal for the Project Manager's review, as applicable, fully coordinate material as follows:

a. Determine and verify field dimensions and conditions, materials, catalog numbers, and similar data.

b. Coordinate shop drawing submittals with previously issued Addenda and Information Bulletins.

c. Coordinate with the various types of Work and public agencies involved.

d. Secure necessary approvals from public agencies and others and signify by stamp, or other means, that approvals have been secured.

e. Unless otherwise specifically permitted by the Project Manager, make submittals in groups containing all associated items.

4. Completeness: Submittals shall be complete; partial submittals will be rejected for not complying with the Contract Documents.

D. Required Corrections and Re-submittals:

1. Subject to same terms and conditions as original submittal.

2. Project Manager will accept not more than one (1) re-submittal.

a. Should additional re-submittals be required, Contractor shall reimburse Owner for Construction Manager’s account and Project Manager’s account for time spent in processing additional re-submittals at rate of 3.25 times rate of Direct Personnel Expense (DPE). Direct Personnel Expense is defined as direct salaries of Construction Manager’s and Project Manager’s personnel engaged on Project and portion of costs of mandatory, and customary contributions and benefits related thereto, including employment taxes and other statutory employee benefits, insurance, sick leave, holidays, vacations, pensions, and similar contributions and benefits.

E. Effect of Review and Acknowledgement by City

1. The Project Manager, as applicable, will review the Submittals or shop Drawings; mark the submittal or shop drawings with required revisions; stamp the submittal or shop drawings and indicate "No Exceptions Taken," "Make Changes Noted," or "Revise and Resubmit”. "Revise and Resubmit” stamps shall not be construed by the Contractor as a valid reason for an

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extension of time request.

2. Review the returned submittal or shop drawings and take appropriate action as indicated.

   a. If submittal or shop drawings are marked "Revise and Resubmit," make revisions and indicate them with a "cloud," stamp and date, and resubmit in the same manner and number as for the original submittal.

   b. If submittal or shop drawings are marked "No Exceptions Taken" or "Make Changes Noted", print and distribute copies for Owner and Inspector, as well as those required for Contractor and Subcontractors.

3. The Project Manager, as applicable, may review at their discretion up to one re-submittal and take action, as appropriate, in the same manner as for the original submittal. If more than one re-submittal is required, any associated costs as a result of additional reviews shall be an extra service of the Project Manager, or his consultants, and will be processed as a deductive Change Order.

4. As with the original submittal, review the returned submittals or shop drawings and take appropriate action as indicated. As specified hereinabove, resubmit and revise until final action by the Project Manager, as applicable. Final action is signified by the markings "No Exceptions Noted," or "Make Changes Noted," on the returned shop drawings.

5. Following final action by the Project Manager, the Contractor shall make copies and distribute as required for accomplishment and inspection of the indicated Work.

6. Only those submittals or shop drawings which bear stamps showing final review of the Contractor, or the Project Manager, or the Project Manager's consultants, or the Owner's consultants, as applicable, shall be used.

7. Reproduction and Mailing Costs: The Contractor shall pay the reproduction and mailing costs of the sepias and all prints.

F. Enforcement: Refer to General Conditions, Part 2.5

G Excessive RFI's: Refer to General Conditions, Part 2.5

H. Additional Requirements for Submittals: See Part 3.01 herein

1.02 SHOP DRAWINGS, SUBMITTALS, PRODUCT DATA, SAMPLES, AND OTHER SUBMITTALS

A. Shop Drawings:

1. Submit copies, as required herein.

B. Product Data:

1. Comply with all requirements for submittals of material chemical content, ventilation requirements during installation, maintenance requirements, and emissions test data specified in Division 1 and technical Specification Sections.

2. Submit in the quantity required to be returned, together with four additional copies each of brochures, catalog cuts, and similar material for mechanical, electrical, hardware, and elevator items; and three additional copies for all others.

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3. Review, processing, and distribution of Product Data shall be the same as that for Shop Drawings.

C. Samples:

1. Submit in the size specified in the individual Specification SECTIONS, and in the quantity required to be returned, together with one additional Sample, which will be retained by the Project Manager or his consultants, or the Owner's consultants, as applicable.

2. Where Samples have natural variations in texture, color, or dimension, submit Samples showing the extreme range plus the middle range of variation.

3. Ship samples to the Project Manager's or consultant's office, carriage prepaid. Samples to be returned to the Contractor will be shipped, carriage collect.

4. Patterns and Colors: Unless the exact pattern and color of a product are indicated in the Contract Documents, whenever a choice of pattern or color is available for a product, submit accurate color charts and pattern charts to the Project Manager for his review and selection.

5. Other Submittals: Submit as specified in the individual Specification Section.

6. Certificates of Compliance:

a. Submit certificates of compliance with the associated Shop Drawings, Product Data, Samples, and other submittals required for the product.

b. Submit on 8-1/2 x 11 inch white paper.

c. Submit six (6) copies.

d. The Project Manager will retain the certificates of compliance; no review reply is intended.

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Part 2 – <u>NOT USED</u>

Part 3 – <u>EXECUTION</u>

3.01 <u>SUBMITTALS REQUIRED AT THE PRECONSTRUCTION MEETING</u>

A. The Contractor shall provide six (6) copies of each of the following submittals to the Engineer at the pre-construction meeting, if these have not been previously provided:

1. Designation of Superintendent

2. A list of all permits and licenses the Contractor has obtained indicating the agency that issued the permit or if the permit has not been obtained, the expected date of receipt of the permit.

3. **24 Hour Contact Number** - The Contractor shall assign a Project Superintendent who has the complete authority to make decisions on behalf of the Contractor. The Project Superintendent shall have the ability to speak, read and write in English. The Project Superintendent shall be on the job at all times during the construction and shall be available and on call 24 hours a day for the duration of the project. The Project Superintendent shall meet with the Engineer at least once per day while the project is actively under

construction. Additionally, the Project Engineer shall attend all regularly scheduled job progress meetings. The Contractor shall provide to the Engineer and the Fremont Police Department a 24-hour contact number for the Project Superintendent. This number shall not direct calls to a recorder or other message taking service.

4. Construction Schedule

5. A **Waste Handling Plan** (See Section 01 50 50) is required within 10 days of the issuance of a Notice to Proceed.

6. Health and Safety Plan (HASP): The Contractor shall submit a preliminary HASP at the pre- construction meeting for the review and approval of the Engineer. All edits and questions must be addressed and resolved, and a final HASP must be submitted prior to start of Work. The HASP shall conform to the requirements of Title 8 of the CCR and title 29 of the CFR, as well as all other relevant statutes and requirements.

7. Site Operations Workplan (SOW): A preliminary SOW shall be submitted for review and approval by the Engineer at the pre-construction meeting. The SOW shall include a detailed description of any conflicts between proposed equipment locations and landscape /tree protection measures, along with a proposed remedial plan. All edits and questions must be addressed and resolved, and a final SOW must be submitted prior to start of Work. The SOW shall identify the work areas, including a site plan showing location of offices, access, proposed stockpile/staging areas, equipment operation and storage areas, landscape maintenance, and storm water runoff control measures. The SOW shall describe the Contractor's sequence and schedule of detailed activities for demolition, including: mobilization; termination of utilities at the property boundaries or as directed by the City; removal, segregation, and control of materials identified as potentially hazardous requiring disposal off-site; general building salvaging, recycling, and demolition; removal and disposal of hazardous and non-hazardous materials off-site; providing, placing, and compaction of fill material in basement excavation; grading; site work, and demobilization. The SOW shall also include a list of the equipment to be used for each phase of work, as well as minimum operating distances from active utilities, existing trees to remain, the skate park, the library, existing parking lots, hardscapes to remain, and a discussion of anticipated problems or difficulties and possible responses. The Contractor shall submit, as part of the SOW, a plan for minimizing the amount of dust and noise affecting the corporation yard. A California-registered engineer, or equivalent shall stamp the plan.

8. General Contractor shall provide a list of all proposed project submittals, if not previously submitted for review.

9. Certified Payroll Reports and Statements of Compliance.

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3.02 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section "**Submittals,"** not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

END OF SECTION

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SECTION 01 32 30 Photographic Documentation

1.01 GENERAL

A. Photographic documentation performed by the General Contractor and their subcontractors for various milestones in the projects as described herein.

1.02 PHOTOGRAPHIC DOCUMENTATION

A. The Contractor shall take photographs of the existing conditions of the entire jobsite prior to the start of demolition and construction and monthly after the start of construction, and upon encountering unforeseen underground utilities or other conditions.

1. Prior to construction to document conditions within the work area;
2. Start of construction, including clearing and grubbing and demolition operations, as applicable;
3. Highlights of all formal Inspections; and
4. Highlights of all undergrounding work and utility crossings; and
5. Highlights of the Final Inspection and Acceptance by the City.

B. Photographs shall be provided digitally, by email on thumb drives, or burned to CD's, capable of being downloaded to a personal computer.

C. Photographs shall show an unobtrusive time and date indicator on each photo, accurately depicting the time and date when the photography was performed.

D. CD's or thumb drives shall be labeled with the same identifying information specified above for photographs.

1.03 DISPUTES AND POTENTIAL CLAIMS

A. In the event a problem arises or dispute occurs which may result in a Notice of Potential Claim under Section 9-1-04 of the Caltrans Standard Specifications and the problem or dispute can be illustrated by photographs and DVD recordings, the Contractor shall provide such photographs and DVDs

1.04 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section "**Photographic Documentation**," not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

END OF SECTION

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SECTION 01 33 23 Shop Drawings, Product Data and Samples

PART 1 GENERAL

1.01 DESCRIPTIONS

A. This Contract Specifications Section includes specifications for the general requirements and procedures for preparing, reviewing, and submitting Shop Drawings, Product Data, and Samples required by the individual Contract Specifications Sections.

1.02 DEFINITIONS

A. Drawings: The term "shop drawings," as used herein, includes fabrication, erection and installation, application, layout, and setting drawings, lists or schedules of materials and equipment, manufacturer's standard drawings, wiring and control diagrams, and all other drawings as may be required to show that the materials, equipment, and systems, and the positions thereof, comply with Contract requirements.

B. Product Data: The term "product data," as used herein, includes manufacturer-prepared descriptive literature, catalog sheets, brochures, performance data, test data, printed diagrams, schedules, illustrations, and other information furnished by the Contractor or the various product and materials Suppliers to illustrate and describe a product, material, system, or assembly for some portion of the Work.

C. Samples: The term "samples," as used herein, are physical examples which illustrate materials, equipment, colors, textures, finishes, functions, configuration, and work quality, and establish the standards of quality and utility by which the Work will be judged for acceptance.

1.03 SUBMITTALS

A. Refer to Contract Specifications Section 01 33 00, Submittals, for submittal procedures.

B. Quantities:

1. Where Shop Drawings, product data or samples are submitted to the Project Manager or Project Landscape Architect for information or record purposes, submit two copies. Where Shop Drawings, product data or samples are reviewed by the Designer, the Contractor shall submit two copies for information and record purposes.

2. Where Shop Drawings, product data or samples are submitted to the Project Manager or Project Landscape Architect for review and approval, submit:

   i. One electronic file format (pdf) and six prints of the pdf drawing.

   ii. Six hard copies of standard schematic drawings, including manufacturer's calculations, manufacturer's standard data, manufacturer's printed installation, assembly, erection, application, and placement instructions.

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iii. A sample board of various architectural items, specified in the various Contract Specifications Sections, unless otherwise specified.

iv. Six copies of inspection reports, test reports, and certificates of compliance.

3. Where permits and licenses and other such documents are obtained in the City's name, submit the original and one copy.

1.04 SHOP DRAWINGS

A. Shop Drawings shall be prepared in accordance with ANSI Y14, Drafting Standards Manual, and the following requirements:

1. Shop Drawings shall be limited to the following standard sizes in inches: Maximum size shall be 22 inches by 34 inches.

WIDTH (Vertical)	LENGTH (Horizontal)
8 1/2 inches (215.9mm)	11.0 inches (279.4mm)
11.0 inches (279.4mm)	8 1/2 inches (215.9mm)
11.0 inches (279.4mm)	17.0 inches (431.8mm)
17.0 inches (431.8mm)	22.0 inches (558.8mm)
22.0 inches (558.8mm)	34.0 inches (863.6mm)

2. Each Shop Drawing shall have the following information in the title block.

a. Drawing number, date, title, revision number, and sheet number
b. Contract number, Contract sheet number, Contract page number.
c. Contractor's name.
d. Subcontractor/manufacturer name (if applicable)
e. Name of installation location.

3. Each Shop Drawing shall use symbols from one standard reference source. The Contractor shall furnish a complete symbol list that includes non-standard symbols used on the Shop Drawing. Symbols used shall conform to the list of standard references as listed below:

a. Institute of Electrical and Electronic Project Manager or Project Landscape Architects (IEEE).
b. National Electric Manufacturer's Association (NEMA).
c. ANSI Y14: American National Standards Institute "Drafting Standards Manual".
d. ANSI Y10: American National Standards Institute "Letter Symbols for Drafting".

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e. ANSI Y32: American National Standards Institute “Graphic Symbols for Drafting”.

4. Each Shop Drawing shall include details necessary for the procurement, installation, maintenance, and repair of all components or facilities equipment provided. Change Order notices that are attached to Shop Drawings shall not constitute revised drawings. Each Shop Drawing shall include all changes and be upgraded to reflect the latest configuration.

B. Shop Drawing Reviews:

In addition to those identified in the Contract Specifications Section 01 33 00 “Submittals”, the City will notify the Contractor of other technical areas that will require the Contractor to submit Shop Drawings for review and approval. The Project Manager and/or Project Landscape Architect may also designate specific additional Shop Drawings that will be reviewed for approval at least 15 days prior to the anticipated submittal date as determined from the Project Schedule.

C. Shop Drawings shall be submitted in accordance with the following requirements:

1. Initial Shop Drawing Review:

a. The first Shop Drawings shall be submitted by the Contractor to be reviewed for conformance to the requirements herein. Once approval is given, the Contractor shall use this approved Shop Drawing as the standard, and prepare subsequent Shop Drawings to a quality equal to or better than the approved standard.

b. The initial submittal of such Shop Drawings shall include electronic copies for review of their conformance with applicable drafting standards. The Project Manager or Project Landscape Architect will make the Drawing CADD Requirements available upon request.

2. Each Shop Drawing prepared and submitted for review shall have in the lower right hand corner, just above the title block, a five-inch square blank space in which the Project Manager or Project Landscape Architect may indicate the action taken.

3. All final approved drawings and catalog cuts shall be submitted to the Project Manager or Project Landscape Architect upon completion of the Work as specified in Contract Specifications Section 01 77 00, Project Close Out.

4. Unless otherwise specified, Shop Drawings shall be utilized as illustrations and drawings in Operation and Maintenance Manuals.

1.05 OTHER SUBMITTALS

A. Other submittals shall be furnished upon request for the Project Manager or Project Landscape Architect’s approval to verify compliance of all equipment and materials with the Contract Documents. These submittals shall include, in addition to drawings

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the following: catalog cuts, certifications of compliance, or any other substantiating information or samples of material items as necessary.

B. Other submittals (including product data and samples) to the Project Manager or Project Landscape Architect will be determined in the same manner as Shop Drawings to be submitted (see Part 1.05B, herein). The Designer will review all other submittals for conformance with the Construction Specifications and Construction Drawings.

1.06 PRODUCT DATA

A. The Contractor shall modify manufacturers' standard diagrams, charts, illustrations, brochures, calculations, schematics, catalog cuts, and other descriptive data to delete information not applicable to the Contract. The Contractor shall supplement standard information with additional information applicable to this Contract, and indicate dimensions, clearances, performance characteristics, capacities, wiring and other diagrams, and controls.

B. If the Contractor utilizes drawings prepared by others, such drawings may include the standards and symbols of others if the drawings are a mix of existing product drawings and drawings prepared specifically for this Contract. In the event others provide drawings prepared specifically for this Contract, such drawings shall conform in symbols, media and standards to the Contractor's drawings.

C. The Contractor shall modify the manufacturer's printed installation, erection, application, and placing instructions to delete information which is not applicable to the Contract.

D. Product drawings shall be consolidated into Books of Product and Equipment drawings.

E. Submittals shall include the following:
   1. Date and revision dates.
   2. Contract title and number.
   3. Reference Construction Drawing numbers.
   4. Applicable Construction Specification Section numbers.
   5. Identification of product by description, model number, style number, serial number, or lot number.
   6. The names of the Contractor, Subcontractors, Suppliers, and manufacturers as applicable.
   7. Applicable standards, such as ASTM or Federal specification numbers.

F. Certificates of Compliance:

   1. The Project Manager or Project Landscape Architect may permit the use of certain materials prior to sampling and testing if accompanied by a certificate of compliance stating that the materials involved comply in all respects with the requirements of the Contract Documents. The certificate shall be signed by the manufacturer of the material. A certificate of compliance shall be furnished with

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each lot of material delivered to the Work, and the lot so certified shall be clearly identified in the certificate.

2. All materials used on the basis of a certificate of compliance may be sampled and tested at any time. The fact that material is used on the basis of a certificate of compliance shall not relieve the Contractor of responsibility for incorporating material in the Work which conforms to the requirements of the Contract Documents. Any such material not conforming to such requirements shall be subject to rejection whether in place or not.

3. The Project Manager or Project Landscape Architect reserves the right to refuse the use of material submitted for approval solely on the basis of a certificate of compliance.

4. The form of the certificate of compliance and its disposition shall be as approved by the Project Manager or Project Landscape Architect.

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1.07 SAMPLES

A. The Contractor shall furnish to the Project Manager or Project Landscape Architect samples required by the Contract Documents. Samples shall be submitted without charge, with shipping charges prepaid. Materials for which samples are required shall not be used in the Work until approved in writing by the Project Manager or Project Landscape Architect.

B. Sample Label: Each sample shall be labeled with the following data:

1. Name, number, and location on Jobsite;
2. Name of Contractor;
3. Material or equipment represented, and location in the Jobsite;
4. Name of producer, brand, trade name if applicable, and place of origin; and
5. Date of submittal.

C. The Contractor shall forward a letter in triplicate to the Project Manager or Project Landscape Architect submitting each shipment of samples and containing the information listed on the Sample Label specified herein. Approval of a sample shall be only for the characteristics and use named in the submittal and approval, and shall not be construed to change or modify any Contract requirement. Before submitting samples, the Contractor shall assure itself that the materials or equipment will be available in the quantities required in the Contract, as no change or substitution shall be permitted after a sample has been approved unless such change or substitution is approved by the Project Manager or Project Landscape Architect in writing.

D. Samples of material from local sources shall be taken by or in the presence of the Project Manager or Project Landscape Architect. Samples taken otherwise shall not be considered for testing.

E. Inspection and tests will be made, but it is understood that such inspections and tests, if made at any point other than the point of incorporation in the Work, in no way shall be considered as a guaranty of acceptance of any material which may be delivered later for incorporation in the Work.

F. Approved samples not damaged in testing may be incorporated in the finished work if marked for identification and approved by the Project Manager or Project Landscape Architect. materials incorporated in the Work shall match the approved samples.

G. Failure of any material to pass the specified tests shall be sufficient cause for refusal to consider, under the Contract, any further samples of the same brand, make, or source of that material. The Project Manager or Project Landscape Architect reserves the right to disapprove any material which has previously proven unsatisfactory in service.

H. Samples of material delivered to the Jobsite or installed in place may be taken by the Project Manager or Project Landscape Architect for testing. Failure of samples to meet Contract requirements shall annul previous approvals of the item tested.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section "**Shop Drawings, Product Data and Samples**" not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefore.

END OF SECTION

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SECTION 01 40 00 Testing and Inspection

1.01 RELATED SECTIONS

A. General Conditions, Article 7.8

B. Article 15, Section 01 45 00 “Quality Control”

C. Caltrans Standard Specifications, 2015

1.02 SCOPE

A. Testing is not a duty of the City and is solely at the discretion of the Project Engineer. Non-testing by the City does not release the Contractor from their responsibility to perform all work in conformance to the Standard Specifications and these Special Provisions.

B. At the City’s discretion, testing will be performed by the City’s testing laboratory and staff, or by an independent testing laboratory, currently on call through an existing Master Service Contract

1.03 REFERENCES

A. California Test: As described in the Caltrans Standard Specifications, and required for Permeable aggregate base and other project specific activities

1.04 TESTING QUALITY ASSURANCE AND QUALITY CONTROL

A. The City reserves the right to use any generally accepted system of sampling and testing which, in the opinion of the Engineer, will assure the City that the quality of the workmanship is in full accord with the Contract Documents.

B. Selection of test sites and samples shall be determined in the field by the City Project Inspector.

C. Test results:

1. If test samples fail to meet requirements of Contract Documents, materials or equipment shall be subject to removal and replacement by Contractor with materials or equipment meeting requirements of Contract Documents.

2. If initial tests are defective, costs of retesting shall be borne by Contractor.

D. Unless otherwise specified, samples and test specimens required under the Contract Documents shall be furnished by the Contractor and prepared for testing in ample time for the completion of the necessary tests and analyses before the subject materials or articles are to be used. The Contractor shall furnish all required test specimens at its own expense.

E. Except as otherwise provided in the Contract Documents, performance of the required initial test and first re-test will be by the City or their representative, and all costs therefore will be borne by the City. The cost of any test after the first re-test shall be borne by the Contractor.

F. Testing is not a duty of the City and is solely at the discretion of the Engineer. Non-testing by the City does not release the Contractor from their responsibility to perform all work in conformance to the Standard Specifications and these Special Provisions.

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G. Verification of Quality: Work shall be subject to verification of quality by City or their designated representative in accordance with provisions of the General Conditions of the Contract.

1. Contractor shall cooperate by making Work available for inspection by City, or their designated representatives
2. Such verification may include field inspection as required.
3. Provide access to all parts of the Work.
4. Provide all information and assistance, as required, for verification of quality by City or Architect/Engineer.
5. Contract modifications, if any, resulting from such verification activities shall be governed by applicable provisions in the General Conditions of the Contract.

H. Limitations on Inspection, Test and Observation: Neither employment of independent testing and inspection agency nor observations by Architect/Engineer shall in any way relieve the Contractor of obligation to perform Work in full conformance to all requirements of Contract Documents.

I. Rejection of Work: City reserves the right to reject all Work not in conformance to the requirements of the Drawings and Specifications.

J. Correction of Non-Conforming Work: Non-conforming Work shall be modified, replaced, repaired or redone by the Contractor at no change in Contract Sum or Contract Time.

K. Acceptance of Non-Conforming Work: Acceptance of nonconforming Work, without specific written acknowledgement and approval of the City, shall not relieve the Contractor of the obligation to correct such Work.

L. Contract Adjustment for Non-Conforming Work: Should City determine that it is not feasible or in City's interest to require non-conforming Work to be repaired or replaced, an equitable reduction in Contract Sum shall be made by agreement between City and Contractor. If equitable amount cannot be agreed upon, a Construction Change Directive will be issued and the amount in dispute resolved in accordance with applicable provisions of the Caltrans Standards.

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1.05 INSPECTIONS AND TESTS BY CITY

A. Inspections and Tests by Governing Authorities: Contractor shall cause all tests and inspections required by City to be made for Work under this Contract.

1. Such authorities include Engineering Department and similar agencies.

2. Except as specifically noted, scheduling, conducting and paying for such inspections shall be solely the Contractor's responsibility.

B. The contractor shall coordinate with the City Project Inspector to arrange all scheduling and on-site inspection and testing as needed to satisfy building permit requirements for the project.

C. It is the responsibility of the contractor to coordinate as needed and described herein and elsewhere in these special provisions to arrange for testing and inspection. The contractor shall notify the City Project Inspector when permitted work is ready for specified tests and inspections.

D. Contractor is required to provide the City with **a minimum of 24 hours notice** for test and inspection required the following work day.

E. If the City chooses to engage a special inspection and testing firm to perform compaction testing, the following are the Laboratory responsibilities:

1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services. Architect may direct laboratory as to location of field tests.
2. Perform specified inspection, sampling, and testing in accordance with specified standards.
3. Ascertain compliance of materials with requirements of Contract Documents.
4. Promptly notify Architect and Contractor of observed irregularities or non-conformance of work or products.
5. Perform additional inspections and tests required by Architect.

F. Test and Inspection Reports: After each inspection and test, one copy of report shall be promptly submitted each to Architect/Engineer, City, City's field representative, Contractor and to agency having jurisdiction (if required by Code).

1. Reports shall clearly identify the following:
   a. Date issued.
   b. Project name and number.
   c. Identification of product and Specifications Section in which Work is specified.
   d. Name of inspector.
   e. Date and time of sampling or inspection.
   f. Location in Project where sampling or inspection was conducted.
   g. Type of inspection or test.
   h. Date of test.
   i. Results of tests.
   j. Comments concerning conformance with Contract Documents and other requirements.
2. Test reports shall indicate specified or required values and shall include statement whether test results indicate satisfactory performance of products.
3. Samples taken but not tested shall be reported.
4. Test reports shall confirm that methods used for sampling and testing conform to specified test procedures.
5. When requested, testing and inspection agency shall provide interpretations of test results.
6. Verification reports shall be prepared and submitted, stating that tests and inspections specified or otherwise required for the project, have been completed and that material and workmanship comply with the Contract Drawings and Specifications. Verification reports shall be submitted at intervals not exceeding 6 months, at Substantial Completion of the Project, and at all times when Work of Project is suspended.

G. Contractor Responsibilities in Inspections and Tests:

1. Advanced Notification: Refer to Article 7.8 (B) of the General Conditions.
2. Deliver to laboratory or designated location, adequate samples of materials proposed to be used which require advance testing, together with proposed mix

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designs.

3. Cooperate with testing and inspection agency personnel, City's field representative, Landscape Architect/Engineer. Provide access to Work areas and off-site fabrication and assembly locations, including during weekends and after normal work hours.
4. Provide incidental labor and facilities to provide safe access to Work to be tested and inspected, to obtain and handle samples at the Project site or at source of products to be tested, and to store and cure test samples.
5. Provide, at least 15 days in advance of first test or inspection of each type, a schedule of tests or inspections indicating types of tests or inspections and their scheduled dates.

1.06 ADDITIONAL TESTING AND INSPECTION

A. Refer to Article 7.8 (C), “Responsibility for Costs”

1.07 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section ‘**Testing and Inspection**,” not otherwise provided for, shall be considered included in the prices paid for the various line items of work requiring testing and no additional compensation will be allowed therefor.

END OF SECTION

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SECTION 01 42 13 Reference Standards

1.01 GENERAL

A. Wherever in these Specifications references are made to the standards, specifications, or other published data of the various national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only. As a guide to the user of these specifications, the following acronyms or abbreviations which may appear in these specifications shall have the meanings indicated herein.

B. Additional plan specific abbreviations will be listed on the title sheet, or in related sections

C. The section includes:

1. Reference Standards
2. Reference Standards File
3. Abbreviations

1.02 REFERENCE STANDARDS

A. The Contract Documents contain references to various standard specifications, codes, practices, and requirements for materials, equipment, work quality, installation, inspections, and tests, which references are published and issued by the organizations, societies, and associations listed herein by abbreviations and name. Such references are hereby made a part of the Contract Documents.

B. Whenever a reference standard contains a administrative requirements, including measurement and payment provisions, such as the standard specification of various government entities, utility districts and other agencies, such administrative requirements will not apply to the Work of this Contract. References to such Standards will be applicable to the pertinent technical provisions only.

C. In case of conflict between codes, reference standards, drawings and the other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the Engineer for clarification and directions prior to ordering or providing any materials or labor. The Contractor shall bid the most stringent requirements.

D. All material, equipment and workmanship, specified by the number symbol, or title of a referenced standard will comply with the latest edition or revision thereof and all amendments and supplements thereto in effect on the date of the Invitation to Bid, except where a particular edition or revision thereof is indicated in the reference.

E. Unless otherwise specified, references in the Contract Documents to “Caltrans Standard Specifications” will mean Caltrans Standard Specifications, 2015 Edition, including any revised standard specifications in effect on the date of the Invitation to Bid.

F. References in the Contract Documents to the “Fremont Standard Details” or City Standard Details” will mean the City of Fremont Standard Details, current edition on the date of the Invitation to Bid.

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1.03 REFERENCE STANDARDS FILE

A. Referenced standards will be obtained by the Contractor and maintained in the Contractor's office. Referecned standards will be made readily available for use by the Engineer and the Constrctor's staff in carrying out the quality assurance and quality control prgrams specified in the Contract Documents, and to assure compliance with the requirements of the codes, specifications, test methods, practices, and other standards referenced in the Contract Documents.

1.04 ABBREVIATIONS AND ACRONYMS

AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturer's Association
AAN	American Association of Nurserymen
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ACEH	Alameda County Health Agency - Environmental Health
ACI	American Concrete Institute
ACFCD	Alameda County Flood Control District
ACWD	Alameda County Water District
AEIC	Association of Edison Illuminating Companies
AGC	Associated General Contractors
AFBMA	Anti-friction Bearing Manufacturer's Association
AI	The Asphalt Institute
AIMA	Acoustical and Insulating Materials Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute, Inc.
APA	American Plywood Association
API	American Petroleum Institute
APTA	American Public Transportation Association
APWA	American Public Works Association
AREMA	American Railway Engineering and Maintenance of Way Association
ARI	Air Conditioning and Refrigeration Institute
ASHRAE	American Society of Heating, Refrigeration, Engineer, Inc and Air Conditioning
ASCE	American Society of Civil Engineers

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ASME	American Society of Mechanical Engineers
ASNT	American Society of Non-Destructive Testing
ASQC	American Society for Quality Control
ASTM	American Society for Testing and Materials
AWPA	American Wood Preserver's Association
AWPI	American Wood Preserver's Institute
AWS	American Welding Society
AWWA	American Water Works Association
BAAQMD	Bay Area Air Quality Management District
BBC	Basic Building Code, Building Officials and Code Administrators International
BHMA	Builders Hardware Manufacturer's Association
BSI	Building Stone Institute
Cal-OSHA	California Occupational Safety and Health Administration
CALTRANS	State of California Department of Transportation
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CBC	California Building Code
CBSC	California Building Standards Commission
CLFMI	Chain Link Fence Manufacturer's Institute
CMAA	Crane Manufacturer's Association of America
CPUC	California Public Utilities Commission
COF	City of Fremont
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards, United States Department of Commerce
DEMA	Diesel Engines Manufacturer's Association
DHI	Door and Hardware Institute
DSI	Dimensional Stone Institute
DOT	United States Department of Transportation
DTSC	California Department of Toxic Substances Control
EEI	Edison Electric Institute
EIA	Electronic Industries Association
FFD	Fremont Fire Department
FGMA	Flat Glass Marketing Association
FM	Factory Mutual System,
FMC	Fremont Municipal Code
FS	Federal Specifications

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ICC	International Code Council
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IMSA	International Municipal Signal Association
IPCEA	Insulated Power Cable Engineers Association
ICBO	International Conference of Building Officials
ISO	International Organization for Standardization
ITE	Institute of Traffic Engineers
JIC	Joint Industrial Council
LSD	Landscape Standard Details
MIA	Marble Institute of America
MSS	Manufacturer's Standardization Society
NAAMM	National Association of Architectural Metal Manufacturer's
NBFU	Nation Board of Fire Underwriters
NEBB	National Environmental Balancing Bureau
NACE	National Association of Corrosion Engineers
NBS	National Bureau of Standards
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
NLMA	National Lumber Manufacturer's Association
NRCA	National Roofing Contractors Association
NTMA	National Terrazzo and Mosaic Association
OSHA	Occupational Safety and Health Administration (Federal)
PCA	Portland Cement Association
PCI	Pre-stressed Concrete Institute
PDI	Plumbing and Drainage Institute
PEI	Porcelain Enamel Institute
PG&E	Pacific Gas and Electric Company
PS	U.S. Products Standards
PSD	Park Standard Details
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SSPC	Stel Structures Painting Council
SWI	Sealant and Waterproof Institute
TCA	Tile Council of America

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UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
UMC	Uniform Mechanical Code
UPC	Uniform Plumbing Code
USBPR	United States Bureau of Public Roads
USD	Union Sanitary District
WCLA	West Coast Lumberman's Association
WCLIB	West Coast Lumber Inspection Bureau
WH	Warnock Hersey
WIC	Woodwork Institute of California

END OF SECTION

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SECTION 01 43 39 Mock-Ups

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. General mock-up requirements:

1. Intent of mock-up is to ascertain element's designed fit into space provided and to provide Prime Trade Contractor with opportunity to coordinate Subcontractor Work.

2. Approved Work can be included as part of final construction.

3. Mock-ups may include, but are not necessarily limited to, the following:

a. Portland cement concrete paving.

b. Concrete work.
c. Cement plaster

1.02 RELATED REQUIREMENTS

Individual Specifications Sections: Specific mock-ups as required.

1.03 DESCRIPTION

Maintain quality control over Work of various Sections of Specifications, manufacturers, products, services, workmanship, and site conditions to produce mock-ups in accordance with the Contract Documents.

1.04 WORKMANSHIP

A. Comply with standards specified.
B. Provide qualified personnel to produce mock-up of specified quality.
C. Secure mock-ups in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.
D. Provide finish to match approved samples.

1.05 MOCK-UPS

A. When required in individual Specification Sections, install full-scale mock-up of assembly at Project site at location acceptable to the Engineer.
B. Assemble and erect complete, with specified attachment and anchorage devices, flashings, seals and finishes.
C. Acceptable mock-ups in place shall become the standard of quality for the Work and may be retained in completed Work.
D. Remove unacceptable mock-ups.
E. Mock-ups shall be approved by the Engineer in writing, prior to commencing with Work.

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PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section "**Mock-ups**" not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefore.

END OF SECTION

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SECTION 01 45 00 Quality Control

1.01 SITE INVESTIGATION AND CONTROL

A. The Contractor shall verify all dimensions in the field and shall check all field conditions continuously during the Work. The Contractor shall be solely responsible for any inaccuracies built into the Work.

B. The Contractor shall inspect related and appurtenant work and shall report in writing to the Engineer, any conditions which will prevent proper completion of the Work. Any required removal, repair, or replacement caused by unsuitable conditions shall be done by the Contractor at its sole cost and expense.

1.02 SUBMITTALS

A. Refer to Sections 01 30 00 - Submittal, and include all Shop Drawings, Product Data, Mock ups, and other submittal requirements and procedures.

1.03 INSPECTION OF THE WORK

A. General: The Work shall be conducted under the general observation of the Engineer and shall be subject to inspection by representatives of the City to assure strict compliance with the requirements of the Contract Documents.

B. The Building Department and Fire Department Inspections required by permit are separate code inspections than QA/QC inspections by the Owner. Inspections by representatives of the City as the Owner do not satisfy the permit authorities.

C. The authorized representative of the Engineer on the project site shall be those representatives or consultants designated by the Engineer to act on behalf of the City. The presence of the Inspectors, however, shall not relieve the Contractor of the responsibility for the proper execution of the Work in accordance with all requirements of the Contract Documents. Compliance is distinctly a duty of the Contractor, and said duty shall not be avoided by any act or omission on the part of the inspector(s).

D. All materials and articles furnished by the Contractor shall be subject to rigid inspection, and no material or articles shall be used in the Work until it has been inspected and accepted by the Engineer or the City.

E. At all times during the construction, the Contractor shall prevent the formation of any airborne dust nuisance. If the Contractor fails to remove the nuisance within 2 hours, the City may order that the work be done and all expenses incurred for the performance of this work will be deducted from payments to the Contractor.

1.04 QUALITY ASSURANCE AND QUALITY CONTROL

A. Contractor's Quality Control: Contractor shall ensure that products, services, workmanship and site conditions comply with requirements of the Drawings and Specifications by coordinating, supervising, testing and inspecting the work and by utilizing only suitably qualified personnel.

B. Quality of Products: Unless otherwise indicated or specified, all products shall be new, free of defects and fit for the intended use.

C. Quality Requirements: Work shall be accomplished in accordance with quality requirements of the Drawings and Specifications, including, by reference, all Codes, laws, rules, regulations and standards. When no quality basis is prescribed, the

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quality shall be in accordance with the best accepted practices of the construction industry for the locale of the Project, for projects of this type.

D. Quality of Installation: All Work shall be produced plumb, level, square and true, or true to indicated angle, and with proper alignment and relationship between the various elements.

E. Quality Control Personnel: Contractor shall employ and assign knowledgeable and skilled personnel as necessary to perform quality control functions to ensure that the Work is provided as required.

F. Protection of Completed Work: Take all measures necessary to preserve completed Work free from damage, deterioration, soiling and staining, until Acceptance by the City.

G. Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Unless more stringent requirements are indicated or specified, comply with manufacturer's instructions and recommendations, reference standards and building code research report requirements in preparing, fabricating erecting, installing, applying, connecting and finishing Work.

H. Deviations from Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Document and explain all deviations from reference standards and building code research report requirements and manufacturer's product installation instructions and recommendations, including acknowledgement by the manufacturer that such deviations are acceptable and appropriate for the Project.

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1.05 LABORATORIES

A. Laboratory QC testing shall be conducted by qualified testing laboratories, hired through task order by the City, or performed by the City itself at its laboratory.

1.06 QC SURVEYOR

A. The Contractor shall employ or retain a California-licensed surveyor and associated field and office staff to perform a conformance survey to verify the Contractor's survey layouts, control points, etc.

B. The QC Surveyor shall make the surveys necessary to develop the Record Drawings.

C. The QC surveyor need not be the Lead Surveyor.

1.07 CONTRACTOR'S QUALITY CONTROL TESTING

A. All construction processes, procedures, and workmanship shall be inspected by the Contractor's construction Quality Control (QC) inspectors. Inspection observations, measurement, results, non-conformances, and corrective actions shall be documented on forms acceptable to the City. Inspection observation and documentation shall include description of construction activity and location by Contract Specifications Section.

B. All materials are subject to inspection, sampling, and testing at any time before Final Acceptance of the Work.

1. References in the Contract to a test designation of the American Society for Testing and Materials (ASTM) or other recognized national organization shall mean the latest revision of that test method or specification for the work in effect on the day the Request for Proposals (RFP) for the Work is dated, unless otherwise noted.

2. Materials will be sampled and tested by the Contractor's construction QC testers and samplers. Copies of all test results will be furnished to the Contractor's Representative, the QA Manager, and the City. The exception to this is when a test is done for the Contractor as process control assuring that its process and materials source is producing an acceptable product. Process control tests usually occur when an operation is begun and when changes occur in the source of materials or method of production.

3. The City may observe any testing performed by the Contractor's construction QC testers and samplers. If the City observes a deviation from the specified sampling or testing procedures, the City shall verbally describe the observed deviation to the Construction QC Manager, followed by a written Non-Conformance Report (NCR) covering the deviation to the Construction QC Manager and Contractor's Representative within twenty-four hours.

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1.08 SAMPLING AND TESTING

A. Unless otherwise specified, all sampling and testing shall be in accordance with the methods prescribed in the current standards of the ASTM or other specified published standards, as applicable to the class and nature of the article or materials considered; however, the City reserves the right to use any generally-accepted system of sampling and testing which, in the opinion of the Engineer will assure the City that the quality of the workmanship is in full accord with the Contract Documents.

B. Laboratory Tests:

1. All laboratory testing shall be performed by an independent, qualified testing laboratory retained by task order by the City, or performed by the City itself at its laboratory.

C. Qualification of Laboratory Testing Personnel: Personnel performing laboratory tests shall be qualified for such work by virtue of prior experience and training.

D. Testing Equipment: Testing equipment shall be in satisfactory operating condition, of adequate capacity and range, and accurately calibrated. Testing equipment shall be calibrated in accordance with national standards which are certified by the National Institute of Standards and Technology. Testing equipment shall be calibrated at the frequency recommended by the equipment manufacturer.

E. Test Program Plan:

1. A Test Program Plan shall be prepared, identifying the approach for accomplishing each of the specified tests.

2. A narrative shall be prepared for each test specified, describing the test set-up, equipment, and instrumentation that will be used; procedure to be implemented; and the anticipated, as well as acceptable, test results.

3. Drawings showing the relationship of the test sample and all significant components of the test equipment shall be included, as necessary, to describe the test set-up and procedure.

4. The Test Program Plan shall include:

   a. Test sequencing.

   b. Equipment specifications and calibration methods for all testing equipment.

   c. Identity and qualifications of personnel who will perform testing.

   d. Proposed format for reporting test data.

   e. The projected schedule for the test procedure submittals, test executions, and test results' report submittals.

5. After approval of the Test Program Plan, any proposed changes will require approval of the City of Fremont prior to implementing the change.

F. Any waiver by the City of any specific testing or other quality assurance measures, whether or not such waiver is accompanied by a guarantee of substantial performance as a relief from the specified testing or other quality assurance requirements as originally specified, and whether or not such guarantee is accompanied by a "performance bond" to assure execution of any necessary corrective or remedial Work, shall not be construed as a waiver of any prescriptive or performance requirements of the Contract Documents. "Performance bond" as used herein is a separate bond in addition to the Contract Performance Bond required in Article 13.3 of the General Conditions.

G. Notwithstanding the existence of such waiver, and in addition to any testing and inspection performed by any other inspector on behalf of the City or any other public agency having jurisdiction, the Engineer shall have the right to make independent investigations and tests, and failure of any portion of the Work to meet any of the requirements of the Contract Documents, shall be reasonable cause for the Engineer to require the removal or correction and reconstruction of any such work in accordance with the General Conditions.

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1.09 TIME OF INSPECTIONS AND TESTS

A. Samples and test specimens required under the Contract Documents shall be furnished by the Contractor and prepared for testing in ample time for the completion of the necessary tests and analyses before the subject materials or articles are to be used. The Contractor shall furnish all required test specimens at its own expense. Except as otherwise provided in the Contract Documents, performance of the required initial test and first re-test will be by the City, and all costs therefore will be borne by the City; except, that the cost of any test after the first re-test shall be borne by the Contractor.

B. Whenever the Contractor is ready to backfill, bury, cast in concrete, hide, or otherwise cover or make inaccessible any work under the Contract, the Contractor shall notify the Engineer not less than 48 hours in advance of beginning any such work of backfilling, burying, casting in concrete, hiding, covering, or making inaccessible any portion of the Work to be inspected, so that the required inspections can be scheduled and performed. Failure of the Contractor to notify the Engineer at least 48 hours in advance of any such inspections shall be reasonable cause for the Engineer to require sufficient delay in the Contractor's schedule to allow time for such inspections and any remedial

or corrective work required, and all costs of such delays, including its impact or effect upon other portions of the Work shall be borne by the Contractor.

C. Provide timely coordination for inspection by permit and code authorities.

1.010 CITY OF FREMONT'S MONITORING

A. The City will verify that milestones are met in accordance with the Contractor's schedule of milestones and will verify quantities of any unit priced work items.

B. A monthly audit of milestones and quantities of any unit priced work items will be performed and any required correction will be made to the subsequent progress pay estimate.

C. This review and audit will assure that the milestone achievement and correct quantities are shown.

D. Documents for payment of Change Orders must also contain sufficient information to satisfy an audit.

1.11 INDEPENDENT REFEREE LABORATORY

A. The City will retain the services of an independent certified laboratory on an "on-call" basis to act as a "referee" laboratory for resolution of disputes regarding sampling and testing results reported by the City's verification samplers and testers and the Contractor's construction QC samplers and testers.

1. The services of the "referee" laboratory may be requested by the Cityor by the Contractor.

2. The frequency and location of sampling and testing will be mutually agreed by the City and the Contractor prior to the referee laboratory's performing its work.

3. The sampling and testing results determined by the "referee" laboratory shall be final and binding on both parties and not subject to disputes resolution.

B. The party whose sampling and testing results are not confirmed and/or supported by the "referee" laboratory (i.e., the unsuccessful party) shall be responsible for payment for the "referee" services.

1. If the City is the unsuccessful party, it will make payment directly to the "referee" laboratory.

2. If the Contractor is the unsuccessful party, the cost of the "referee" laboratory services will be deducted from the monthly progress payment(s) otherwise due, and the City will make payments to the "referee" laboratory on behalf of the Contractor.

3. If the sampling and testing results obtained by the referee laboratory are inconclusive and do not clearly identify which party's results are correct, the cost of the referee laboratory's services will be shared equally between the Contractor and the City. The City will make full payment to the referee laboratory and the Contractor's share will be deducted from the next progress payment.

C. The "referee" laboratory will not be associated with the Contract in any capacity or be affiliated with any party to the Contract or with any Principal Participant, the

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Designer and/or Subcontractor. The "referee" laboratory shall not be a department, agency, or office of any stakeholder.

1.12 CONTRACTOR SCHEDULING AND NOTICE TO THE CITY

A. The Contractor shall notify the City in writing by Friday noon of each week of planned design reviews and construction activities, including fabrication, for the following two weeks to allow the City to schedule its resources. The Contractor will deliver this information at the weekly coordination meeting where related discussion will occur.

B. For activities (such as, fabrication) occurring out of the immediate Contract area (beyond 100 miles of the City), the Contractor shall give the City at least 21 Days of notice of planned work.

1.13 DOCUMENTATION

A. Construction: The Contractor shall collect and preserve each of the following types of data in written form concurrently during the Contractor's performance of the Work, all of which shall be in a format acceptable to the City. The Contractor may use forms provided by the City or its own forms providing equivalent information. Refer to Contract Specifications Section 01 43 00, Quality Assurance for additional requirements.

1. Daily manpower and equipment reports for the Contractor and each Subcontractor for construction-related activities shall be prepared and maintained by the Contractor.

2. A daily log for construction-related activities in a narrative form recording all significant occurrences on the Contract, including, unusual weather; asserted occurrences; events and conditions causing or threatening to cause any significant delay, disruption, or interference with the progress of any of the Work; significant injuries to persons or property; and a listing of each activity depicted on the current monthly plan update which is being actively prosecuted.

3. For utility-related work such data shall be maintained separately for each utility facility.

4. For harmful/hazardous material remediation work, such data shall be maintained separately for each site.

5. Records shall document all QC operations, inspections, activities, and tests performed, including the work of Subcontractors. Such records shall include any delays encountered and work noted that does not conform to the requirements of the Contract and design together with the corrective actions taken regarding such work.

6. Records shall document the measurement of quantities for all unit priced items, if any.

B. Test Reports:

1. Within five Days after completion of testing performed by or for the Contractor, submit test results of such tests to the City of Fremont.

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a. Identify test reports with the information specified for Submittals in Contract Specifications Section 01 30 00, Submittal Procedures.

b. Include the name and address of the organization performing the test and the date(s) of the tests.

2. Test reports shall include the following information:

a. Actual test results compared with the Contract requirements and identification of all non-conforming items.

b. Calibration certificates.

3. The City of Fremont will make available to the Contractor copies of all test reports of tests performed by the City of Fremont.

C. Weekly Documentation: The Contractor shall complete and submit appropriate weekly documentation that includes factual evidence that required activities or tests have been performed, including the following:

1. The type, number, and results of QC and control activities, including reviews, inspections, tests, audits, monitoring of work performance, and materials analysis;

2. Closely-related data such as qualifications of personnel, procedures, and equipment used;

3. The identity of the QC inspector or data recorder, the type of test or observation employed, the results, the acceptability of the work, and action taken in connection with any deficiencies noted;

4. The nature of non-conforming work and causes for rejection;

5. Proposed corrective action;

6. Corrective actions taken; and

7. Results of corrective actions.

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1.14 SOURCE OF MATERIALS

A. In accordance with Contract Specifications the Contractor shall notify the City of Fremont in writing of the sources from which the Contractor proposes to obtain materials requiring City approval, certification or testing.

B. The Contractor may use certificates of compliance for certain materials and products in lieu of the specified sampling and testing procedures.

1. Submit any certificates required for demonstrating proof of compliance of materials with specification requirements with each lot of material delivered to the Work. The lot so certified shall be clearly identified by the certificate. Certificates shall be signed by an authorized representative of the producer or manufacturer and shall state that the material complies in all respects with Contract requirements.

2. The Project Schedules shall indicate the date scheduled for submittal of the certificates as specified in Contract Specifications Section 01 32 16, Project Progress Schedule. In the case of multiple shipments, each of which shall be accompanied by a certificate of compliance, the scheduled date on the Project Schedules shall indicate the initial submittal only.

3. The certificate of compliance shall be accompanied by a certified copy of test results or shall state that such test results are on file with the producer or manufacturer and shall be furnished to the City on request. The certificate shall give the name and address of the organization performing the tests, the date of the tests, and the quantity of material shipped information as specified in Contract Specifications Section 01 30 00, Submittal Procedures.

4. Materials used on the basis of a certificate of compliance may be sampled and tested by the City of Fremont at any time. The fact that material is used on the basis of a certificate of compliance shall not relieve the Contractor of its responsibility for incorporating material in the Work that conforms to the requirements of the Contract, and any such material not conforming to such requirements will be subject to rejection, whether in place or not.

5. The City reserves the right to refuse to permit the use of certain materials on the basis of a certificate of compliance.

1.15 MANUFACTURERS' SPECIFICATIONS AND INSTRUCTIONS

A. Unless otherwise indicated or specified, manufactured materials, products, processes, equipment, systems, assemblies, and the like shall be erected, installed, or applied in accordance with the manufacturers' instructions, directions, or specifications. Said erection, installation, or application shall be in accordance with printed instructions furnished by the manufacturer of the material or equipment concerned for use under conditions similar to those at the Jobsite.

B. Any deviation from the manufacturers' printed installation instructions and recommendations shall be explained and acknowledged as correct and appropriate for the circumstances, in writing, by the particular manufacturer. The Contractor will be held responsible for installations contrary to the respective manufacturers' instructions and recommendations.

1.16 SPECIALIST APPLICATOR / INSTALLER

A. Materials, equipment, systems, and assemblies requiring special knowledge and skill for the application or installation of such materials, equipment, systems, or assemblies shall be applied or installed by the specified product manufacturer or its authorized representative or by a skilled and experienced Subcontractor qualified and specializing in the application or installation of the specified product.

B. The Contractor shall ensure that the installation Subcontractor is approved by the product manufacturer, as applicable.

1.17 MANUFACTURERS' FIELD SERVICES

A. The Contractor shall have the manufacturer of a product, system, or assembly that requires special knowledge and skill for the proper application or installation of such product, system, or assembly provide appropriate field or job service at no additional cost to the City. The Contractor shall have the manufacturer inspect and approve the application or installation work.

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B. The Contractor shall make all necessary arrangements with the manufacturer of the products to be installed to provide onsite consultation and inspection services to assure the correct application or installation of the product, system, or assembly.

C. The Contractor shall ensure that the manufacturer's authorized representative is present at the time any phase of this work is started.

D. The Contractor shall have the manufacturer inspect and approve all surfaces over which, or upon which, the manufacturer's product will be applied or installed.

E. The Contractor shall have the manufacturer's representative make periodic visits to the Jobsite as the work progresses as necessary for consultation and for expediting the work in the most practical manner.

1.18 FINISHED TOLERANCES

A. Except as specified otherwise in the individual Contract Specifications Sections, finished tolerances shall conform with the following requirements:

1. Walls: Finished wall surfaces shall be plumb and shall have a maximum variation of 1/8 inch in 8 feet when a straightedge is laid on the surface in any direction, and no measurable variation in any 2-foot direction.

2. Ceilings: Finished ceiling surfaces shall present true, level, and plane surfaces, with a maximum variation of 1/8 inch in 8 feet when a straightedge and water level are laid on the surface in any direction, and no measurable variation in any 2-foot direction.

3. Concrete Floors: Tolerances for concrete floors and pavement are specified in Contract Specifications Section, 03 30 00, Cast In Place Concrete.

4. Finished Floors: Finished floors shall be level to within plus or minus 1/8 inch in 10 feet. Where floor drains occur, slope finished floor to the drain at the rate of 1/8 inch per foot or as otherwise indicated on the Contract Drawings.

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PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

A. MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section "**Quality Control**" not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

END OF SECTION

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SECTION 01 50 50 Construction and Demolition Debris Management

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies requirements for diversion of construction and demolition debris from the landfill and accepted hauling practices.

B. Related requirements specified elsewhere include, but are not limited to:

1. Fremont Municipal Code
2. California Building Standards Code, most current version
3. Alameda County Waste Management Authority Ordinance 2008-01

1.02 PERFORMANCE REQUIREMENT

A. Performance Requirement: The performance requirement for this project is to divert:

- 50% of remaining construction and demolition debris to be reused or recycled

B. The Performance Requirement shall be satisfied by providing all of the following:

1. An approved Waste Handling Plan within 10 days of Notice to Proceed
2. Two Debris Diversion & Disposal Reports that include:

- receipts, weigh tags or other acceptable documentation from authorized recycling facilities or vendors that clearly indicate the materials management performance requirement was met.
- the City of origin listed as Fremont
- the type and weight of material reused or recycled
- the weight of material landfilled (garbage).

1.03 DEFINITIONS

A. **"Approved Recycling Service or Facility"** means an off-site service or facility that provides processing of material for recycling, composting or other diversion from landfill and is approved by the City of Fremont.

B. "**Construction or Demolition Debris**" shall mean brick, mortar, concrete, plaster, scrap wood, scrap metal, sheet rock, and other such bulky wastes associated with construction, demolition, refurbishing, renovation, excavation or other similar work on or related to a structure or property.

C. "**Conversion Rate**" means the rate set forth in the standardized Conversion Rate Table approved by the City of Fremont for use in estimating the weight or volume of materials identified in the Waste Handling Plan and Debris Diversion & Disposal Report.

D. "**Divert**" means to use material for any purpose other than disposal in a landfill and includes reuse and recycling.

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E. "**Generator**" means an owner or responsible party for a Commercial facility, which generates Recyclable Materials as a result of its business, facility or property activity, including construction sites.

F. "**Hauler**" means any person or entity that transports garbage, recyclables, yard waste or other discarded material.

G. "**Municipal Solid Waste**" means all putrescible and non-putrescible solid, semisolid and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial waste, Construction and Demolition Waste, and other discarded wastes.

H. "**Recyclable Materials**" mean materials which may be returned to the economic mainstream as commodities for reuse, or for processing to create new or reconstituted products, which if not segregated from garbage would otherwise become garbage. The Recyclable Materials must be segregated from garbage. Recyclable Materials include Single Commodity Construction and Demolition Debris.

I. "**Self Haul**" means Generators who transport his or her own materials by using a vehicle owned by the Generator and driven by the Generator's employees rather than using the hauling services of the City's franchise hauler or a third party hauling company.

J. "**Single Commodity Construction and Demolition Debris**" means Single Commodity Recyclable Materials from Commercial Generators which is source separated, and are a result of construction, remodeling, repair or demolition on pavement, houses, commercial buildings, multi-family dwellings and other structures, including construction job sites and may include single commodity materials such as bricks, mortar, scrap wood, scrap metal, and sheet rock. Soil, asphalt and concrete are exempt from this definition.

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1.04 SUBMITTALS

A. The Contractor is required to submit a schedule that will describe all construction, demolition and removal procedures, sequence of activities, and schedule of activities. The schedule must be submitted within 10 calendar days after receipt of Notice to Proceed, prior to any demolition or construction activities, and must be approved by the Project Manager.

B. The Contractor is required to submit a Waste Handling Plan to indicate how materials will be diverted from landfill and which facility or service will be used. The Waste Handling Plan must be submitted within 10 calendar days after receipt of Notice to Proceed and must be approved prior to any demolition or construction activities. Submit this form to: City Project Manager (See Notice to Bidders for contact information).

C. The Contractor is required to submit a completed Debris Diversion & Disposal Report including receipts, weigh tags or other acceptable documentation at 50 percent completion of the Work. The report should be submitted within 30 calendar days of 50% completion of the Work.

D. The Contractor is required to submit a completed Debris Diversion & Disposal Report including receipts, weigh tags or other acceptable documentation at 100 percent completion of the Work. The report should be submitted within 30 calendar days of the completion of the Work. Final

payment will not be issued until the documentation is approved or outstanding fines resolved.

E. Contractors who choose to self-haul construction debris instead of using Republic Services debris box will be required to submit monthly Debris Diversion & Disposal Reports.

1.05 QUALITY ASSURANCE

A. Republic Services is the only hauler authorized to haul garbage and construction debris from Fremont. The contractor must subscribe to debris box service with Republic Services for all materials, except soil, asphalt and concrete.

B. **Alternately, the contractor may self-haul the construction and demolition debris, using their own employees, equipment, and vehicles, to an approved facility, if the debris being hauled is an incidental part of construction or demolition services provided by the contractor.**

C. A City of Fremont Business tax (license) is required of all persons working in Fremont, including all contractors, subcontractors, and vendors.

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1.06 WASTE HANDLING PLAN DEVELOPMENT and IMPLEMENTATION

A. The Waste Handling Plan is an estimate of the amount and type of debris that will be generated from the project. It is important to create a Waste Handling Plan prior to starting the project to identify costs, potential savings and ensure proper recycling of the materials needed to achieve the diversion requirement. Estimate the amount and type of debris generated from the project, and then develop a plan for diverting the required percentage of construction and demolition debris from the landfill.

1. Identify each type of debris item generated during the project (wood, scrap metal, etc.). Propose means and methods for collecting and separating each type of debris deemed reusable or recyclable. *Recommended Handling and Storage Procedures* with suggested actions for salvage or recycling of each type of demolition and construction debris are provided at the end of this section.

2. Estimate the weight or volume, by number of tons or cubic yards (CY), of each item that will be reused, recycled, or disposed in a landfill. Enter this number in the appropriate columns. If the materials are to be reused on site, list that in Reuse column: i.e., "wood waste chipped on site for mulch."

3. Include a good faith estimate of each type of construction debris generated by the project. Submit with calculations based upon weight of each material. Items subject to the good faith estimate and diversion requirement include:

   a. Permeable Rock
   b. Subgrade material
   c. Plastic
   d. Trash/Garbage
   e. Wood and Pallets (unpainted)

4. List the name of an approved recycling facility or service provider for each type of debris. Contact the facility and verify that they can accept that debris item in the proposed quantities anticipated. Schedule each

debris item and list the recycling service and recycling company name, telephone number, address, and person contacted.

B. Implementation

1. Maintain a log of each load, of each debris category item diverted from landfill and materials sent to recycling facilities. Log any debris sent to a Class III landfill separately. Maintain the receipts and weigh tags from all disposal and recycling activities.

   a. Include the following information in the log: type of load, load weight, name of recycling service or facility, and date accepted by recycling service or by facility.

   b. The Project Manager reserves the right to audit the log at any time. Contractor shall retain and provide to Project Manager all weight tickets, copies of receipts, invoices, and any other documentation related to the recycling or disposal of generated debris.

   c. Units of measure: Use same units as stated in the approved plan "good faith" estimate of construction or demolition debris (tons or cubic yards).

2. Designate specific on-site area(s) to facilitate separation of materials for potential reuse, salvage, and recycling. Do not mix garbage with materials designated for reuse, recycling or composting. Loads designated for recycling may not contain more than 10% garbage by weight or volume.

   a. Keep garbage bins and pile areas neat and clean. Signage is required to clearly mark bins for each category of debris.

   b. When ordering a debris box, be sure to specify that the materials must be recycled, not landfilled. Inform the debris box vendor that you will require documentation that clearly states the city of origin as Fremont, identifies the type and weight of material reused or recycled.

   c. Landscape/plant debris: Separate plant and tree debris from other materials. The landscape debris must be composted, chipped, used for mulch or fuel. It is illegal to dispose of plant debris in an Alameda County landfill. Landscape debris shall not be taken out of county to avoid this requirement.

3. Training and Coordination

   a. Provide on-site instruction of appropriate salvage, reuse, separation, handling, and recycling methods to be used by all entities at the appropriate stages of the Project.

   b. Provide copies of the Waste Handling Plan to all on-site supervisors, each subcontractor, and the Project Manager.

   c. Include construction debris management on the agenda of meetings. At a minimum, discuss mandatory recycling requirements and debris management issues at the following meetings:

4. Pre-demolition/pre-construction meeting

   a. Regularly scheduled job-site meeting

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PART 2 - PRODUCTS

2.01 MATERIALS, EQUIPMENT AND FACILITIES

A. Furnish all materials, tools, equipment, devices, appurtenances, and services required for performing the salvage, demolition, and construction. Dispose of debris in a safe, acceptable manner, at approved facilities. Burying of trash and debris on the site is not permitted.

B. Republic Services is the only approved hauler for materials in Fremont. The contractor must subscribe to debris box service for garbage and recycling with Republic Services.

C. The contractor may self-haul construction and/or demolition debris to an approved recycling/disposal facility, only if they use their own equipment, vehicles and employees, as part of a total construction or demolition project. Such debris removal must be provided incidentally to construction or demolition services provided by the contractor. It is illegal to subcontract with a third party to haul garbage. Contractor can continue to self-haul construction debris off-site if all these conditions are met:

- Contractor is providing a construction or demolition service on site and the debris removal is an incidental part of the work performed; and
- Contractors use their own employees, company vehicles and equipment; and,
- Contractors deliver the construction debris to an approved facility (see list of approved facilities)
- All contractors and subcontractors must be licensed to do business in Fremont

D. The following facilities and service providers are approved to accept Construction & Demolition Debris for recycling:

1. Fremont Recycling and Transfer Station, 41149 Boyce Road, Fremont (510) 252-0500 www.fremont-recycling.com/
2. Newby Island Landfill, 1601 Dixon Landing Road, Milpitas (408) 432-1234
3. Guadalupe Landfill, 15999 Guadalupe Mines Road, San Jose (408) 268-1670
4. Zanker Material Processing Facility, 675 Los Esteros Road, San Jose (408) 263-2384
5. Davis Street Recycling and Transfer Station, 2615 Davis Street, San Leandro (510) 563-4257
6. Stevens Creek Quarry, 12100 Stevens Canyon Rd, Cupertino, CA (408) 253-2512

E. Services required for construction materials management:

Type of Material	***Approved Service Provider***
All Garbage / Municipal Solid Waste	• Republic Waste debris box or;

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	• Contractor self-haul to approved facility
Source separated recyclable material (scrap wood, plant debris, sheetrock)	• Republic Waste debris box or; • Contractor self-haul to approved facility
Source separated recycling commodity (metal)	• Republic Waste debris box or; • Contractor self-haul to approved facility; or • Any approved debris box from metal recycler (Schnitzer Steel, Sims Metals, etc.)
Source separated inerts (concrete, asphalt, soil)	• Republic Waste debris box or; • Contractor self-haul to approved facility/quarry, or; • Any approved debris box from inert recycler (Vulcan Materials, etc.)

F. The following materials cannot be collected in Republic Services debris box containers: asbestos, batteries, hazardous waste. Liquids, paints, oils, medical waste, tires, televisions, monitors and appliances containing chlorofluorocarbons (CFC's)

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PART 3 - EXECUTION

3.01 GENERAL

A. Conduct construction and demolition to minimize interference with adjacent building areas.
B. Conduct operations with minimum interference to public or private access.
C. Maintain protected egress and access at all times.
D. Perform demolition work in accordance with ANSI A10.6 and the accepted demolition plan or program.
E. Remove items indicated for demolition within the limits of the work, and as required to complete the work of this contract. Do not remove anything beyond the limits of work indicated without prior written approval by the Project Manager. If in doubt whether to remove an item, obtain written approval by the Project Manager prior to proceeding.
F. Remove materials from site as work progresses, at least weekly. Remove debris from the site so that its presence will not delay the progress of the work. Debris shall be the property of the Contractor and shall be removed and disposed of in a legal manner off the City's property.

3.02 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section '**Construction and Demolition Waste Management**,' not otherwise provided for, shall be considered included in prices paid for the various contract items of work involved and no additional compensations will be allowed therefor.

Waste Handling Plan - Form 1
(Pre-Demolition/Pre-Construction)

Applicant must reuse or recycle 100% of asphalt/concrete and 50% of remaining items.

Permit BLD/PWC # _____ Project Name:_____

Project Address: _____ Date:_____

Contractor: _____ Contact:_____

Phone: _____ Email:_____

Type of Project:_____

Check the box for each type of material that will be generated during the project. Place the check in the appropriate column whether the item will be reused, recycled, or landfilled. Provide the name of each approved recycling facility/service provider for each material. Allied Waste is the only approved hauler for garbage and recycling. Applicant may self-haul material.

SAVE ALL RECEIPTS FOR SUBMITTAL TO THE CITY OF FREMONT WITH A FINAL DIVERSION REPORT

Failure to provide proper documentation will result in a $1000 per ton penalty for each ton not recycled

Material	Reused	Recycled	Landfilled	Name of Recycling Facility or Vendor
Asphalt/ Concrete **(100% reuse/recycle required)**			N/A	
Plant or Tree Debris **(100% reuse/compost required)**			N/A	
Dirt/Clean Fill			N/A	
Brick				
Building Materials (doors, etc.)				
Cardboard				
Carpet/Foam/Padding				
Dry Wall/Sheetrock (scrap)				
Metal				
Mixed C&D (ie,wood, metal, drywall, film plastic)				
Plastics, including film plastic				
Wood - unpainted or pallets				
Wood - treated/painted		N/A		
Garbage	N/A	N/A		Republic Services
Other:				
TOTALS:				

For City Use: Date Approved_____ **Not Approved**_____

Staff Signature_____ **Waived**_____

Waste Handling Plan Acknowledgment

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The Foreman for each Subcontractor that comes on site is to receive a copy of the Construction Waste Handling Plan and complete this Acknowledgment Form.

I have read the Waste Handling Plan for the project; I understand the goals of this plan and agree to follow the procedures described in this plan.

DATE	SUBCONTRACTOR COMPANY NAME	FOREMAN NAME	SIGNATURE

All Subcontractors shall comply with the project's Waste Handling Plan and foremen shall sign the Acknowledgment Sheet.

Subcontractors who fail to comply with the Waste Handling Plan will be subject to backcharges or withholding of payment, as deemed appropriate. For instance, Subcontractors who contaminate debris boxes that have been designated for a single material type will be subject to backcharge or withheld payment.

1. The project's debris diversion requirements are 100% of asphalt, concrete, inerts, plant debris and 50% of the remaining debris.

2. 50% of the waste that is generated on this jobsite will be diverted from the landfill and recycled for other use.

3. The Waste Handling Plan identifies the materials that will be generated on this project, and the diversion strategy for each material type.

4. Waste prevention and recycling activities will be discussed at the beginning of subcontractor meetings. As each new subcontractor comes on-site, the contractor will present him/her with a copy of the Plan and provide a tour of the jobsite to identify materials to be salvaged and the procedures for handling jobsite debris. All Subcontractor foremen will acknowledge in writing that they have read and will abide by the Plan. The Waste Handling Plan will be posted at the jobsite trailer.

5. Salvage: Excess materials that cannot be used in the project, should be returned to the vendor, the owner, or donated to charity if feasible.

6. Republic Services will provide a commingled drop box at the jobsite for most of the construction waste. These commingled drop boxes will be taken to the Fremont Recycling and Transfer Station. The average diversion rate for commingled waste will be 50%. As site conditions permit, additional drop boxes will be used for particular phases of construction (e.g., concrete and wood waste) to ensure the highest waste diversion rate possible.

7. In the event that the waste diversion rate achievable via the strategy described above, is projected to be lower than what is required, then a strategy of source-separated waste diversion and/or waste stream reduction will be implemented. Source separated waste refers to jobsite waste that is not mixed but is instead allocated to a debris box designated for a single material type, such as clean wood or metal.

8. In the event that site use constraints (such as limited space) restrict the number of debris boxes that can be used for collection of designated waste the project Superintendent will, as deemed appropriate, allocate specific areas onsite where individual material types are to be consolidated. These collection points are not to be contaminated with non-designated waste types.

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CITY OF Fremont

Debris Diversion & Disposal Report

(After Demolition/Construction)

Attach copies of receipts, gate tags, or other verifying documentation.

Applicant must reuse or recycle 100% of asphalt/concrete and 50% of remaining items.

Failure to provide documentation will result in a $1000 per ton penalty for each ton not recycled.

Permit BLD/PWC: _____ Project Name: _____

Project Address: _____ Date: _____

Contractor: _____ Contact: _____

Phone: _____ Email: _____

Type of Project: _____

Material	Tons/CY Reused	Tons/CY Recycled	Tons/CY Landfilled	Name of Recycling Facility or Service
Asphalt/ Concrete **(100% reuse/recycle required)**			N/A	
Plant or Tree Debris **(100% reuse/compost required)**			N/A	
Dirt/Clean Fill			N/A	
Brick				
Building Materials (doors, etc.)				
Cardboard				
Carpet/Foam/Padding				
Dry Wall/Sheetrock (scrap)				
Film Plastic				
Metal				
Mixed Const & Demo (C&D) (ie,wood, metal, drywall, film plastic)				
Plastic				
Wood - unpainted or pallets				
Wood - treated/painted	N/A	N/A		
Garbage	N/A	N/A		Republic Services
Other:				
Totals:				

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PROJECT SUMMARY

A. Total tons of materials salvaged, reused, or recycled (except A/C): _____

B. Total tons of materials landfilled (not recycled): _____

C. Total tons of materials generated for the project (Line A+B): _____

D. Percentage of materials recycled/reused (divide A by C x100%): _____%

For City Use Only: Approved _____ **Not Approved** _____

Waived _____ **Staff Initials** _____

Instructions for Completing the Debris Diversion & Disposal Report (DDDR)

The Debris Diversion & Disposal Report lists the actual amount of debris that was generated from

the construction or demolition project.

1. Identify each type of debris item generated during the project (wood, scrap metal, etc.)
2. Enter the weight or volume (by number of tons or cubic yards (CY)), of each item that was reused, recycled, or disposed in a landfill. Enter this number in the appropriate columns.
3. All the asphalt/concrete was to be reused or recycled. 50% of everything else must be reused or recycled to comply with the mandatory debris recycling ordinance. The asphalt and concrete tonnage will not count towards the 50% diversion requirement.
4. Attach receipts from each of the approved facilities or service providers who recycled/processed that material. Approved facilities are listed below. The receipts must indicate "Fremont" as the City of origin to be accepted.
5. If the materials were reused on site, list that in Reuse column: i.e., "wood waste chipped on site for mulch" with an estimate of the weight or volume.

Attach all receipts from all facilities and vendors for each type of debris item. The totals on the form should match the receipts. This report is due within 30 days of completing your project. This report and the receipts are needed to get your Final Permit Approval. Failure to provide documentation will result in a $1000 per ton penalty for each ton not recycled.

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Approved Recycling Facilities

Fremont Recycling & Transfer Station:
41149 Boyce Road, Fremont 510-252-0500 www.fremont-recycling.com
Newby Island Landfill/Recycling Facility
1601 Dixon Landing Road, Milpitas 408-262-1401
Zanker Material Processing Facility
675 Los Esteros Road, San Jose 408-263-2384
Guadalupe Landfill
15999 Guadalupe Mines Road, San Jose 408-268-1670
Davis Street Transfer Station
2615 Davis Street, San Leandro 510-563-4257
Stevens Creek Quarry (concrete, asphalt, dirt only)
12100 Stevens Canyon Rd. Cupertino 408-253-2512

Conversion Factors

Material	Lbs/cubic yard	Tons/cubic yard	Cubic yds/ton
Wood	300	0.15	6.7
Wood (chipped)	650	0.33	3
Cardboard	100	0.05	20
Drywall	700	0.35	2.9
Asphalt	1400	0.7	1.4
Concrete	2600	1.3	.77
Mixed Waste	350	0.175	5.7
Mixed C&D Debris	900	0.45	2.2

Conversion Factors
The following conversion factors are estimates. The ranges vary widely, depending on how the materials are handled (compacted, loose, chipped, etc.).

Recommended Handling & Storage Procedures

Item or Material by	Suggested Action
02 SITEWORK	
Asphalt Paving	***Salvageable*** - reuse for temporary road construction
Chain Link Fencing	***Salvageable*** - roll up chain link and cut off posts to maximum length allowable - all accessories (tops, clamps, bolts, straps, etc.) should be kept together in a container
Wood Fencing	***Salvageable*** - if possible, dismantle in sections for easy re-erection - cut posts off at ground level
03 CONCRETE	
Cast-in-place Concrete	Recyclable - typically too large for salvage and reuse
Precast Concrete	Recyclable - typically too large for salvage and reuse
04 MASONRY	
Concrete Block	***Salvageable*** - if not concrete filled - recyclable if filled with concrete
Paving Stones	***Salvageable*** - stack and palletize for easy removal
Brick	***Salvageable*** - if set with lime-based mortar - recyclable if set with concrete
Decorative Concrete Block	***Salvageable*** - if not concrete filled - recyclable if filled with concrete
05 METALS	
Reinforcing Steel (rebar)	Recyclable - usually imbedded in concrete, therefore not reusable
Steel Flashing	Recyclable - usually not in suitable condition for reuse
Interior Metal Wall Studs	Recyclable - usually too time-consuming to save in suitable condition for reuse, therefore not cost effective
Structural Steel	***Salvageable*** - includes I-Beams, H-Beams, Square Tubing, Pipe, and Chanel Iron - ensure care is taken to keep straight - separate by size
Cast Iron	Recyclable - usually too old and brittle for reuse
Copper	Recyclable - rarely salvageable due to the possibility of damage while salvaging
Aluminum Soffit	Recyclable - usually not in suitable condition for reuse
Misc. Steel	***Salvageable*** - includes Pipe, Q-decking, Square-tubing, and Wilson joists - prior to reuse must determine the item's structural ability to meet current Building Code - recyclable if item is bent or structural ability is compromised
06 WOOD & PLASTICS	
Regular Wood Framing	***Salvageable*** - all lumber should be slated, stacked and banded according to dimension and lengths - stacks should be kept uniform (ensure piles fit in accordance with truck deck, 2 piles side by side - each pile a maximum width of 4' each including dunnage, height of piles should be kept to 3' to 4' maximum)
Pressure Treated Wood Framing	***Salvageable*** - same as regular wood framing
Regular Plywood Sheathing	***Salvageable*** - stack in piles keeping full sheets together and partial sheets together in lots of 50 pieces - separate by ¼", ½", ¾" etc. - recommend stacking nail side to nail side - materials should be kept dry by covering with plastic sheeting (which also allows for air flow)
Pressure Treated Plywood Sheathing	***Salvageable*** - same as regular plywood sheathing
Laminated Beams	***Salvageable*** - beams should be kept dry by covering with plastic sheeting (which also allows for air flow) - beams should be supported in such a manner as to keep them straight and should be slated to allow air flow when stacked
Wood Truss Joists	***Salvageable*** - joists should be supported in such a manner as to keep them straight and should be slated to allow air flow when stacked
Heavy Timbers/Posts	***Salvageable*** - all timber should be sorted according to dimension and length - timber should be slated to allow air flow - all damaged ends should be trimmed

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Item or Material by	Suggested Action
Washroom Counters	***Salvageable*** - if fixtures are removed, counters can be stored vertically (like doors) - should be kept dry
07 THERMAL & MOISTURE PROTECTION	
Roofing Gravel	***Salvageable*** - reusable
Fiberglass Bat Insulation	***Salvageable*** - prevent from getting wet
Rigid Fiberglass Insulation	***Salvageable*** - prevent from getting wet
Plastic sheeting Rigid Insulation	***Salvageable*** - stack and band for easy transport
Copper Flashing	Recyclable - usually too time-consuming to save in suitable condition for reuse, therefore not cost effective
Roof Drains, Metal	Recyclable - usually too time-consuming to save in suitable condition for reuse, therefore not cost effective
08 DOORS & WINDOWS	
Doors, Metal	***Salvageable*** - remove with full frame and hardware - apply a metal self tapping screw through the top of the door to hold it in the frame as a unit - label keys belonging to each door
Doors, Wood	***Salvageable*** - remove with full frame and hardware - nail the door through the frame to hold it from falling out of jam - label keys belonging to each door
Bi-Fold Doors, Metal	***Salvageable*** - remove all hardware parts and attach to door (e.g. in plastic zip lock bags) - wrap track on edge of door with duct tape
Bi-Fold Doors, Wood	***Salvageable*** - remove all hardware parts and attach to door (e.g. in plastic zip lock bags) - screw track on edge of door
Overhead Doors	***Salvageable*** - must be removed carefully (as doors have spring assembly) - all door hardware should be kept together - (hinges, screws, rollers, guides etc.) - door panels should be stacked face to face - track should be marked left and right - note, it is very important to keep all parts
Patio Doors	***Salvageable*** - remove and stand vertically with drains to the bottom
Metal Sliding Doors	***Salvageable*** - dependent on size and condition of doors and hardware - recyclable otherwise if too large or not in suitable condition
Mechanical Closures	***Salvageable*** - dependent on age and physical condition
Panic Hardware	***Salvageable*** - keep all parts together (e.g. in plastic zip lock bags)
Pre-Finished Aluminum Thermal Windows	***Salvageable*** - dependent on the size - smaller windows should always be salvaged but larger windows can be difficult to resell (especially if fixed/non-opening)
Metal Sash Windows	***Salvageable*** - if small but limited marketability - recyclable otherwise by removing glass and recycling metal frame
Glass Panels	***Salvageable*** - limited marketability - store vertically or horizontally - ensure panels are level or supported in order to prevent damage to the seal
Unframed Glass Mirrors	***Salvageable*** - store vertically on either a carpet, cardboard, or rubber surface for protection - recommend storing face to face
Store Fronts	***Salvageable*** - best to be keep in one unit - store on A-frame rack and tie back
Skylights	***Salvageable*** - ensure that seal is not broken - store where

CITY COUNCIL REFERENCE ONLY

Item or Material by	Suggested Action
	not affected by wind
09 FINISHES	
Carpet/Carpet Tiles	***Salvageable*** - if in very good condition
Terra Cotta Tile	***Salvageable*** - dependent on quantities available, since sometimes difficult to match if product is obsolete
Metal Base Board	Recyclable - usually too time-consuming to save in suitable condition for reuse, therefore not cost effective
Wood Base Board	***Salvageable*** - remove, denail (if possible), stack face to face, and hold together with duct tape - keep sizes and lengths together (if possible)
Hardwood Flooring	***Salvageable*** - if tongue and groove flooring - remove, denail, stack face to face, and hold together with duct tape - keep lengths together (if possible) - thin strip flooring is not salvageable (i.e. too thin for refinishing)
Gypsum Panels	Recyclable
Wood Paneling	***Salvageable*** - if in suitable condition (otherwise not cost effective) - recyclable otherwise (with clean wood)
Metal Suspension System	Recyclable - usually too time-consuming to save in suitable condition for reuse, therefore not cost effective
Specialty Wood Finishes	***Salvageable*** - includes mantels, built-in shelving, bookcases, crown moldings, and window sash - keep all trim work where possible
Cabinets	***Salvageable*** - includes kitchen and bathroom cabinets - if possible, take a picture of the cabinet in place prior to removal as this will give potential purchasers a better idea of how the cabinets look in place
10 SPECIALTIES	
Toilet Partitions	***Salvageable*** - must ensure all hardware is available
Framed Glass Mirrors	***Salvageable*** - store vertically on either a carpet or rubber surface for protection - recommend storing face to face
Towel Racks, Soap Dispensers, and Other Washroom Accessories	***Salvageable*** - for commercial products ensure all keys to open units are included
Shower Stalls	***Salvageable*** - if acrylic stalls - ensure the stall is suitable condition and not cracked or overly worn
Chalk boards and White boards	***Salvageable*** - limited marketability
Metal Lockers	***Salvageable*** - for ease of handling and resale, break into units of 6 or less
Old Hardware	***Salvageable*** - includes glass door knobs, hinges, and antique items
11 EQUIPMENT	
Household appliances	***Salvageable*** - if in suitable condition - includes fridges, stoves, stove hoods, dish washers, freezers, washers, and dryers
12 FURNISHINGS	
Metal File Cabinets	***Salvageable*** - only if in very good condition
Metal Shelving Unit	***Salvageable*** - when dismantling ensure all bolts, nuts and additional parts are kept together - recommend marking sections in order to make it easier to re-erect
Commercial Metal Racking	***Salvageable*** - when dismantling ensure all bolts, nuts

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Item or Material by	Suggested Action
	and additional parts are kept together - recommend marking sections in order to make it easier to re-erect
Metal Desks	***Salvageable*** - if in suitable condition - recyclable otherwise
Wood Desks	***Salvageable*** - if in suitable condition
14 CONVEYING SYSTEMS	
Winches	***Salvageable*** - if in suitable mechanical condition - recyclable otherwise
15 MECHANICAL	
Toilets	***Salvageable*** - limited marketability due to current Plumbing Codes (white toilets offer the best resale opportunities) - recyclable otherwise (sink with concrete and taps with metals)
Urinals	***Salvageable*** - ensure there are no cracks and the hardware is working - recyclable otherwise (sink with concrete and taps with metals)
Ceramic Sinks	***Salvageable*** - if in suitable condition, recyclable otherwise (sink with concrete and taps with metals)
Stainless Steel Tanks	***Salvageable*** - dependent on previous usage (sometimes required to destroy for contamination reasons) - recyclable otherwise
Janitor Sinks	***Salvageable*** - dependent on its condition - recyclable if made of old cast iron
Bath Tubs	***Salvageable*** - dependent on its condition and colour (white bath tubs and old claw foot tubs offer the best resale opportunities)
Radiators	***Salvageable*** - dependent on size (for ease of handling, 20 to 25 ribs would be the maximum suitable size for salvaging) and condition - recyclable otherwise
Hot Water Tanks	***Salvageable*** - if year 1995 or newer - recyclable otherwise
Suspended Blow Heaters	***Salvageable*** - if year 1990 or newer - recyclable otherwise
Wall Mount Radiators	***Salvageable*** - dependent on its condition - recyclable otherwise
Wall Mount Electric Radiators	***Salvageable*** - dependent on its condition - recyclable otherwise
Mechanical Water Pumps & Tanks	***Salvageable*** - dependent on its condition - recyclable otherwise
Oil Interceptor	Recyclable
Oil Storage Tank	***Salvageable*** - dependent on previous usage (sometimes required to destroy for contamination reasons) - recyclable otherwise
Ventilation Ducting	***Salvageable*** - dependent on size and condition - recyclable otherwise
Metal Ducting\Ventilation	***Salvageable*** - dependent on size and condition - recyclable otherwise
Stainless Steel Ducting\Ventilation	***Salvageable*** - dependent on size and condition - recyclable otherwise
Copper Ducting\Ventilation	***Salvageable*** - dependent on size and condition - recyclable otherwise
Aluminum Ducting\Ventilation	***Salvageable*** - dependent on size and condition -

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Item or Material by	Suggested Action
	recyclable otherwise
Piping	***Salvageable*** - dependent on size and condition - recyclable otherwise
Exhaust Hood, Galvanized Metal	***Salvageable*** - dependent on size and condition - recyclable otherwise
Exhaust Hood, Stainless Steel	***Salvageable*** - dependent on size and condition - recyclable otherwise
Supply Air Units	***Salvageable*** - dependent on age, condition, and marketability - specialty item
Return Air Metal Grill	***Salvageable*** - if in suitable condition or collectable, recyclable otherwise (with metals)
Fresh Air Metal Diffuser	***Salvageable*** - if in suitable condition or collectable, recyclable otherwise (with metals)
Fire Bells	***Salvageable*** - if in suitable condition or collectable, recyclable otherwise (with metals)
Air Receiver Tank	***Salvageable*** - based on marketability - specialty item
Compressor Tank	***Salvageable*** - based on marketability - specialty item
Compressor Motor	***Salvageable*** - dependent on age and condition - recyclable otherwise
After Cooler	***Salvageable*** - based on marketability - specialty item
Boilers (hot water heating)	***Salvageable*** - dependent on age, size and condition - recyclable otherwise
HVAC Roof Systems	***Salvageable*** - dependent on age and condition - recyclable otherwise
Gas Furnaces	***Salvageable*** - dependent on size and condition and if year 1995 or newer - recyclable otherwise
16 ELECTRICAL	
Transformers	Usually tested for PCBs and if confirmed, then handled as a special waste - ***salvageable*** otherwise
Switch Boxes	***Salvageable*** - dependent on age, size and condition - recyclable otherwise
Receptacle Switches	***Salvageable*** - dependent on age and condition - landfilled otherwise
Receptacle Plugs	***Salvageable*** - dependent on age and condition - landfilled otherwise
Heat Detectors	***Salvageable*** - dependent on age, size and condition - landfilled otherwise
Exhaust Fans	***Salvageable*** - dependent on age, size and condition - recyclable otherwise
Electrical Ceiling Blade-Fans	***Salvageable*** - dependent on age, size and condition - recyclable otherwise
Incandescent Light Fixtures	***Salvageable*** - dependent on age, size and condition - recyclable or landfilled otherwise
Fluorescent Light Fixtures	Usually tested for PCBs and if confirmed, then handled as a special waste - ***salvageable*** otherwise - dependent on age and condition
Battery Lighting Fixtures (wall mount)	***Salvageable*** - dependent on age (as sometimes batteries are limited to holding a charge) - landfilled otherwise
Exit Lights	***Salvageable*** - dependent on age (as sometimes batteries are limited to holding a charge) - landfilled otherwise
Panel Boxes	***Salvageable*** - dependent on age, size and condition - recyclable otherwise
Commercial Vapor Lights	***Salvageable*** - dependent on age and condition - landfilled otherwise

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Item or Material by	Suggested Action
Street Lights on Poles	***Salvageable*** - dependent on age, size and condition - recyclable otherwise

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 01 51 00 Mobilization and Temporary Construction Facilities

PART 1 – GENERAL

1.01 RELATED SECTIONS

A. General Conditions, Article 7.2 (E)

B. Section 01 55 00 "Site Access and Storage"

C. Section 02 41 16 and 02 41 19 "Demolition"

D. Caltrans Standard Specifications, May 2015

1.02 DESCRIPTION

Work includes: Mobilization, temporary facilities and controls required for this work, at all sites include, but are not limited to: staging areas; temporary utilities such as water, electricity and telephone; haul roads; enclosures such as tarpaulins, barricades, and canopies; sanitary facilities; scaffolding and safety equipment, and for all other work and operations which must be performed or costs incurred prior to beginning work on the various contract items on the project site. All such temporary facilities for all sites shall be located for convenience and safety and maintained in a safe and sanitary condition at all times until completion of the Contract, then removed from the site and disposed of as required or as directed.

1.03 COMPLIANCE WITH CODES AND REGULATIONS

Compliance with all requirements of pertinent safety regulations is described in the General Conditions of the Contract for Construction and shall include, but not necessarily be limited to: Federal Occupational Health Administration (OSHA) and latest edition, Uniform Building Code (with California Amendments) and ADA (American Disability Act).

1.04 PRODUCT HANDLING

Use all means necessary to maintain all temporary facilities and controls in proper and safe condition throughout progress of the work. In the event of damage or loss, immediately make all repairs and replacements necessary and at no additional cost to the Owner.

1.05 SUBMITTALS

General Arrangement and Layout Drawings showing arrangement of all temporary facilities including all offices, parking, material storage warehouses, shops, material laydown, staging and storage areas, fences, and roads, within 30 Days of Notice to Proceed.

1.06 GOVERNING LAWS

Temporary facilities shall be in compliance with applicable federal, State, county, municipal, and local utility laws, rules, and regulations. Nothing in these Contract Documents shall be construed to permit work not conforming to such codes and regulations.

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1.07 TOOLS AND SUPPLIES

Provide engineering equipment and facilities, construction tools, equipment, materials, and supplies of the types and quantities necessary to facilitate the timely execution of the Work.

PART 2- PRODUCTS

2.01 TEMPORARY UTILITIES

A. The Contractor shall notify all Utility Companies of their Work. Notice will give sufficient time for inspection and disconnect of the utilities by the said Utility Companies.

B. The contractor shall pay all charges of gas, electric, and telephone utilities for temporary connections, disconnections and service to the work.

C. Provide safe distribution of required utilities to the job areas for use of all trades.

D. The contractor shall pay all charges of water, sewage and drainage for temporary services and connection/disconnection charges to the work. The City will pay for all permanent service charges for electrical, water, sewer and storm drainage.

2.02 TEMPORARY WATER

A. Provide, maintain and pay for suitable quality water service required for construction operations as required for the work, at the Contractor's expense. Closest availability of water will be determined by the Contractor and will be approved by authorities having jurisdiction before making the connection

B. The Contractor shall not make connection to, or take water from, any fire hydrant or pipeline without first obtaining permission from Alameda County Water District (ACWD) or other authority having jurisdiction over the use of said fire hydrant or pipeline and from and from the Fremont Fire Department (FFD).

C. For each such connection made, the Contractor shall first attach to the fire hydrant or pipeline a valve and a construction meter supplied by ACWD or said other authority or agency.

D. Furnish and install all necessary temporary piping and, upon completion of the work, remove all such temporary piping.

E. If necessary, extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing, if necessary.

F. Removal of Water Connections: Before final acceptance of the Work on the project, all temporary connections and piping installed by the Contractor shall be entirely removed, and all affected improvements shall be restored to their original condition, or better, to the satisfaction of the Engineer, the City, and/or other agency owning the affected utilities.

2.03 TEMPORARY HEAT

A. Provide, at the Contractor's expense, temporary heat as necessary for drying out the station facilities and other structures, curing of concrete, the proper installation of materials, and the protection of the Work, materials, and workers against injury from dampness and cold.

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B. Fuel, equipment, and methods of heating will be approved by the jurisdictional fire marshal before using.

2.04 TEMPORARY ELECTRICITY

A. Electrical Services: Provide and maintain during the course and progress of the Work all electrical power and wiring requirements to facilitate the work of all trades and services associated with the Work. Electrical power will be provided at the Contractor's expense. The Contractor will request the utility company to install temporary power poles in locations required. All temporary wiring, feeders, and connections will be furnished by the Contractor, as required.

B. All wiring for temporary electric light and power will be properly installed and maintained and will be securely fastened in place. . All electrical facilities will conform to the requirements of CCR: Title 8, Industrial Relations, Subchapter Subchapter 5, Electrical Safety Orders, and Subpart K of OSHA Safety and Health Standards for Construction.

C. All temporary electrical facilities and connections will be subject to approval of the City Engineer and the power company representative.and shall be removed in like manner at the Contractor's expense prior to final acceptance of the Work by the City.

D. Removal of Electrical Connections: Before final acceptance of the Work on the project, all temporary connections and piping installed by the Contractor shall be entirely removed, and all affected improvements shall be restored to their original condition, or better, to the satisfaction of the Engineer, the City, and/or other agency owning the affected utility.

2.04 TEMPORARY TELEPHONE

Contractor is responsible for providing site telephone and fax as required. Existing telephones at the project site is not available for use. Maintain in the Contractor's field office or in a protected location on the job site for the use of the subcontractors. Superintendent may opt for a cellular phone.

2.05 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Existing facilities are not available for Contractor's use.

B. Provide adequate fixed or portable chemical toilet conveniences whenever needed for the use of employees, including, washing facilities, and drinking water for the use of all employees and persons engaged on or about the Work, including Subcontractors and their employees. Drinking water shall be potable, and drinking water facilities shall be clean and sanitary.

C. Provide adequate wheelchair, accessible, portable chemical toilet conveniences for the use of the public, including, hand washing facilities/stations. Portable toilet facilities shall be sized for accessibility, 100% ADA and Title 24 compliant, for the duration of the project. Five (5) toilets, required, at minimum, to offset the loss of stalls during construction.

D. Minimum dimensional requirements: Height 90"; Width 67"; Depth 86.5"; seat height: 19"; capacity 68 gallons.

E. Locate sanitary facilities where approved by City staff. To be determined in the field prior to construction and delivery

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F. Maintain in a clean and sanitary condition during the course of the Work. Keep such facilities adequately supplied with toilet paper, paper toweling, paper cups, and related supplies as required. At minimum, provide a weekly service schedule for cleaning and servicing.

G. Sanitary and Other Organic Wastes: The Contractor shall establish a regular collection of all sanitary and organic wastes. All refuse from sanitary facilities provided by the Contractor or organic material wastes from any other source related to the Contractor's operations shall be disposed of away from the site in a manner satisfactory to the Engineer and in accordance with all laws and regulations pertaining thereto.

H. At completion of the Work, sanitary facilities shall be properly disinfected and all evidence of same removed from the Jobsite.

I. Comply with all minimum requirements of the Health Department or other public agency having jurisdiction. Maintain in a sanitary condition at all time – secure toilets in non-work hours from vandalism.

2.06 CONTRACTOR'S FIELD OFFICE (OPTIONAL)

A. At the contractors option, furnish and install a field office, not less than 8 feet by 12 feet and equipped with a table or shelf large enough for easy perusal of drawings, as well as drawing racks and shelves to maintain order and neatness. Field office shall be used to store record drawings, display permits and licenses, and permit periodic meetings with subcontractors, Owner and Architect. Field Office shall also have a fax machine.

B. The Contractor's field office shall contain a complete set of Contract Documents.

C. The Contractor shall make arrangements and pay all costs associated with the temporary field office.

2.07 STORAGE AND PARKING AREAS (Staging Areas)

A. The Contract Drawings may indicate work areas available to the Contractor for storage of materials and for parking of construction equipment. If so indicated, these areas will be provided to the Contractor for the durations indicated in the Contract Specifications. Additional work and storage space, if required, shall be provided by the Contractor at Contractor's expense.

B. The Contractor shall provide parking facilities for the Contractor's personnel, Subcontractors, Supplier's delivery vehicles, and authorized visitors. Off the Jobsite parking facilities (if any) shall not impair or interfere with existing community parking and traffic conditions, regulations, and restrictions.

C. Storage areas, construction parking, staging and construction yards shall be illuminated at a level at least 0.25 to 0.50 foot-candles average.

D. No parking or vehicle storage will be permitted in environmentally sensitive areas as identified on the Contract Drawings.

2.08 ENCLOSED STORAGE AND SHOPS

A. The Contractor shall provide all temporary storage and shop rooms that may be required at the Jobsite for safe and proper storage of tools, materials, and equipment. Construct such rooms only in locations indicated or as approved by the Supervising

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Construction Coordinator, and so as not to interfere with the proper installation and completion of other work.

B. Remove such rooms within 3 Days of receipt of notices from the Supervising Construction Coordinator that removal is necessary, and incur all expenses for such removal.

C. Storage of gasoline or similar fuels shall conform to National Fire Protection Association (NFPA) regulations and local fire department regulations and shall be confined within definite boundaries apart from buildings as approved by the Supervising Construction Coordinator and the jurisdictional fire marshal.

2.09 PROTECTIVE BARRICADES AND SAFETY PRECAUTIONS

A. Construct and maintain barricades, lights, shoring, and warning signs as required by federal and State safety ordinances and as required to protect the City's property from damage or loss and as necessary for the protection of the public and adjacent properties. Provide walks around obstructions made in a public place for prosecuting the Work. Leave all protection in place and maintain until removal is authorized.

B. Guard and protect all workers, pedestrians, and the public from excavations, construction equipment, obstructions, and other dangers with adequate railings, guard rails, temporary walks, barricades, warning signs, directional signs, overhead protection, planking, decking, danger lights, and other suitable safeguards.

C. Flaggers shall be provided to direct or divert pedestrian or vehicular traffic when necessary.

2.10 PUMPING

Keep the site, excavations, and structures free of accumulation of water at all times, whether from underground seepage, rainfall, drainage, or broken utility lines at no expense to the Owner.

2.11 FIRE PROTECTION

Temporary fire extinguishers shall be provided and available at the job site in accordance with the appropriate NFPA Bulletins and good practice.

2.12 BARRIERS AND ENCLOSURES

A. See “Temporary Construction Fencing” found herein Article 15.

B. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and properties from damage from construction operations and demolition in accordance with OSHA and governing authorities having jurisdiction.

2.13 TEMPORARY ACCESS FACILITIES

A. The Contractor shall construct, maintain, and later remove temporary access bridges, driveways, roadways, and other items needed for Contractor access to and within the Jobsite.

B. Contractor shall be responsible for any damage to streets, curbs and sidewalks due to the use of such facilities, and such damaged portions shall be repaired as required to place them in the same condition as existed prior to the commencement of the work.

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C. Extend and relocate access and parking space usage as Work progress requires. Provide and maintain access to fire hydrants, free of obstructions. Provide means of removing mud from vehicle wheels before entering streets.

D. Contractors shall comply in every respect with applicable Building Codes regarding the use of public streets and sidewalks and provide the proper barricading and lighting of public thoroughfares surrounding the construction activities.

E. Arrange for temporary parking areas on-site for construction personnel.

F. Parking of vehicles by construction personnel shall be limited to areas within the existing parking lot outside the limits-of-work, as designated by the Project Landscape Architect, or on the plans.

G. Use all means necessary to maintain all temporary facilities and controls in proper and safe condition throughout progress of the work. In the event of damage or loss, immediately make all repairs and replacements necessary and at no additional cost to the Owner.

H. All areas affected by Contractor-constructed temporary facilities shall be restored to their original condition upon removal of the temporary facilities.

2.14 TEMPORARY PARKING AREAS

A. Extend and relocate access and parking space usage as Work progress requires.

B. Provide and maintain access to fire hydrants, free of obstructions.

C. Provide means of removing mud from vehicle wheels before entering streets.

D. Coordinate and arrange for temporary parking areas on-site to accommodate construction personnel within the existing parking lot outside the limits-of-work, as designated by the Project Landscape Architect, or on the plans.

2.15 PROTECTION OF INSTALLED WORK

A. All work installed, completed and accepted per the direction herein to phase construction, shall be protected from damage by other phases of construction work.

B. Contractor shall control activity in immediate work area to prevent damage.

C. Provide temporary and removable protection for installed Products, as needed.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

2.16 SECURITY

A. Provide such watchmen, patrols, fencing, alarm system and other security means as required to adequately protect the work and to protect materials and equipment stored at the site of the work and elsewhere, and to protect the interests of the Contractor, the City, and all parties having such interest, until completion of the work and its Acceptance of the Work by the City.

B. Storage areas will be suitably fenced and lighted and routinely patrolled by security guards.

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C. The City assumes no responsibility for protection of structures and finished work or for loss of materials and equipment from the time that Contract operations have commenced until Acceptance of the Work.

D. If watchman/security service is deemed necessary by the Contractor, such protection shall be provided by the Contractor, and all costs therefore shall be paid for by the Contractor.

E. Damaged, lost, or stolen materials and equipment, whether or not stored or already installed, shall be replaced by the Contractor with new specified materials and equipment, including reinstallation where applicable, at no additional cost to the City.

2.17 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and rubbish from site as specified in Article 15, subsection 15.7, Section 01505 “Construction and Demolition Waste Management”.

2.18 POSTING OF REGULATIONS

Comply with industry standards and applicable laws and regulations of authorities having jurisdiction in the posting of regulations.

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PART 3 EXECUTION

3.01 SPECIAL CONDITIONS OF THE SITE

A. The area to be set aside for the use of the Contractor is indicated on the Drawings as "Limit of Work" and “Staging Area” Except for sub-surface utility work, curb and gutter, temporary roads and any other work specifically shown or noted, the Contractor shall confine his operations within the limits-of-work so indicated.

B. Work shall not proceed for the site or buildings until all temporary work such as utilities, barricades, field office and sanitary facilities are furnished and installed.

3.02 MATERIAL STORAGE AND PROTECTION

A. During the progress of the work, products and materials shall be neatly stored in accordance with the appropriate manufacturer's recommendations and shall be properly cared for and protected from weather, vandalism and theft.

B. All installed products and materials shall be adequately protected until such time as the Owner accepts the Project.

3.03 CONDITIONS AT THE SITE

A. The Contractor shall make all necessary inspections of the job site and of the work to be fully aware of the conditions of all temporary facilities and controls at all times.

B. The Contractor shall take all steps necessary to prohibit any part of the premises, the buildings, or structures to be overloaded by setting thereon any material or equipment, or performing thereon any of his work, which could cause any loss, damage, and/or injury to person or property.

C. The Contractor shall make a close inspection of all materials as delivered and shall promptly return all defective materials without waiting for their rejection by the Architect.

3.04 REMOVAL

Maintain all temporary facilities and controls as long as needed for the safe and proper completion of the work. Remove all such temporary facilities and controls as rapidly as progress of the work will permit.

3.05 RESTORATION OF AREAS

Upon completion of the project, all temporary facilities shall be removed from the site and all areas not otherwise improved but which were adversely affected by the Contractor's work shall be returned to their original condition.

3.06 FINAL SITE CLEAN-UP

Prior to final inspection, thoroughly clean the entire site and restore to a neat, acceptable condition. Remove from the entire site all construction waste and unused materials, dunnage, loose rock and stones, excess earth, roots, weeds, and all debris of any description resulting from the work. Hose down and scrub where necessary all new concrete and asphalt pavement and paved walks, and all existing concrete and asphalt pavement and walks dirtied as a result of the work. Thoroughly remove mortar drippings from concrete walks and other pavements, where they occur – do not power spray concrete decks with high pressure.

3.07 CLOSEOUT

A. Upon completion of the Work, or prior thereto when required by the Supervising Construction Coordinator, remove temporary facilities' structures and installations from the City's property.

B. Return exterior areas utilized for temporary facilities to their original, natural state or, when called for on the Contract Documents, complete such areas as indicated.

3.08 MEASUREMENT AND PAYMENT

The lump sum price paid for **"Mobilization"** shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, including all temporary construction facilities, and temporary sanitary facilities, as described herein, and for doing all the work covered in this section, complete and in place as shown on the plans, as required by the Special Provisions, and as required by the Project City Project Manager.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 01 55 00 Site Access and Storage

PART 1 GENERAL

1.01 GENERAL

A. The Contractor shall take all necessary precautions for the protection of the Work and the safety of the public. The Contractor shall, at the Contractor's elective option, station guards, or other deterrent devices, as may be required to deter vandalism or theft, including but not limited to barricades, fencing and other obstructions, and security lighting. The Contractor shall secure any open access points to the project area during all hours when Contractor is not actively engaged in the performance of the Work.

1.02 RELATED SECTIONS

A. Refer to General Conditions, Article 2.2, Article 7.2, Article 7.3, Article 7.5 and Article 7.9 regarding staging and temporary facilities.

B. Section 01 51 00 "Mobilization and Temporary Facilities"

1.03 HIGHWAY LIMITATIONS

A. The Contractor shall make its own investigation of the condition of available public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress to and from the project site. It shall be the Contractor's responsibility to construct and maintain any access or haul roads required for its demolition operations.

B. All hauling by motor vehicles shall be confined to truck routes, except where otherwise authorized in writing by the Engineer. Truck routes are those shown on the map titled "City of Fremont Truck Routes, Adopted by City Council 4-26-1988" incorporated into these specifications, and as designated in the Fremont Municipal Code. The Contractor is responsible for acquiring all oversize/overweight vehicle permits from agencies having jurisdiction when transporting materials or equipment with size and weight exceeding established hauling criteria.

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1.04 CONTRACTOR'S WORK, STAGING, AND STORAGE AREA

A. At or before the pre-construction meeting the contractor shall submit to the Supervising Construction Coordinator, as part of the Site Operations Work plan (SOW) required per Section 01 30 00 "Submittal", a Project site plan, drawn to scale, indicating the proposed layout and use of the site for access and staging. At minimum the plan will show the location and configuration of temporary construction fencing / tree protection fencing and gates, site access, storage, staging, temporary offices, subcontractor parking, storm water runoff control measures, and access for contractors doing work under concurrently under other contracts.

B. The Contractor shall make its own arrangements for any necessary off-site storage or shop areas necessary for the proper execution of the Work. Off-site shall be defined as any area outside the temporary fencing required. If

the site is located on public property, the Contractor shall submit a site plan, drawn to scale, of the proposed storage, trailer, and/or staging site for the Engineer's approval. If the site is on private property, the Contractor shall submit evidence of the property owner's approval of the use of the site.

C. During construction, to the best extent possible, the Contractor shall maintain ingress and egress in to the parking lots to allow for continued public use.

1.05 TEMPORARY USE OF PUBLIC FACILITIES

A. Street Use: Nothing herein shall be construed to entitle the Contractor to the exclusive use of any public street, alley, way, or parking area during the performance of the Work hereunder, and it shall so conduct its operations as not to interfere unnecessarily with the public's use of the surrounding public area, or the authorized of the City, utility companies, or other agencies in such streets, alleys, ways, or parking areas.

B. Fire hydrants on or adjacent to the Work shall be kept accessible to fire fighting apparatus

C. Temporary provisions shall be made by the Contractor to assure the use of the sidewalks and the proper functioning of all gutters, sewer inlets, and other drainage facilities.

PART 2 PRODUCTS

Not applicable to this section.

PART 3 EXECUTION

3.01 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section **"Site Access and Storage",** not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 01 56 00 Protection of Existing Facilities

1.01 GENERAL

A. The Contractor shall protect all existing utilities, trees, shrubbery, lawn, landscaping, irrigation facilities, wells, buildings, fences, roadside signs, poles, and all other improvements not designated for demolition and removal, and shall restore damaged or temporarily relocated utilities and other improvements as listed above to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with requirements of the Contract Documents.

B. Potholing: The Contractor shall verify the exact locations and depths of all utilities shown and the Contractor shall make exploratory excavations of all utilities that may interfere with the Work. All such exploratory excavations shall be performed as soon as practicable after Notice to Proceed and, in any event, a sufficient time in advance of demolition to avoid possible delays to the Contractor's works. When such exploratory excavations show the utility location as shown to be in error, the Contractor shall notify the City.

C. The number of exploratory excavations shall be that number which is sufficient to determine the alignment and grade of the utility

D. All reference markings made by the Contractor shall be done with spray chalk or approved equal, and shall be removed by the Contractor when no longer needed.

E. The Contractor is responsible for any and all damages resulting from insufficient weather protection. Contractor is to coordinate exterior work to avoid damage.

F. The Contractor shall be completely responsible for the care and condition of the project improvements in their entirety until completion of the maintenance period and acceptance by the City. The Contractor shall provide such watchmen, guards, and security devices as deemed necessary to prevent destruction of property and vandalism.

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1.02 PROTECTION OF SURVEY MARKS

A. The Contractor shall not destroy, remove, or otherwise disturb existing survey markers without proper authorization. No pavement breaking or excavation shall be started until all survey or other permanent marker points that will be disturbed by the Work have been properly referenced for easy and accurate restoration. It shall be the Contractor's responsibility to notify the proper representative of the City of the time and location that work will be done. Such notification shall be sufficiently in advance of demolition so that there will be no delay due to waiting for survey points to be satisfactorily referenced for restoration. All survey markers or point disturbed by the Contractor without proper authorization of the Engineer, will be accurately restored by the City at the Contractor's expense after all contract work has been completed.

1.03 EXISTING UTILITIES AND IMPROVEMENTS

A. General: The Contractor shall protect all underground utilities and other improvements, which may be impaired during the Work. It shall be the Contractor's responsibility to ascertain the actual location of all existing utilities and other improvements that will be encountered in its demolition operations, and to see that such utilities and other improvements are adequately protected from damage due to

such operations. The Contractor shall take all possible precautions for the protection of unforeseen utility lines to provide for uninterrupted service and to provide such special protection as may be necessary.

B. Utilities to be Moved: In case it shall be necessary to remove from the property any public utility or franchise holder, such utility or franchise holder, will, upon the request of the Contractor, be notified by the City to move such property within a specified reasonable time. When utility lines are to be removed are encountered within the area of operations, the Contractor shall notify the Engineer a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.

C. Where proper completion of the Work requires the temporary or permanent removal and/or relocation of an existing utility or other improvement, which is shown the Contractor shall remove, and, without unnecessary delay, temporarily replace or relocate such utility or the facility. In all cases of such temporary removal or relocation, restoration to former location shall be accomplished by the Contractor in a manner that will restore or replace the utility or improvement as nearly as possible to its former locations and to as good or better condition than found prior to removal.

D. City's Right of Access: The right is reserved to the City and to the owners of public utilities and franchises to enter at any time upon any public property, right-of-way, or easement for the purpose of making changes in their facilities made necessary by the Work of this contract.

E. Underground Utilities Shown or Indicated: Existing utility lines that are shown or the locations of which are made known to the Contractor prior to excavation and that are to be retained, and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired by the Contractor.

F. Underground Utilities Not Shown or Indicated: In the event that the Contractor damages any existing utility lines that are not shown or the locations of which are not made known to the Contractor prior to excavation, a written report thereof shall be made immediately to the City. If directed by the City, repairs shall be made by the Contractor under the provisions for changes and extra work.

G. Approval of Repairs: All repairs to a damaged improvement are subject to inspection and approval by an authorized representative of the improvement owner before being concealed by backfill or other work.

H. Maintaining Service: All oil and gas pipelines, power, and telephone or other communication cable ducts, gas and water mains, irrigation lines, wells, sewer lines, storm drain lines, poles, and overhead power and communication wires and cables encountered along the line of the Work shall remain continuously in service during all operations under the Contract, unless other arrangements satisfactory to the City are made with the owner of said pipelines, duct, main, irrigation line, sewer, storm drain, pole, wire or cable. The Contractor shall be responsible for and shall repair all damage due to its operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.

1.04 TREES, MOWING IRRIGATION, AND OTHER VEGETATION WITHIN PROJECT LIMITS

A. General: The Contractor shall exercise all necessary precautions so as not to destroy or damage any trees, or other vegetation, including that landscaping material lying within the project limits, and shall not trim or remove any trees unless such trees have been approved for trimming or removal by the City. All existing trees and other

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vegetation, which become damaged during demolition, shall be trimmed or replaced by the Contractor in consultation with a certified arborist to the satisfaction of the City and/or agency. Tree trimming and replacement shall be accomplished as approved and directed by the Engineer.

B. City Tree Preservation Requirements, Tree Survey Standards, Arborist Analysis Report Standards and Standard Tree Preservation notes from the City Landscape Development Requirements and Policies are attached (pages 4-7) plus Sheet 8 depicting standard tree protection fencing.

C. Contractor protection of existing trees, including protective fencing around the tree drip line is required.

D. Replacement: The Contractor shall immediately notify the City and/or other jurisdictional agency if any tree is damaged by the Contractor's operations. Refer to Section 01530 for repair compensation. If, in the opinion of the City or said other agency, the damage is such that replacement is necessary, the Contractor shall replace the tree at its own expense. The tree shall be of a like size and variety as the tree damaged, or, if of a smaller size, the Contractor shall pay the owner of said tree a compensatory payment acceptable to the tree owner, subject to the approval of the City or other jurisdictional agency. The size of the trees shall not be less than 1-inch diameter nor less than 6 feet in height. Fines will be assessed against the Contractor for removal of trees without the prior written approval of the City. The minimum amount of the fine or restitution to the City will be the replacement of the tree removed, with one of equal or greater size and maturity and as approved by the City. Larger fines may be assessed against the Contractor depending on the circumstances and type of tree removed, especially in the case of trees listed in the City's Historical Tree List.

E. Mowing: Contractor shall be responsible for the adequate watering, mowing, disease control and/or fertilizing, pest abatement (if necessary), and other maintenance of lawn within the limits of work, and affected by the placement of the temporary construction fence. The temporary construction fence may, in some cases, bifurcate lawn areas or interrupt irrigation to the lawn. The contractor is responsible for continuing adequate irrigation at all times. Affected lawn within or adjacent to the temporary construction fence shall be maintained by the contractor, including mowing no less than once every two weeks, or to maintain a lawn height of no greater than 6" at any time. This shall include areas a minimum of ten (10) feet outside the project limits of work temporary fencing. At no point shall City crews enter the project limits of work to perform maintenance and mowing during the construction period. If City crews are required to enter the site, at the request of the Contractor, or at the direction of the City, due to negligence of the Contractor to perform adequate mowing, the Contractor shall be charged on a time and materials basis, by the City, and the cost for performing mowing and maintenance shall be retained from their contract, and deducted.

F. Irrigation: All irrigation elements, equipment and components within the project limits, and those elements, equipment and components outside the project limits of work, indicated to remain in working order, shall be the responsibility of the contractor to remain, and be maintained, in working order over the duration of the project, including the plant establishment period. This includes all equipment connected to components within the project limits of work to be removed, relocated, or re-routed. At no point shall City crews enter the project limits of work to perform maintenance on the irrigation system. If City enters the site, at the request of the Contractor, or at the direction of the City due to negligence of the Contractor to perform maintenance, keep the system running, and adequately water existing lawn, trees, and other plant material, the Contractor shall be charged on a time and materials basis, by the City,

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and the cost for performing said work shall be retained from their contract, and deducted.

1.05 PROTECTION OF ADJACENT STRUCTURES

A. The Contractor shall take steps to protect adjacent structures from damage during all project activities, including, but not limited to, building and construction, hazardous materials removal, salvage/recycling, demolition, basement demolition, backfilling, grading and landscaping operations.

B. Any and all damage to adjacent structures shall be the responsibility of the Contractor.

C. If damage occurs, the Contractor will take immediate steps to remedy the situation in the field.

1.06 NOTIFICATION BY THE CONTRACTOR

A. Prior to any excavation in the vicinity of any existing underground facilities, including all water, sewer, storm drain, gas petroleum products, or other pipelines; all buried electrical power, communications, or television cables; all traffic signal and street lighting facilities; and all roadway and state highway right-of-ways the Contractor shall notify the Underground Service Alert Agency (800.227.2600) and the respective authorities representing the owners or agencies responsible for such underground facilities not less than 48 hours prior to excavation so that a representative of said owners or agencies can mark the utility alignment or be present during such work if they so desire.

1.07 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section "**Protection of Existing Facilities,"** not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, including mowing and irrigation of existing sod, and no additional compensation will be allowed therefor**.**

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 01 56 30 Tree Removal, Tree Pruning and Root Pruning

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Refer to all other sections, determine the extent and character of related work, and coordinate all work so that all work associated with this section is complete.

B. This section is complete in its entirety and is not supplemental to the standard specifications for Caltrans except where specifically noted.

1.02 RELATED SECTIONS

A. Section 01 56 39 - Tree Protection

B. Section 02 41 16 - Structure Demolition

1.03 DESCRIPTION OF WORK

A. The work in this section includes furnishing all labor, materials, equipment and services necessary to complete the work described on the Demolition Plans, and as specified herein but is not limited to:

1. Tree Removal and Stump Grinding.
2. Air Spade or Hand Excavation at Tree Roots - This shall include root pruning, as directed at the direction of the City's Assigned Arborist and as described in the attached Arborist reports.

1.04 DEFINITIONS

A. Refer to Section 01 56 39 "Tree Protection"

1.05 SUBMITTALS

A. Product data: Submit complete materials list of items to be provided under this Section. Include manufacturer's literature.

B. Submit qualifications of Certified Arborist and California licensed Pest Control Advisor.

C. Resume of arborist including certifications, licenses, and list of employees.

1.06 QUALITY ASSURANCE

A. General Responsibility: The Contractor shall be directly responsible for protection and welfare of existing trees, which are noted to remain. This responsibility shall continue throughout all phases of work until the entire project is completed and accepted by the City and through completion of the maintenance period.

B. Qualifications of workmen: Tree pruning, root pruning and trimming shall be performed only by a certified arborist, or certified tree worker, certified by the International Society of Arborists; in compliance with ISA or ANSI standards. Contractor shall be responsible for scheduling City's Assigned Arborist, and shall

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have the arborist on site continuously while existing trees are being pruned or remedial work is being performed.

C. Reference Standards: Published specification, standards, tests, or recommended methods of trade industry apply to work of this section.

D. Work shall be done according to approved submittals and field direction from City's Assigned Arborist.

1.08 REFERENCE STANDARDS

A. Published specifications, standards, tests or recommended methods of ISA or governmental organizations apply to work of this Section.

1. All tree pruning shall be in conformance with ISA standards for Crown Thinning and Crown Reduction.
2. Tree Pruning Guidelines, International Society of Arboriculture (ISA); 1995 edition.
3. American National Standards institute (ANSI) A300. 1996. "Standard Practices for Tree, Shrub and Other Woody Plant Maintenance"
4. Cal-OSHA Tree Work Safety Regulations. Title 8: Article 12
5. Code of Ethics, Western Chapter ISA; 1995 edition.
6. Glossary Of Terms, Western Chapter ISA; 1995 edition.
7. Pruning Standards, Western Chapter ISA; 1995 edition.
8. Standard for Tree Care Operations, American National Standards Institute, (Z133.1); latest edition.
9. International Society of Arboriculture (ISA) "Guide for Establishing Values of Trees and Other Plants," prepared by the Council of Tree and Landscape Appraisers.
10. All climbing techniques shall be in accordance with the Reference Standards.

1.08 SCHEDULE

A. Work shall be done according to an approved schedule submitted in "Submittals".

1.09 WARRANTY

A. Contractor shall warrant that all trees other than those slated for removal covered by the provisions of this Section will be healthy and in flourishing condition of active growth one year from the date of Project Completion and Acceptance.

B. Requirements of the warranty shall apply if failure of Contractor to take specified precautions and work within restrictions of this Section contributes to destruction of or injury to a tree, in the judgment of the Parks Supervisor.

C. If a tree is destroyed, or injured so that in the judgment of the Parks Supervisor it should be replaced, it shall be removed at Contractor's expense. The Contractor shall replace in kind up to the appraised value of the tree lost.

CITY COUNCIL REFERENCE ONLY

PART 2 – PRODUCTS

2.01 EQUIPMENT

A. Root Pruning: All work shall be done by hand using chain saws, hand saws, Sawz-all, or other method that allows for surgical removal. The use of mechanical root pruning tools, such as a Vermeer Root Pruner may be allowed so along as the equipment does not result in the roots being broken, fractured, or split horizontally beyond the vertical cut.

B. Vacuum Excavator: Roots may be exposed using a water and vacuum excavator, DitchWitch FX20, FX30, FX60 or equal product.

C. Backhoe: Roots within radial trench may be removed using a backhoe after roots have been cut clean.

D. Stump Removal: Vermeer Stump Cutter, or approved equal.

E. Herbicide: To kill turf around trees, use a contact herbicide. Translocated herbicides will not be acceptable, or used near the trees.

F. All equipment used for completing the work covered in this section shall conform to the requirements of CAL-OSHA Tree Work Safety Regulations Title 8: Article 12.

2.02 CERTIFIED ARBORIST

A. Root pruning shall be performed only by a certified arborist, or certified tree worker, certified by the International Society of Arborists; in compliance with ISA or ANSI standards.

B. Contractor, or certified arborist performing tree removal, tree pruning, and root pruning, shall be responsible for obtaining and scheduling the City's Assigned Arborist for site inspection, and shall have the City's Assigned Arborist on site continuously while existing trees or roots are being pruned or remedial work is being performed.

2.03 CITY ASSIGNED ARBORIST/CONSULTING ARBORIST

A. The City shall retain Hortscience as the City's Assigned Arborist/Consulting Arborist, for on-call work related to this project, if it is determined that the contractor's construction activity may be detrimental to the health of existing trees.

B. The City's Assigned Arborist/Consulting Arborist shall be brought on site during construction to observe construction activities in and around the root zone of existing trees, make determinations on how to preserve the root zone, make determinations on roots to be cut, and direct the contractor's operations within the drip line and root zone of the tree.

C. It will be the Contractor's responsibility to coordinate, and take direction from, and implement the direction of the City's Assigned Arborist/Consulting Arborist in the field under their supervision.

PART 3 EXECUTION

3.01 AIR SPADE OR HAND EXCAVATION AROUND TREES

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A. Clear and grub and excavate within the drip line and root zone of the existing trees to achieve new subgrade, facilitate utility trenching and establish finished grade.

B. Excavate to new subgrade to accommodate full concrete section per the project plans and details.

C. When excavation is to occur around, and within the drip line of trees, as indicated on the plans, all excavation work shall be done by hand within the tree root zone, or by using a water or vacuum excavator (air spade) to minimize damage to root system. Mechanical excavation will not be allowed.

D. Hand dig, or water/vacuum excavate a trench at the edge of the area where excavation will be required to construct paving, curb and gutter. Depth of the trench should be determined by the depth of the excavation required, including aggregate base, to construct the paving, curb and gutter, or concrete paving.

E. Main lateral roots and taproots shall not be cut. Smaller roots that interfere with installation of new work may be cut with prior approval as described elsewhere herein.

F. Roots shall be completely exposed to at least 2 inches below the bottom of the roots. Main lateral roots and taproots shall only be pruned under the direction of the City's Arborist. An attempt shall be made to preserve all roots 1/2" diameter and larger. Roots under two (2) inches in diameter, that interfere with installation of new work, may be cut and removed after field review and approval of such proposed cuts by the City's Arborist.

G. Roots shall be relocated in backfill areas wherever possible. If large, main lateral roots are encountered, they shall be exposed beyond excavation limits as required to bend and relocate without breaking. If relocation of roots is not practical, roots shall be cut and removed from within the excavation limits after field review and approval of such cuts by the City's Arborist.

H. Exposed roots shall not be allowed to dry out before permanent backfill is placed. Temporary earth cover shall be provided, or roots shall be packed with peatmoss and covered with a layer of burlap and temporarily supported and protected from damage until covered with backfill. The cover over the roots shall be wetted twice a day, during day and evening, at the contractor's expense, and no additional payment shall be made therefore.

I. The above excavations should be carried out by a certified arborist or certified tree worker, and monitored by the City's Arborist. At that time, the City's Arborist should evaluate any damage which has already occurred and the extent of the root damage that would be required to construct the proposed improvements. It will be determined at that time whether the tree is a satisfactory candidate for preservation. If the tree is to be preserved, the City's Arborist should direct and monitor the pruning of roots and removal of loose bark as needed.

CITY COUNCIL REFERENCE ONLY

3.02 REPAIR COMPENSATION

A. Damage to existing tree crown or roots over 1-inch in diameter shall be immediately reported to the Engineer in writing, and, at the direction of the Engineer, with recommendations from the City's Assigned Arborist, repair damage immediately at the Contractor's expense and monitored by a the City's Assigned Arborist.

B. The City's Assigned Arborist shall direct repair of trees damaged by construction operations. Repairs shall be made promptly after damage occurs to prevent progressive deterioration of damaged tree.

C. Damaged tree limbs or trees which have died as a result of injury during construction shall remain the property of the City and shall remain or be removed by the Contractor as directed by the Engineer, with recommendations from the City's Assigned Arborist.

D. Any tree to remain which is damaged or destroyed owing to the Contractor's negligence or failure to provide adequate protection shall be compensated for according to the full appraisal value using the "trunk formula" method in accordance with the latest edition of The Guide for Plant Appraisal, 9th edition (published in 2000 by the International Society of Arboriculture, Savoy IL) and the Species Classification and Group Assignment (2004), a publication of the Western Chapter of the International Society of Arboriculture.

E. The Contractor shall immediately notify the City and/or other jurisdictional agency if any tree is damaged by the Contractor's operations. If, in the opinion of the City, the City's Assigned Arborist, or other said agency, the damage is such that tree replacement is necessary, the Contractor shall replace the tree at their expense. The tree shall be of a like size and variety as the tree damaged, or, if of a smaller size, the Contractor shall pay the owner of said tree a compensatory payment acceptable to the tree owner, subject to the approval of the City or other jurisdictional agency. The size of the trees shall not be less than 1-inch diameter nor less than 6 feet in height. Fines will be assessed against the Contractor for removal of trees without the prior written approval of the City. The minimum amount of the fine or restitution to the City will be the replacement of the tree removed, with a tree of equal or greater size and maturity and as approved by the City. Larger fines may be assessed against the Contractor depending on the circumstances and type of tree removed, especially in the case of trees listed in the City's Landmark Tree List. The value of such a tree shall be based, at minimum, on the full appraised value using the "trunk formula" method in accordance with the latest edition of The Guide for Plant Appraisal, 9th edition (published in 2000 by the International Society of Arboriculture, Savoy IL) and the Species Classification and Group Assignment (2004), a publication of the Western Chapter of the International Society of Arboriculture).

CITY COUNCIL REFERENCE ONLY

3.03 ROOT PRUNING

A. Upon demolition of existing site conditions, the contractor shall excavate around tree roots requiring further field investigation at the direction of the City's Arborist. Roots shall be exposed to allow an unimpeded view around the entire root circumference.

B. Saw cutting of asphalt or concrete to full depth, should not occur adjacent to trees until the exposed roots have been adequately evaluated and there is assurance from the City' Assigned Arborist that full depth saw cutting will not result in detrimental damage to the root structure of the trees in question.

C. Once exposed, the City's Arborist shall make a determination regarding which roots to cut, where to cut them, approve the tools used to make the cuts and observe the root cuts; or, once exposed the arborist may determine that the tree will simply require removal, as root pruning may structurally weaken the tree; or, the arborist may determine that the roots do not require any pruning and the contractor may then install base material to achieve the new road section, or curb and gutter section.

D. The Contractor shall coordinate with the City's Assigned Arborist to have them on-site to help coordinate and direct the root pruning operation.

E. If the underground root conditions differ from the direction and information shown on the plans, the Contractor shall excavate, root prune, tree trim, or remove trees at the City Arborist's direction in the field.

F. All excavation of tree roots, root pruning, tree removal, and tree trimming work, performed by the Contractor, shall be observed and directed by the City's Arborist

G. Roots shall be cut within the trench, or excavation limits, with a root cutting machine, rock cutter, sawzall, or other approved root pruning equipment.

H. Any roots 1-inch in diameter or larger requiring removal shall be cut cleanly in live tissue. Cut and exposed roots and the surrounding soil shall be moistened and covered with a thick mulch (4 inches) to prevent desiccation. No pruning seals or paints shall be used on wounds. A water absorbent mater (i.e. burlap) shall be secured at the top of the trench and shall be draped over the exposed roots. This material shall be kept moistened and soil shall be replaced as soon as practicable.

I. After root cutting is complete along the edge of the proposed trench or excavation, it is acceptable to either grub out or grind out with a 24 inch stump grinder surface roots which are more than 8 feet from the trunk.

J. Do not encroach closer than 8 feet to the trunk of each tree.

K. While excavation is commencing the Contractor shall coordinate to have the City's Assigned Arborist on site to observe the excavation and direct root pruning as needed to expedite construction effort.

L. All work described in this section shall be performed according to the following published specifications, standards, tests or recommended methods:

1. Tree Pruning Guidelines, International Society of Arboriculture (ISA); current edition.
2. Cal-OSHA Tree Work Safety Regulations. Title 8: Article 12
3. Code of Ethics, Western Chapter ISA; current edition.
4. Glossary Of Terms, Western Chapter ISA; current edition.
5. Pruning Standards, Western Chapter ISA; current edition.
6. Standard for Tree Care Operations, American National Standards Institute, (Z133.1); current edition.

CITY COUNCIL REFERENCE ONLY

3.04 TREE REMOVAL AND STUMP GRINDING

A. Remove and completely dispose of each tree at all locations designated on the plans, leaving a stump with a height of no more than three feet (3') prior to stump removal.

B. Contractor shall grind remaining stump to a minimum depth of twenty-four inches (24") below grade. All lateral roots within a three-foot (3') distance from the edge of the trunk and to a depth of eight inches (8") shall also be removed. All woodchips left by stump removal process must be removed by the contractor.

C. Large surface roots, over 2 inches in diameter, if present beyond 3' from trunk, and within the proposed improvements traffic section, or within the structural section of the curb and gutter, shall be removed during stump grinding operations, within limits of work of said traffic section of curb and gutter section.

D. Contractor shall remove all debris including chips, brush and other debris resulting from tree removal, root removal, and stump removal work daily. Logs shall be removed within 2 weeks.

E. All voids left after stump removal shall be immediately filled with an approved topsoil and compacted to 3" above finished grade to allow for settling. Compaction shall be to 85% relative compaction.

MEASUREMENT AND PAYMENT

A. Full compensation for conforming to the provisions of "**Hand Excavate Around Trees**" in this section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involving excavation and trenching of various utilities, and no additional compensation will be allowed therefor.

B. The contract unit each price paid for "**Tree Removal**" shall include full compensation for furnishing all labor, materials, tools, ,equipment and incidentals for doing all the work covered in this section, including stump grinding, complete in place as shown on the plans, as required by the Special provisions, and as directed by the City's Engineer or their designee.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

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CITY COUNCIL REFERENCE ONLY

SECTION 01 56 39 Tree Protection

PART 1 GENERAL

1.01 DESCRIPTION

A. Section includes protecting and maintaining existing trees, not specifically designated for removal, affected by this Work, whether or not tree trunk is located within project site. Include pruning and remedial work, protection and irrigation during removal work, site work and construction.

B. Tree Protection Measures shall be applied to all Landscape Trees designated for preservation with tree protection fencing as indicated on plans. These measures shall include but not be limited all items listed within the “Tree Preservation Notes” and the “Tree Preservation Detail” including all Tree Protection fences.

C. General: The Contractor shall exercise all necessary precautions so as not to destroy or damage any trees, or other vegetation, including that landscaping material lying within the project limits, and shall not trim or remove any trees unless such trees have been approved for trimming or removal by the City or other jurisdictional agency. All existing trees and other vegetation, which become damaged during demolition, shall be trimmed or replaced by the Contractor in consultation with a certified arborist to the satisfaction of the City and/or agency. Tree trimming and replacement shall be accomplished as approved and directed by the Engineer.

D. Replacement: Refer herein to “Tree Replacement”

E. All trees to be preserved and protected shall be watered by whatever means necessary to keep the trees in a healthy condition.

CITY COUNCIL REFERENCE ONLY

1.02 RELATED SECTIONS

A. Section 01 11 00 - Summary of Work

B. Section 01 56 30 - Tree Removal, Tree Pruning and Root Pruning

C. Section 02 41 16 - Structure Demolition

D. Section 31 10 00 - Site Clearing

E. Section 31 20 00 – Rough Grading

F. Landscape Standard Details, LSD-9, or most current revision.

1.03 DEFINITIONS

A. DBH – Diameter at Breast Height

B. "Drip line" is defined as outermost extent of tree canopy, encompassing tree canopy, trunk, roots and soil. In no case shall drip line encompass an area less than a 10 foot diameter circle.

C. "Injury" is defined, without limitation, as any bruising, scarring, tearing, or breaking of roots, branches or trunk; or soil compaction or contamination resulting in decline of health of tree.

D. "Critical Root Zone" is defined as a minimal distance from the trunk where roots must be protected from construction related activities

E. "Root Pruning": All pruning shall be done by a State of California Licensed Tree Contractor (C61/D49). All pruning shall be done by Certified Arborist or Certified Tree Worker in accordance with the Best Management Practices for Pruning (International Society of Arboriculture, 2008-Revised) and adhere to the most recent editions of the American National Standard for Tree Care Operations (Z133.1) and Pruning (A300).

F. Consulting Arborist: Referred to from here on as City's Arborist, shall be retained by the City through an existing Master Service Agreement, specifically for this project work. The Contractor shall be required to coordinate and take direction from the City's Arborist to maintain the health and structure of trees affected by overlay, curb, and gutter work within the scope of this project.

G. Certified Arborist or Certified Tree Worker: A worker that has been certified by the International Society of Arboriculture (ISA), in compliance with ISA standards, as experienced and capable of tree trimming and root pruning per the ISA guidelines, or the requirements as defined herein.

H. Landscape Standard Details (LSD) – Included as part of the Fremont City Standard Details for Improvements within Public Right of Way; Approved by City Council, Resolution No 2006-31, April 1985; amended December 13, 2011; and last revised September 5, 2012.

I. Infrastructure: The limits of work of the project as delineated on the plans, described in the special provisions, and as described by the Standard Specifications.

CITY COUNCIL REFERENCE ONLY

1.04 QUALITY ASSURANCE

A. General Responsibility: The Contractor shall be directly responsible for protection and welfare of existing trees, which are noted to remain. This responsibility shall continue throughout the full construction period until the entire project is completed and accepted by the City and through completion of the maintenance period.

B. Qualifications of workmen: Trimming shall be performed only by a certified arborist, or certified tree worker, certified by the International Society of Arborists; in compliance with ISA or ANSI standards. Contractor shall be responsible for obtaining and scheduling arborist, and shall have an arborist on site continuously while existing trees or roots are being pruned or remedial work is being performed. Arborist must be approved by the City of Fremont in writing.

C. Reference Standards: Published specification, standards, tests, or recommended methods of trade industry apply to work of this section.

D. International Society of Arboriculture (ISA) "Guide for Establishing Values of Trees and Other Plants," prepared by the Council of Tree and Landscape Appraisers.

1.05 JOB CONDITION

A. Contractor shall install tree protection fencing before any construction equipment enters the site, and must not be removed during the demolition or grading process. Fencing can be adjusted during the demolition, grading and construction activities.

B. Sequencing schedule: Coordinate and cooperate with other trades to enable the work to proceed as rapidly and efficiently as possible.

1.06 GUARANTEE

A. Contractor shall guarantee that all plants covered by the provisions of this Section will be healthy and in flourishing condition of active growth one year from the date of final completion.

B. During the warranty period the Contractor shall be liable for damages to all trees covered by the provisions of this Section.

PART 2 PRODUCTS

2.01 TREE PROTECTION FENCING

A. Tree Protection Fence: 6-foot high chain link fence, sturdy and capable of acting as a barrier against objects, vehicles, etc., and designed so as to allow for access to inside for care of tree as required. It shall be continuously maintained and repaired as necessary. Metal shall be galvanized.

B. Refer to LSD-9 and Tree Protection notes incorporated into the project plans.

C. Install tree protection fencing around trees to be preserved at a distance required from the base of the trunk to the drip line of the tree. Fencing shall remain until landscape work has commenced, and it shall be removed when authorized by the Engineer.

D. Fence Relocation: During the course of construction, relocation of the fence may be required to facilitate construction. Contractor shall request authorization to relocate fence. Requests for Authorization shall be in writing to the Engineer 48 hours prior to anticipate relocation at no cost to the City.

2.02 TREE BARK MULCH

Prior to beginning construction, install tree protection fencing. For trees being protected using LSD-9 immediately after fencing is installed, cover the entire soil area inside the fence with a three-inch thick layer of mulch, holding the mulch back from the tree trunk a minimum of 6 inches. Mulch shall be Sun-up Walk-on bark, or approved equal.

2.03 CITY ASSIGNED ARBORIST/CONSULTING ARBORIST

A. All requirements defined in Section 01 56 30 shall apply herein.

PART 3 EXECUTION

3.01 TREE PROTECTION AND TREE PRESERVATION

A. Tree Preservation Notes per City's Standard Detail LSD-9:

1. Current standard detail at city engineering division shall prevail.

2. Tree protection measures must be in place before construction, demolition and/or grading activities commence. City of Fremont will stop construction if tree protection measures are not in place and maintained throughout the construction period.

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3. Trees called out for preservation shall be fenced at the drip line. Fencing may occur at the combined drip lines of groves of trees. Place a three-inch thick layer of bark mulch beneath drip lines of trees to be preserved. Keep bark mulch back from the tree trunk a minimum of 6 inches.

4. Fencing shall be 6 feet tall chain link fencing with steel posts embedded in the ground.

5. No grading shall occur within the drip lines/fenced area of existing trees unless required by the plans, or the nature of the work.

6. No construction materials or construction vehicles may be stored within the drip lines/fenced area of existing trees.

7. Construction vehicles or machinery may not pass between two or more existing trees identified for preservation if their canopies are within 10 feet of touching. Additional fencing may be required by the city as needed.

8. The contractor is required to have an arborist certified by the International Society of Arboriculture (ISA), approved by the city, on site if site construction efforts require removal of existing roots or branch pruning. Roots approved for cutting must be cut cleanly with a saw. Ripping or shredding roots subject to fine/penalty.

9. Unauthorized tree removal is subject to replacement equal to the appraised value of the tree lost per FMC 4-5108.

10. The contractor is required to water, fertilize and attend to other maintenance needs of existing trees to maintain healthy growth throughout the construction period. An earthen berm measuring minimum 6 feet in diameter, and 6 inches in height shall be constructed at the base of each tree to function as a temporary watering basin during the construction period. Trees shall be watered according to weather and tree species requirements.

11. If trees are being relocated: relocation of existing trees shall occur under the observation and direction of a certified arborist approved by the city of Fremont.

12. Trunk wrap protection shall occur for trees situated in small tree wells or sidewalk planters. This form of protection will be allowed by approval from senior landscape architect only.

B. Contractor shall install tree protection fencing before any construction equipment enters the site, and must not be removed during the demolition or grading process. If fencing is installed, fencing can be adjusted during the demolition, grading and construction activities.

C. Install tree protection fencing around trees to be preserved at a distance required from the base of the trunk to the drip line of the tree. Fencing shall remain until landscape work has commenced, and it shall be removed when authorized by the Engineer.

D. Immediately after fencing is installed, cover soil area inside fence with three-inch thick layer of mulch as specified in Section 32 90 00 - Planting. Mulch shall be held back from the base of the tree trunk a minimum of 6 inches.

E. During the course of construction, relocation of the fence may be required to facilitate construction. Contractor shall request authorization to relocate fence.

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Requests for Authorization shall be in writing to the Engineer 48 hours prior to anticipate relocation at no cost to the City.

3.02 PROTECTION OF TREES

A. Water: Provide ample water supply of potable quality and sufficient quantity for all operations required in this section. The contractor shall provide a schedule to the Project Manager outlining the proposed watering schedule for trees affected by construction.

B. Trees shall not be allowed to deteriorate and shall be maintained in a healthy and vigorous condition during the course of construction and maintenance period.

C. During the course of construction, the Contractor shall take all necessary precautions, as outlined herein, to protect the existing trees to be preserved from injury or death. Protection shall be given to the roots, trunk, and foliage of all existing trees to remain. Trees, subject to the provisions of this Section, which have been injured, or may be affected by construction, shall be assessed by the City's Arborist, and then repaired immediately by a certified tree worker, under the direction of the City's Arborist. Repair may include removal of rough edges and sprung bark and severely injured branches, or other necessary work, as determined by the City's Arborist.

D. Irrigation system servicing trees that will be affected by construction shall be repaired, replaced, or relocated according to the plans, within 30 days of removal. If the existing irrigation system is turned off, removed, or out of service for more than 30 days, all trees shall be hand watered, or watered by what ever means necessary to keep the trees in a healthy and vigorous condition during the course of construction and maintenance period.

E. Tree protection fencing shall be installed for the protection of existing trees to be preserved. No construction, demolition, or work of any nature will be allowed within the fenced area without prior written approval by the Engineer.

1. Approval by the Engineer for work within the fenced area shall not release the Contractor from any of the provisions specified herein for the protection of existing trees to be preserved.

2. During the course of construction of approved work within the fenced area, no roots larger than two inches in diameter shall be cut without prior written approval the Engineer.

F. During construction, the existing site surface drainage patterns shall not be altered within the area.

G. Take necessary measures to maintain healthy living conditions for existing trees to be preserved. Such measures shall include but not limited to periodic washing of leaves for removal of dust, irrigation, redistribution of bark mulch, etc.

H. No construction, demolition, or work of any nature will be allowed within the fenced area without prior written approval by the Engineer. Approval by the Engineer for work within the fenced area shall not release the Contractor from any of the provisions specified herein for the protection of existing trees to be preserved. During the course of construction of approved work within the fenced area, no roots larger than two inches in diameter shall be cut without direction from the City's Arborist in the field.

I. Do not permit the following within drip line of any existing tree to be preserved.

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1. Storage or parking of automobiles or other vehicles.
2. Stockpiling of building materials or refuse of excavated materials.
3. Skinning or bruising of bark.
4. Use of trees as support posts, power poles, or signposts; anchorage for ropes, guy wires, or power lines; or other similar functions.
5. Dumping of poisonous materials on or around trees and roots. Such material includes but is not limited to paint, petroleum products, contaminated water, or other deleterious materials.
6. Cutting of tree roots by utility trenching, foundation digging, placement of curbs and trenches, and other miscellaneous excavation without prior approval of the Engineer and monitored by a certified arborist.
7. Damage to trunk, limbs or foliage caused by maneuvering vehicles or stacking material or equipment too close to the tree.
8. Compaction of the root area by movement of trucks or grading machines; storage of equipment, gravel, earth fill, or construction supplies.
9. Excessive water or heat from equipment, utility line construction, or burning of trash under or near shrubs or trees.
10. Damage to root system from flooding, erosion, and excessive wetting and drying resulting from dewatering and other operations.

3.03 EXCAVATION AROUND TREES

Refer to Section 01 56 30 “Tree Removal, Tree Pruning and Root Pruning”

3.04 IRRIGATION SYSTEM

A. If system is in place, protect existing irrigation system service point from damage.

B. If repair or relocation is required, make repairs, or perform relocation, ensure it is automated, and re-activate the system in order to water trees that may be affected by excavation, root pruning or crown thinning.

C. Set up a watering program to ensure that existing trees are provided with adequate water to prevent drying out during construction

D. Full compensation for conforming to the provisions in “Irrigation System” and the replacement, relocation and activation of the existing irrigation system shall be considered as included in the units price paid for “Irrigation Modifications” and no additional compensation will be allowed therefore.

3.05 TREE TRIMMING, TREE PRUNING, CROWN THINNING, ROOT PRUNING

Refer to Section 01 56 30 “Tree Removal, Tree Pruning and Root Pruning”

3.06 REPAIR COMPENSATION

Refer to Section 01 56 30 “Tree Removal, Tree Pruning and Root Pruning”

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3.07 TREE REPLACEMENT

A. The Contractor shall immediately notify the City and/or other jurisdictional agency if any tree is damaged by the Contractor's operations. If, in the opinion of the City or said other agency, the damage is such that replacement is necessary, the Contractor shall replace the tree at their expense. The tree shall be of a like size and variety as the tree damaged, or, if of a smaller size, the Contractor shall pay the owner of said tree a compensatory payment acceptable to the tree owner, subject to the approval of the City or other jurisdictional agency.

B. The size of trees shall not be less than 1-inch diameter nor less than 6 feet in height.

C. Fines will be assessed against the Contractor for removal of trees without the prior written approval of the City. The minimum amount of the fine or restitution to the City will be the replacement of the tree removed, with one of equal or greater size and maturity and as approved by the City. Larger fines may be assessed against the Contractor depending on the circumstances and type of tree removed, especially in the case of trees listed in the City's Historical Tree List.

3.08 MAINTENANCE

Contractor shall be responsible to perform periodic inspections of existing trees to be preserved and submit written proposals to the Engineer for additional maintenance work as may be required to ensure the health and general well-being of the trees. Contractor shall retain, at the direction of the Engineer, a certified arborist to perform or monitor this work.

3.09 MEASUREMENT AND PAYMENT

The linear foot price paid for "**Tree Protection Fencing**", shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work covered in this Section, including placement of bark mulch, related maintenance, and the relocation of fencing to facilitate construction, complete in place as shown on the plans, as required by the Special Provisions, and as required by the City's Engineer, Landscape Architect or Certified Arborist, and no additional compensation shall be allowed therefor.

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END OF SECTION

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SECTION 01 57 00 Temporary Construction Fencing

PART 1 GENERAL

1.01 SECTION INCLUDES

Temporary Construction Fencing.

PART 2 PRODUCTS

2.01 TEMPORARY CONSTRUCTION FENCING

A. Temporary construction fences and gates shall be furnished, installed, maintain, and relocated at the project site by the Contractor, as shown on the plans and as specified in these specifications and special provisions, and as directed by the Project Inspector, or Supervising Construction Coordinator.

B. The contractor shall be responsible for adjusting the layout of the fences as necessary to accommodate its work, to accommodate other contractors doing work, and accessing the site and building(s).

C. Temporary construction fencing shall be placed around the work area intended for use by the Contractor. A portion of the property is available for use by the Contractor for staging. The Contractor shall submit a plan showing the location of their trailer and staging area for review by the City.

D. Temporary construction fencing and gates shall be chain link, type CL-6, six feet (6') high, as a minimum and shall conform to the specifications for permanent fencing of similar character as provided in Section 80, "Fences" of the Standard Specifications and these special provisions. Construction fencing and gates shall be simple to install, maintain, relocate, and remove. Concrete footings for metal posts will not be required. The temporary fences and gates shall be of a type that extends fully to the ground. The Contractor may upgrade the fence in height or quality to meet the conditions at the site.

E. The second paragraph of Section 80-4.02, “Construction,” of the Standard

Specification is amended to read as follows:

“Posts shall be installed by the Contractor so as to fulfill the requirements outlined in this section and shall be crowned at the top to shed water.”

F. Materials may be commercial quality providing the dimensions and sizes of said materials are equal to, or greater than, the dimensions and sized specified by the Standard Specifications.

G. Used materials may be used providing such used materials are good, sound, and are suitable for the purposed intended. The Contractor shall be the approval of the Engineer prior to installing construction fencing and gates using used materials.

H. The Contractor shall get approval from the Engineer for location of temporary fences and gates prior to installing any materials.

I. Temporary construction fencing that are damaged from any cause including vandalism during the progress of the work shall be immediately repaired or replaced by the Contractor at this expense. Any damage caused by the use of temporary fences and gates to existing features including, but not limited to, existing turf areas, holes in the ground, damage to existing vegetation, etc. shall be repaired or replaced by the Contractor at this expense. If holes are caused by the use of temporary

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fences and gates, they shall be backfilled in accordance with the provisions in the second paragraph of Section 15-1.02, “Preservation of Property,” of the Standard Specifications.

PART 3 EXECUTION

3.01 SPECIAL CONDITIONS OF THE SITE

A. The area to be set aside for the use of the Contractor is indicated on the Drawings as "Limit of Work" and “Staging Area” Except for sub-surface utility work, curb and gutter, temporary roads and any other work specifically shown or noted, the Contractor shall confine his operations within the limits-of-work so indicated.

B. Work shall not proceed for the site or buildings until all temporary construction fencing is installed.

3.02 CONDITIONS AT THE SITE

A. The Contractor shall make all necessary inspections of the job site and of the work to be fully aware of the conditions of all temporary construction fencing at all times.

B. The Contractor shall take all steps necessary to prohibit any part of the premises, the buildings, or structures to be overloaded by setting thereon any material or equipment, or performing thereon any of his work, which could cause any loss, damage, and/or injury to person or property.

3.03 REMOVAL

A. Maintain all temporary construction fencing as long as needed for the safe and proper completion of the work. Remove all such temporary construction fencing as rapidly as progress of the work will permit.

3.04 FINAL SITE CLEAN-UP

See Section 01 77 00.

3.05 MEASUREMENT AND PAYMENT

A. The linear foot unit price paid for **“Temporary Construction Fencing”** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, complete and in place as shown on the plans, as required by the Special Provisions, and as required by the City’s Engineer and no additional compensation will be allowed therefor.

END OF SECTION

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SECTION 01 57 19 Temporary Controls

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Traffic plans and controls

B. Pedestrian and patron controls

C. Construction operations under traffic

D. Pollution abatement – general requirements

E. Water Pollution Prevention Program

F. Dust control.

G. Rubbish control.

H. Mud control.

I. Noise and vibration control.

J. Federal Water Pollution Control Act.

K. Chemicals.

L. Cultural Resources.

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1.02 REFERENCES

A. State of California, Department of Transportation (Caltrans), Standard Specifications 2015.

B. State of California, Department of Transportation (Caltrans), California Manual of Uniform Traffic Control Devices (California MUTCD), Part 1, Temporary Traffic Control.

C. State of California, Vehicle Code.

D. State of California General Permit Order 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-006-DWQ) or most current version.

E. California Regional Water Quality Control Board San Francisco Bay Municipal Regional Stormwater NPDES Permit, Order No. R2-2015-0049.

F. American National Standards Institute (ANSI) S1.4: Specification for Sound Level Meters.

G. Refer to Article 7.9 for Worksite Maintenance and Operation including:

H. Air quality and air emissions control

I. Dust and debris

J. Clean up

K. Disposal and Completion

L. Erosion and sediment control (SWPPP), refer to Section 01 57 23 Temporary Storm Water Pollution Control

M. American National Standards Institute (ANSI) S1.4: Specification for Sound Level Meters.

1.03 RELATED SECTIONS

A. Section 01 06 00 - Regulatory Requirements.

B. Section 01 57 23 – Statewide Construction General Permit

1.04 SUBMITTALS

A. General: Refer to Contract Specifications Section 01 30 00, Submittals.

B. Noise and Vibration Monitoring Plan as described in Part 1.12, herein.

1.05 PEDESTRIAN AND PATRON CONTROLS

A. Pedestrian Handling Plan

1. The Contractor will prepare a pedestrian handling plan for the Work within Park property to reflect any changes in pedestrian and patron paths including the accessible path. The accessible path will be as determined by the City in accordance with the requirements of California Building Code and the Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines. The pedestrian handling plan will include drawing(s) showing proposed pedestrian handling devices including temporary signage and wayfinding signs. The Contractor will submit the plan for review and approval by the Engineer. All pedestrian handling devices and signage will be in compliance with the accessibility requirements of the California Building Code and the Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines.
2. Include pedestrian handling plans for each phase of the work requiring different pedestrian diversion patterns and methods of control. Include for each phase detailed schedules for performance of work and include proposed pedestrian handling devices.
3. Where overhead protection is required for walkways during construction, the requirement for Covered Walkways of Chapter 33 of California Building Code will be followed.

B. Work Area Controls

1. All construction work within and around the Park facilities will be separated from the public with appropriate barriers to prevent public access to construction areas and to contain construction hazards.

2. When the construction work is not within the Worksite perimeter fence as specified in Section 01 52 00, Construction Facilities, a barrier will be placed around the construction work area to prevent public access to the work area and to protect the public from construction operations. The area to be enclosed within barriers will not encroach into an exit path nor block the access path to elevators, escalators or stairways. Barriers on the platform level will not be closer than 7 feet from the platform edge. Barriers on the concourse level will not interfere with access to fare gates or automatic fare collection vending equipment unless approved by the Engineer in writing.

3. A barrier that will be removed at the end of the work hours or work shift is a short- term barrier. Work performed within a short-term barrier must be able to be safely secured and not present a hazard to the public when the barrier is removed. Short- term barriers can be portable crowd control barriers, traffic delineator connected with rails, etc. to form a solid barrier, or other field constructed barriers approved by the Engineer.

4. A barrier that protects work that cannot be safely secured, is a hazard to the public, or remains in place after the end of the work hours or work shift is a long-term barrier. Long-term barriers will be a minimum of 8 feet in height. Long-term

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barriers will be constructed in accordance with the Barrier Design requirements of Chapter 33 of the California Building Code, and will be constructed with fire resistant materials. The use of fire retardant treated lumber and plywood is acceptable. Long-term barriers will be painted and maintained free of graffiti; paint color to be selected by the Engineer.

1.06 TRAFFIC PLANS AND CONTROLS

A. The Contractor will prepare a traffic control plan required for the Work. The traffic plan will include drawings showing proposed traffic control devices including temporary signage and temporary pavement markings and striping. Traffic control shall conform to the provisions of Part 6, Temporary Traffic Control of the latest California Manual on Uniform Traffic Control Devices.
B. The Contractor shall furnish, install, operate, maintain, and remove when no longer required, all traffic control and protective devices required for the approved traffic plan.
C. The traffic control plan will be submitted to the Engineer in accordance with Article 15 – Special Conditions, Section 01 33 00 Submittal Procedures.

1.07 CONSTRUCTION OPERATIONS UNDER TRAFFIC

A. "Construction equipment" is defined as all types of equipment, vehicles, and tools used in connection with construction work. The term "workers" includes every person or firm performing work in or adjacent to public streets.
B. When in traffic lanes, all vehicles and equipment will be operated at normal traffic speeds. If this is not practicable, a slow moving vehicle emblem will be displayed in accordance with the California Vehicle Code. Construction equipment will not be parked in any lane intended for use by normal traffic. Equipment parked or stored at the work site will be behind a guard rail, barrier, curb, or other protective device.
C. One-Way Traffic: No construction equipment will be operated in traffic lanes, except in the designated direction of travel for respective lanes.
D. Equipment Travel:

1. No construction equipment other than that designated and used for general highway transportation will be moved on streets during hours of darkness or periods of adverse weather conditions that reduce normal visibility.

2. Any construction equipment or material required for construction operations which exceeds the maximum vehicle dimensions specified in the Motor Vehicle Code, will be moved only in accordance with established State and local regulations. No such oversize load will be moved over public streets without first obtaining approval of the appropriate jurisdictional authority.

E. When flagging is required, provide certified flaggers and flagging in accordance with the requirements of the California MUTCD, Part 6.
F. All temporary control devices in connection with construction work will be removed at the close of the work day, unless the state of the work is such that warning devices are still needed and are adapted for night closing.

1.08 POLLUTION ABATEMENT - GENERAL REQUIREMENTS

A. Conduct construction operations in a manner that will minimize pollution of the environment surrounding the area of the Work by all practicable means and methods. Apply specific controls as specified in the Contract Specifications and as follows:

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1. Waste Materials: No waste or eroded materials shall be allowed to enter natural or man-made water or sewage removal systems. Eroded materials from excavations, borrow areas, or stockpiled fill shall be contained within the Jobsite. The Contractor shall develop methods for control of erosion as specified in Part 1.07, herein.
2. Burning: No burning of waste materials or debris will be permitted.
3. Burying: No burying of waste materials and debris will be permitted within the limits of the City's property.

B. Provide for and maintain the flow of all sewers, drains, building or inlet connections, and all water courses which may be encountered during progress of the Work. Do not allow the contents of any sewer, drain, or building or inlet connection to flow into trenches. Immediately remove from proximity of the Work all offensive matter, using such precautions as are required by local authorities having jurisdiction.

1.09 WATER POLLUTION PREVENTION PROGRAM

A. Refer to Section 01 57 23

B. Water Pollution Control will conform to the requirements set forth in the Chapter 18.205 of the City of Fremont Municipal Code - Grading, Erosion and Sediment Control, and in the current version of the State Construction General Permit, and the Contract Documents.

1.010 DUST CONTROL

A. Refer to Article 7.9 of the General Conditions

B. The Contractor shall furnish all labor, equipment, and means required and shall carry out effective measures wherever and as often as necessary to prevent its operation from producing dust in amounts damaging to property, cultivated vegetation, or domestic animals, or causing a nuisance to persons living in or occupying buildings in the vicinity. The Contractor shall be responsible for any damage resulting from any dust originating from its operations. The dust abatement measures shall be continued until the Contractor is relieved of further responsibility by the City.

C. Upon failure of the Contractor to remove the nuisance dust as specified in Paragraph B within 2 hours after notification by the Supervising Construction Coordinator, the City may order that such work be done by others, and all costs therefore shall be deducted from monies owned or to be owed the Contractor.

D. It is understood that the provisions in Section 10, “Dust Control” will not prevent the Contractor from applying water or dust palliative for his convenience if he so desires; however, the Contractor shall endeavor, whenever possible to restrict the use of water to control dust for his convenience due to the current need to conserve water.

E. As a part of the SWPPP, the Contractor shall submit a Dust Control Plan describing proposed methods and equipment to be used for dust control, street sweeping and cleaning operations.

F. Contractor shall provide dust control at all times, including holidays and weekends, as required to abate dust nuisance on and about the Jobsite which is a result of construction activities.

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G. Quantities and equipment for dust control shall be sufficient to effectively prevent dust nuisance on and about the Jobsite; and when weather conditions warrant, sprinklering equipment shall be on hand at all times for immediate availability.

H. The City Inspector, City Engineer or Project Manager shall have authority to order dust control work whenever conditions warrant, and there shall be no additional cost to the City therefor. Dust control shall be effectively maintained whether or not the City Inspector, City Engineer or Project Manager orders such work.

I. Complaints from the public shall be reported to the City Inspector, City Engineer or Project Manager and shall be acted on immediately.

J. Where earthwork operations are in progress, keep exposed earth surfaces dampened continuously. Also, keep dirt accessways and roads dampened continuously.

K. If portions of the Jobsite are temporarily inactive or abandoned for whatever reason, provide dust control and abatement continuously during such periods of inactivity.

L. Where dust resulting from construction activities has collected on public sidewalks and streets, hose down such sidewalks and streets to abate flying dust parts. Clean all sidewalks and streets from accumulated dirt and dust.

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1.011 RUBBISH CONTROL

During the progress of the Work, the Contractor shall keep the site of the Work and other areas used by it in a neat and clean condition, and free from any accumulation of rubbish. The Contractor shall dispose of all rubbish and waste materials of any nature occurring at the Work site, and shall establish regular intervals of collection and disposal of such materials and waste. The Contractor shall also keep its haul roads free from dirt, rubbish, and unnecessary obstructions resulting from its operations. Disposal of all rubbish and surplus materials shall be off the site of construction in accordance with local codes and ordinances governing locations and methods of disposal, and in conformance with all applicable laws and regulations.

1.012 MUD CONTROL

A. Contractor shall take proper measures to prevent tracking of mud onto public streets, drives, and sidewalks. Such measures shall include, but are not limited to, covering muddy areas on the Jobsite with clean, dry sand.

B. All egress from the Jobsite shall be maintained in a dry condition, and any mud tracked onto streets, sidewalks, or drives shall be immediately removed, and the affected area shall be cleaned. The City Inspector, City Engineer or Project Manager may order such work at any time the conditions warrant.

C. Contractor shall provide and maintain truck wheel washes and cleaning stations either at all points of haul route ingress and egress to public right-of-way or at a central location within the Jobsite. Washwater sedimentation removal and discharge quality shall be in accordance with regulatory requirements for discharge into receiving utilities or bodies of water. All trucks, or other vehicles leaving the Jobsite, shall be cleaned of mud and dirt, including mud and dirt clinging to exterior body surfaces of vehicles.

D. All trucks coming to the Jobsite or leaving the Jobsite with materials or loose debris shall be loaded in a manner that will prevent dropping of materials or

debris on streets. Spillage resulting from hauling operations along or across any public traveled way shall be removed immediately.

E. Contractor shall engage a street sweeping and cleaning service or otherwise provide for the sweeping and cleaning of haul routes and work areas within public right-of-way. Street sweeping and cleaning operations shall comply with City of Fremont requirements. The duration of this activity shall be concurrent with excavation, hauling, and stockpiling operations. The minimum cleaning and sweeping frequency shall be continuous during continuous hauling operations and as needed during intermittent operations. The City Inspector, City Engineer or Project Manager may order additional street sweeping and cleaning at no additional expense to the City as conditions warrant.

F. The applicable requirements for mud control shall be included in the Contractor's SWPPP.

1.013 NOISE AND VIBRATION CONTROL

A. Refer to Article 7.20 "Noise Control" of the General Conditions.

B. Requirements: Minimize noise caused by construction operations, and provide working machinery and equipment fitted with efficient noise suppression devices. Employ other noise abatement measures as necessary for protection of employees and the public. In addition, restrict working hours and schedule operations in a manner that will minimize, to the greatest extent feasible, disturbance to residents in the vicinity of the Work.

C. Definitions:

1. Daytime refers to the period from 7:00 a.m. to 7:00 p.m. local time daily except Sundays and legal holidays.

2. Nighttime refers to all other times including all day Sunday and legal holidays.

3. Construction Limits are defined for the purpose of these noise and vibration control requirements as the City right-of-way lines, construction easement boundaries, or property lines as shown in the Contract Drawings.

D. Contractor shall submit a Noise and Vibration Monitoring Plan describing proposed noise and vibration monitoring and recording equipment and positioning.

E. Noise Control Requirements: Contractor shall employ noise-reducing construction practices such that construction noise does not exceed the limits specified herein. Employ other noise abatement measures as necessary for protection of employees and the public. Measures to be employed may include but are not limited to the following:

1. Restrict working hours and schedule operations in a manner that will minimize, to the greatest extent feasible, disturbance to residents in the vicinity of the Work.

2. Use equipment with enclosed engines and/or high performance mufflers.

3. Locate stationary equipment as far as possible from noise-sensitive uses.

4. Construct noise barriers, such as temporary walls or piles of excavated

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material between noise activities and noise sensitive uses.

5. Re-route construction-related traffic along roads that will result in the least amount of disturbance to residences.

F. Vibration Control Requirements: Contractor will employ vibration-reducing construction practices such that construction vibration does not exceed 80 VdB (more than 1 hour per Day), 90 VdB (less than 1 hour per day), or 100 VdB (less than 10 minutes per Day), or a peak particle velocity damage threshold of 0.20 inch per second for fragile buildings or structures. Measures to be employed may include but are not limited to the following.

1. Locate vibration-generating equipment as far as possible from vibration-sensitive land uses.

2. Avoid simultaneous operation of multiple pieces of vibration-generating equipment.

3. Avoid nighttime construction in residential areas.

4. Avoid construction processes that generate high vibration levels

5. Avoid the use of vibratory rollers near vibration-sensitive uses.

G. Monitoring:

1. Monitor noise and vibration levels of work operations to assure compliance with the noise limitations specified herein. Retain record of noise measurements for inspection by the City Inspector, City Engineer or Project Manager.

2. Promptly inform the City Inspector, City Engineer or Project Manager of any complaints received from the public regarding noise and vibration. Describe the action proposed and the schedule for implementation, and subsequently inform the City Inspector, City Engineer or Project Manager of the results of the action.

3. Monitor noise and vibration levels day and night and for each new activity or piece of equipment. Start by measuring three times a Day that work operations occur plus once a night for 3 consecutive Days that work operations occur. Monitor noise and vibration levels at least once a week thereafter.

H. Measurement Procedure:

1. Except where otherwise indicated, perform all noise measurements using the A-weight network and "slow" response of an instrument complying with the criteria for a Type 2 General Purpose sound level meter as described in ANSI S1.4.

2. Measure impulsive or impact noises with an impulse sound level meter complying with the criteria of IEC 179 for impulse sound level meters. As an alternative procedure, a Type 2 General Purpose sound level meter on C-weighting and "fast" response may be used to estimate peak values of impulsive or impact noises. Transient meter indications of 125 dbC "fast" or higher will be considered as indications of impulsive noise levels of 140 dBA or greater.

3. Measure noise levels at buildings affected acoustically by the Contractor's operations at points between 3 feet and 6 feet from the building face to minimize the effect of reflections.

CITY COUNCIL REFERENCE ONLY

4. Measure noise levels at points on the outer boundaries of Construction Limits for noise emanating from within.

5. Where more than one criterion of noise limits is applicable, use the more restrictive requirement for determining compliance.

I. Continuous Construction Noise: Prevent noise from stationary sources, parked mobile sources, or any source or combination of sources producing repetitive or long-term noise lasting more than a few hours from exceeding the following limits:

1. Maximum Allowable Continuous Noise Level, dBA:

Affected Residential Areas	Daytime	Nighttime
Single family residences	60	50
Arterials or in multi-family residential areas, including hospitals	65	55
Semi-residential/commercial areas, including hotels	70	60

Affected Commercial Areas	At All Times
Semi-residential/commercial areas, including schools	65
Commercial areas with no nighttime residency	70
Affected Industrial Areas	
All locations	80

J. Intermittent Construction Noise: Prevent noises from non-stationary mobile equipment operated by a driver or from any source of non-scheduled, intermittent, non-repetitive, short term noises not lasting more than a few hours from exceeding the following limits:

1. Maximum Allowable Intermittent Noise Level, dBA:

Affected Residential Areas	Daytime	Nighttime
Single family residences	75	60
Arterials or in multi-family residential areas, including hospitals	75	65
Semi-residential/commercial areas, including hotels	80	70

Affected Commercial Areas	At All Times
Semi-residential/commercial areas, including schools	80
Commercial areas with no nighttime residency	85

1.014 CHEMICALS

CITY COUNCIL REFERENCE ONLY

All chemicals used during project construction or furnished for project operation, whether defoliant, soil-sterilant, herbicide, pesticide, disinfectant, polymer, reactant or of other classification, shall show approval of either the U.S. Environmental Protection Agency or the U.S. Department of Agriculture. Use of all such chemicals and disposal of residues shall be in strict accordance with the printed instructions of the manufacturer.

1.015 CULTURAL RESOURCES, HISTORIC OR ARCHEOLOGICAL ITEMS

A. Refer to Article 7.18 “Historic or Archeological Items” of the General Conditions.

B. The Contractor's attention is directed to the National Historic Preservation Act of 1966 (16 U.S.C. 470 and 36 CFR 800) which provides for the preservation of potential historic architectural, archaeological, or cultural resources (hereinafter called "cultural resources"). The Contractor shall conform to the requirements of the National Historic Preservation Act of 1966 as it relates to the preservation of cultural resources.

C. If buried cultural resources such as chipped or ground stone, quantities of bone or shell material, historic debris, or building foundations are inadvertently discovered during ground-disturbing activities, work will be stopped as described in article 7.18 of the General Conditions.

D. In the event of discovery of human remains during construction, there will be no further excavation or disturbance of the site or any nearby area reasonably suspected to contain adjacent remains. The Alameda County Coroner will be contacted and will make a determination as to whether the remains are Native American. If the coroner determines that the remains are not subject to his authority, he shall notify the Native American Heritage Commission, who will attempt to identify descendants of the deceased. If no satisfactory agreement can be reached as to disposition of the remains pursuant to State law, the remains will be buried and any associated items on the property in a location not subject to further subsurface disturbance.

The contractor shall conform to the requirements of the National Historic Preservation Act of 1966 as it relates to the preservation of cultural resources.

E. In the event of the discovery of buried cultural resources, such as chipped or ground stone, quantities of bone or shell material, historic debris, or building foundations are inadvertently discovered during grounding disturbing or subsurface excavations and activities, at the site of construction, work will be stopped as described in Article 7.18, and the following procedures shall be instituted:

1. The Engineer will issue a Field Order directing the Contractor to cease construction operations at the location of such potential cultural resources find.

2. Such Field Order shall be effective until such time as a qualified archaeologist can assess the value of such potential cultural resources and make a recommendation to the State Cultural Resources Officer.

3. Additionally, if human skeletal remains are inadvertently encountered during construction the Contractor shall contact the Alameda County Coroner immediately.

F. If the archaeologist determines that the potential find is a bona fide cultural resource, at the direction of the State Cultural Resources Officer, the Contractor shall suspend work at the location of the find per Article 7.18 of the General Conditions.

CITY COUNCIL REFERENCE ONLY

1.016 MEASUREMENT AND PAYMENT

A. Full compensation for conforming to the provisions in this section "**Temporary Controls**" not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 01 57 23 Water Pollution Control

PART 1 GENERAL

1.01 GENERAL

A. Water pollution control shall conform to the provisions of Section 7.19 "Environmental Control" of these General Conditions and the following Special Conditions and these Project Specifications.

B. The size of the project does not require submittal of a SWPPP to the State Water Board, but does require the implementation of Water Pollution Control Best Management Practices (BMP's)

1.02 RELATED SECTIONS

A. Section 7.19 of the General Conditions

B. Erosion, sediment, noise, dust, and exhaust control requirements are specified in Contract Specifications Section, 01 57 19, Temporary Controls.

C. California State Water Resources Control Board (SWRCB): Order No. 2009-0009-DWQ.

D. Section 401 of the Clean Water Act Section, Water Quality Certification issued by the Regional Water Quality Control Board (RWQCB).

E. Section 402 of the Clean Water Act, National Pollutant Discharge Elimination System - General Permit for Stormwater Discharges Associated with Construction issued by the State Water Resources Control Board (SWRCB) located at the following website: http://www.waterboards.ca.gov/water_issues/programs/npdes/.

F. Land Disturbance Activities Order No. 2009-0009-DWQ, NPDES NO. CAS000002.

G. Fremont Municipal Code (FMC) Chapter 11 - "Storm Water Management and Discharge Control Ordinance."

H. City's Stormwater NPDES (National Pollutant Discharge Elimination System) Permit No. CAS612008.

I. Construction General Permit, 99-08-DWQ.

CITY COUNCIL REFERENCE ONLY

1.03 SUBMITTALS

C. General: Refer to Contract Specifications Section 01 30 00, Submittals.

D. Water Pollution Control Plan, and Site Map(s) as described herein.

1.04 FEDERAL WATER POLLUTION CONTROL ACT

Refer to Section 01 57 19, Temporary Controls.

1.05 WATER POLLUTION CONTROL PLAN

A. A Water Pollution Control Plan shall be submitted by the Contractor to the Engineer for approval prior to proceeding with any work on this project. This plan shall be designed to implement the BMP's already defined in the plan set (fiber

rolls, stabilized construction entrance, drain inlet protection, etc.) and any other BMP's necessary to keep dirt, debris, and construction waste away from storm drains and local waterways. Contractor shall implement and maintain the plan, and or update the plan to provide temporary erosion and sediment control (Water Pollution Control Plan) for the duration of the project.

B. Contractor shall implement and maintain temporary erosion and sediment control for the project as detailed in the most recent version of the Erosion Control and Sediment Control Field Manual for California, and the most recent California Stormwater Quality Association (CASQA) BMP Handbook, Construction, for the entire duration of the project.

1.06 PRODUCTS

A. Best Management Practice (BMP) products shall be as specified in the most recent CASQA BMP Handbook, Construction.

1.07 EXECUTION OF WATER POLLUTION CONTROL PLAN

A. Erosion and sediment control work shall consist of applying BMP's to control the discharge of stormwater pollutants from the project site. BMP's shall be used to cover all temporary erosion and sediment control situations that arise during construction including unanticipated field conditions year-round. These erosion and sediment control measures shall control and contain erosion-caused silt deposits and provide for the safe discharge of silt-free storm water into existing and proposed storm facilities.

B. The Water Pollution Control Plan shall be designed to ensure the project site is protected during all storm events for the entire duration of the project.

C. Contractor shall implement and maintain all Water Pollution Control Plan work for the project that shall include:

1. Construction of any and all necessary systems to eliminate contaminants from entering the storm system.
2. Clean up and control of the work site materials, spoils and debris.
3. Removal of contaminants produced by equipment used for the construction of the project.
4. Prohibition of illicit discharge (non-rain water) into the storm system.
5. Provision of all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

D. The Water Pollution Control Plan must be approved by the Engineer prior to any construction work commencing on this project, as required by Section 2.5 of the General Conditions and Section 01 30 00, Submittals, of the Project Specifications.

E. Contractor shall be responsible for ensuring that all sub-contractors and suppliers are aware of all water pollution control measures and that they implement such measures. Failure to comply with the storm water quality regulations and specifications will result in the issuance of verbal or written corrective notices, citations, fines, and/or a project stop order.

CITY COUNCIL REFERENCE ONLY

F. Contractor shall maintain erosion and sediment control measures daily. The name of the person responsible for the daily maintenance of these facilities shall be on record with the Engineer and Project Inspector, along with a phone number where they can be reached twenty-four (24) hours a day.

G. Erosion and Sediment Control: Temporary erosion and sediment control work shall consist of applying erosion control materials to embankment slopes, excavation slopes and other areas designated on the Water Pollution Control Plan, and installing sediment control such as, but not limited to, fiber roll, silt fence, inlet protection, gravel bags, headwall protection and stabilized construction entrances and exits, or other measures as specified in the Water Pollution Control Plan.

1.08 MEASUREMENT AND PAYMENT

The lump sum price paid for conforming to the provisions in this section "**Water Pollution Control**" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing the work covered in this section and Section 01 57 19, including development of a Water Pollution Control Plan as described in these specifications, and as required by the Permit, submittal to the City for review, implementation of all necessary BMP's, on-going maintenance of BMP facilities for the duration of the contract, documentation and reports, and final site stabilization, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the Project Engineer, and no additional compensation will be allowed therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

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CITY COUNCIL REFERENCE ONLY

SECTION 01 58 00 Project Identification Signage

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Contract Identification and Construction Signage

B. Mounting post, bolts and footing

C. Removal and backfill of post holes

1.02 MEASUREMENT AND PAYMENT

The contract price paid for **"Project Identification Signage"** of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals., and for doing all work covered in this section, complete and in place as shown on the plans, as required by the Special Provisions and as required by the Project Engineer.

1.03 DESCRIPTION OF WORK

A. The Contractor is responsible to furnish and erect one (1) professionally-made project information signs.

B. Sign location shall be adjacent to the driveway within the parking lot, or a location determined in the field and approved by the Project Manager adjacent to the construction site.

1.04 PROJECT INFORMATION CONSTRUCTION SIGN

A. Design, Layout, and Size: Design, layout, and size of lettering and colors shall conform to the details shown on the attached "Illustration of Sign Layout."

B. All text to be Century Gothic, black text on white background. Letters and wording to be spaced as indicated on the template.

C. City logo shall be Standard colors as provided in the template.

D. Border around the sign shall be a single line with no bevel.

E. Plan graphics of the improvements shall be placed in the upper left corner of the sign. City logo will be at top and centered with the project title directly below logo, and project description below title.

F. Sign material shall be .080 sheet aluminum, with 1" radius corners. Fastening hardware shall be commercial quality.

G. Sign to be mounted on minimum 4" wood posts embedded in the ground, with 6'-6" clearance beneath the bottom of the sign.

H. Painting: Powder-coat paint all exterior surfaces of the sign assembly in accordance with Military Standard MIL-C-24712. Ensure finish meets the requirements of ASTM D 3359, ASTM D 3363, and ASTM D1055/D1056. Quality assurance program shall meet MIL-1-45208A. Generally, letters and logos shall be painted black, except where indicated otherwise, on a white background.

CITY COUNCIL REFERENCE ONLY

I. Painting: Powder-coat paint all exterior surfaces of the sign assembly in accordance with Military Standard MIL-C-24712. Ensure finish meets the requirements of ASTM D 3359, ASTM D 3363, and ASTM D1055/D1056. Quality assurance program shall meet MIL-1-45208A. Generally, letters and logos shall be painted black, except where indicated otherwise, on a white background. City colors shall be used for their logos. Style of letters shall be Helvetica, unless otherwise indicated.

J. Any deviations shall be approved by the project manager prior to fabrication.

K. City will provide an AutoCAD template to the contractor or their sign shop. Refer to the end of this section for graphic example.

L. Excavate post holes, provide mounting fastener.

M. Contract Funding Sign Quantities: Three.

N. Location: The signs shall be placed at the three pathway entrances leading to the bathroom structure: 1) at the Always Dream Play Park; 2) at the accessible entrance in the tennis court parking lot; 3) At the accessible entrance in the parking lot for Fabbri Fields 1 and 2.

1.05 INSTALLATION AND MAINTENANCE

A. Installation: Sign mounting and sign parts shall be installed in accordance with Caltrans Standard Plans for Roadside Signs – Wood Post.

B. Maintenance: Keep signs clean and in good repair until Contract Completion.

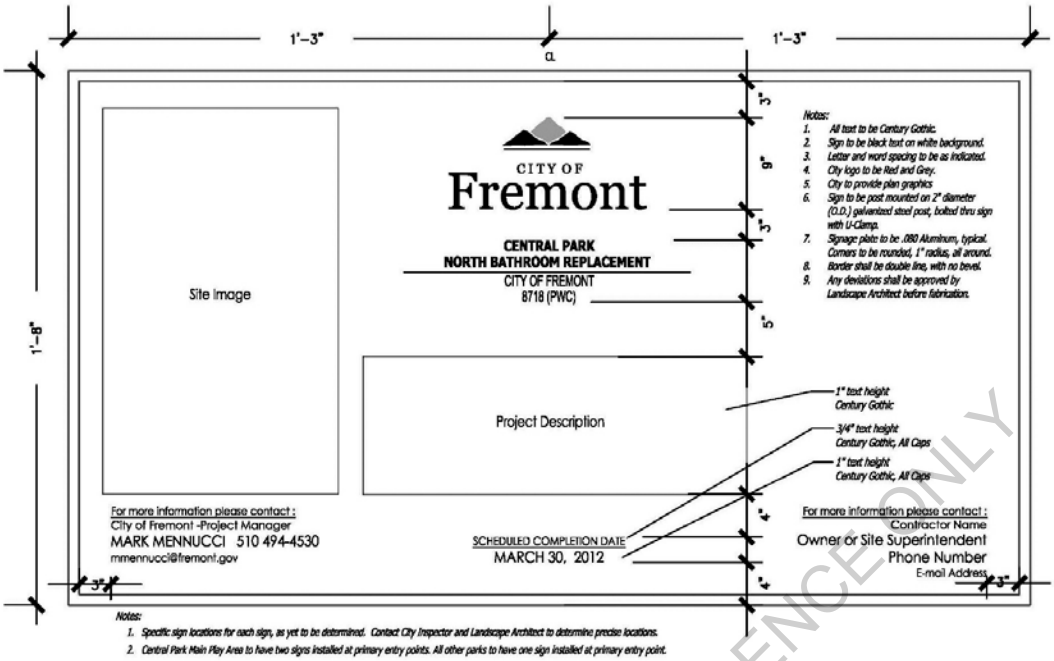
1.06 SUBMITTALS

A. Refer to Contract Specifications Section 01 30 00, Submittal Procedures.

B. Submit Shop Drawings of Contract funding signs and field office signs including designs, layouts, sizes, and proposed locations within 15 Days of Notice to Proceed.

CITY COUNCIL REFERENCE ONLY

1.07 ILLUSTRATION OF SIGN LAYOUT **Change graphic**



1.08 PROJECT DESCRIPTION LANGUAGE

Warm Springs Community Park serves a hub for the Warm Springs neighborhood providing sports fields, playgrounds, picnic areas, tennis courts, a community center, public restroom and a meeting room. The upgrade of the Warm Springs Community Park Meeting and Bathrooms include the demolition, removal, recycling, and off hauling of existing site concrete, structures, utilities, and landscaping; the construction of a new restroom facility, concrete walkways, utilities, and landscape restoration and improvements.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

MEASUREMENT AND PAYMENT

The Lump sum contract price paid for **"Project Identification Signage"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved, complete in place, as shown on the plans, as required by these Special Provisions, and as directed by the City's Engineer and no additional compensation will be allowed therefore.

END OF SECTION

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CITY COUNCIL REFERENCE ONLY

SECTION 01 60 00 Product Requirements

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Administrative and procedural requirements governing Contractor's selection of products for use in Project.

1.02 RELATED SECTIONS

A. Section 01 30 00 "Submittals"

B. Section 01 63 00 "Product Substitutions"

1.03 DEFINITIONS

A. Definitions used in this Article are not intended to change meaning of other terms used in Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings tin construction industry.

1. Products: Items purchased for incorporation in Work, whether purchased for Project or taken previously purchased stock. Term "product" includes terms "material," "equipment," "system," and terms of similar intent.

a. Names Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or lists in manufacturer's published product literature, that is current as of date of Contract Documents.

2. Materials: Products substantially shaped, cut, worked, missed, finished, refined or otherwise fabricated, processed, or installed to form part of Work.

3. Equipment: Product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

CITY COUNCIL REFERENCE ONLY

1.04 SUBMITTALS

A. Product List: Prepare list showing products specified in tabular form acceptable to Construction Manager and Project Landscape Architect. Include generic names of products required. Include manufacturer's name and proprietary product names for each item listed.

B. Refer to Section 01 30 00 "Submittals"

1.05 QUALITY ASSURANCE

A. Source Limitations: To fullest extent possible, provide products of same kind from single source.

B. Compatibility of Options: When given option of selecting between two (2) or more products for use on Project, product selected shall be compatible with

products previously selected, even if previously selected products were also options.

C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on exterior.

1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.

2. Equipment Nameplates: Provide permanent nameplate on each item of service-connected or power-operated equipment. Locate on easily accessible surface that is inconspicuous in occupied spaces. Nameplate shall contain following information and other essential operating data:

a. Name of product and manufacturer

b. Model and serial number

c. Capacity

d. Speed

e. Ratings

CITY COUNCIL REFERENCE ONLY

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products according to manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

1. Schedule delivery to minimize long-term storage at site and to prevent overcrowding of construction spaces.

2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3. Deliver products to site in undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

4. Inspect products upon delivery to ensure compliance with Contract Documents and to ensure that products are undamaged and property protected.

5. Store products at site in manner that will facilitate inspection and measurement of quantity or counting of units.

6. Store heavy materials away from Project structure in manner that will not endanger supporting construction.

7. Store products subject to damage by elements above ground, under cover in weather-tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 – PRODUCTS

2.01 PRODUCT SELECTION

A. General Product Requirements: Provide products that comply with Contract Documents, that are undamaged and, unless otherwise, indicated, new at time of installation.

1. Provide products complete with accessories, trim, finish, safety guards, and other devised and details needed for complete installation and intended use and effect.

2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. Product Selection Procedures: Contract Documents and governing regulations govern product selection. Procedures governing product selection include following:

1. Nonproprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in Work, but do not restrict Contractor to use of these products only, Contractor may propose any available product that complies with Contract requirements. Comply with Section 01 63 00 to obtain approval for use of unnamed product.

2. Products Specified by Indicating Basis for Design: Design and approval is based on Systems, products, and assemblies of manufacturer indicated. Equivalent systems, products, and assemblies of other named manufacturers may be used; however, Contractor is responsible for additional approvals required, for coordination with remainder of Contract Documents, and for costs of redesign or recalculation required. Comply with Section 01 63 00 to obtain approval for use of unnamed product.

3. Descriptive Specification Requirements. Where Specifications describe product or assembly, listing exact characteristics required, with or without use of brand or trade name, provide product or assembly that provides characteristics and otherwise complies with Contract requirements.

4. Performance Specification Requirements. Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by manufacturer for application indicated.

a. Manufacturer's recommendations may be contained in published product literature or by manufacturer's certification of performance.

5. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with imposed code, standard, or regulation, select product that complies with standards, codes, or regulations specified.

6. Visual Matching: Where Specifications require matching established Sample, Architect's decision will be final on whether proposed product matches satisfactorily.

a. Where no product available within specified category matches satisfactorily and complies with other specified requirements, comply with provisions of Section 01 63 00 for selection of matching product in another product category.

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7. Visual Selection: Where specified product requirements include phase "as selected from manufacturer's standard colors, patterns, textures" or similar phase, select product and manufacturer that complies with other specified requirements. Architect will select color, pattern, and texture from product line selected.

PART 3 – EXECUTION

3.01 INSTALLATION OF PRODUCTS

A. Comply with manufacturer's instructions and recommendations for installation of products in applications indicated. Anchor each product securely in place accurately located and aligned and other Work.

1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

3.02 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section "**Product Requirements**", not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 01 63 00 Product Substitution Procedures

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Administrative and procedural requirements for handling requests for substitution made after Intent to Award of Contract.

1.02 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by Contractor after Intent to Award of Contract are considered to be requests for substitutions. Following are not considered to be requests for substitutions:

1. Revisions to Contract Documents requested by Owner, Supervising Construction Coordinator, Project Manager, or Project Landscape Architect.
2. Specified options of products and construction methods included in Contract Documents.
3. Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.
4. Substitutions requested during bidding period, and accepted by Addendum prior to Intent to Award of Contract, are included in Contract Documents and are not subject to requirements specified in this Section for Substitutions.

1.03 SUBMITTALS

A. Requests for substitutions will not be considered before selection of Contractor. Substitutions will not be considered when:

1. Indicated on shop drawings or product data submittals without separate formal request.
2. Requested directly by subcontractor or supplier.
3. Acceptance will require substantial revision of Contract Documents.
4. Proposed changes are not in keeping with general intent of Contract Documents.

B. Requests for substitution will be considered only within thirty-five (35) working days after Contractor selection and Intent to Award to the Contractor. The Contractor hereby agrees that failure to submit alternative product requests within the stipulated time period shall act as a waiver of any future rights to offer such substitutes, and the Contractor hereby agrees to provide one of the specific products called for in the Contract Documents. Other requests will be considered only when:

1. Specified product or method of construction cannot be provided within Contract Time. Supervising Construction Coordinator will not consider

CITY COUNCIL REFERENCE ONLY

request if product or method cannot be provided as result of failure to pursue Work promptly or coordinate activities properly.

2. Subsequent information or changes indicate specified product will not perform as intended.

3. Requested substitution offers Owner substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additionally responsibilities Owner must assume. Owner's additional responsibilities include compensation to Architect for redesign and evaluation services, compensation to Supervising Construction Coordinator for additional processing and evaluation services, increase costs of other construction by Owner, and similar considerations.

   a. Supervising Construction Coordinator's time shall be compensated a specified for compensation of time in subsequent article titled Modification of Documents.

4. Specified product or method of construction cannot receive necessary approval by governing authority, and requested substitution can be approved.

5. Specified product or method of construction cannot be provided in manner that is compatible with other materials and where Contractor certified that substitution will overcome incompatibility.

6. Specified product or method of construction cannot be coordinated with other materials and where Contractor certifies that proposed substitution can be coordinated.

7. Specified product or method of construction cannot provide warranty required by Contract Documents and where Contractor certifies that proposed substitution provides required warranty.

C. Do not order or install substitute products without written acceptance.

D. Only one (1) request for substitution for each product will be considered. When substitution is not accepted, provide specified product.

E. Project Manager, or Landscape Architect, will determine acceptability of substitutions.

F. Submit two (2) copies of each request to the Project Manager, or Landscape Architect, through the Supervising Construction Coordinator. Requests should be on a form entitled "Substitution Request Form". Submit separate form for each substitution, and include the following information, at minimum:

1. Identify products by Specification Section and Article numbers.

2. Provide manufacturer's name and address, trade name of products, and model or catalog number.

3. List fabricators and suppliers as appropriate.

4. Document each request with complete data substantiating compliance of proposed substitution with requirements of Contract Documents including independent laboratory testing reports, approval numbers, listings, and approved assembly descriptions as requested by Supervising Construction Coordinator, Project Manager, or Project Landscape Architect, or as required by agencies having jurisdiction.

5. Attach product data as specified in Section 01 30 00.

CITY COUNCIL REFERENCE ONLY

6. Give itemized comparison of proposed substitution with specified product, listing variation, and reference to Specification Section and Article numbers.
7. Give quality and performance comparison between proposed substitution and specified product.
8. Submit written certification from manufacturer that proposed substitution is appropriate for this application.
9. List availability of maintenance services and replacement materials.
10. State effect of substitution on construction schedule, and changes required in other Work or products.

G. By making request for substitutions, Contractor:

1. Represents that Contractor has personally investigated proposed substitute product and determined that it is equal to or superior in all respects to that specified.
2. Represents that Contractor will provide same warranty for substitution that Contractor would for that specified.
3. Will coordinate installation of accepted substitute, making such changes as may be required for Work to be compatible with substrates and adjacent materials, and complete in all respects.
4. Waive claims for additional time related to substitution which may later become apparent.
5. Certifies that cost data presented is complete and includes related costs under this Contract, including redesign costs, and waives claims for additional costs related to substitution which may later become apparent.

H. Modification of Documents: Where substitution required, for proper installation, changes to design of Work as indicated on accepted Shop Drawings, furnish drawings and specifications prepared by and bearing seal of licensed architect and engineers as appropriate, revising Contract Documents.

1. Submit revised Documents for acceptance in accordance with Section 01 30 00.
2. Revised Drawings: Sufficiently complete for proper installation of substitution and related Work.
3. If, in the Project Manager, or Landscape Architect's, sole judgment, proposed substitution is of such significance or deals with product or system affecting basic design or aesthetics, Contractor shall pay the Project Manager, or Project Landscape Architect, for changes required to Contract Documents as follows:

   a. Reimburse Owner for time spent in changing Contract Documents at rate of 3.25 times rate of Direct Personnel Expense (DPE). DPE is defined as direct salaries of personnel engaged on Project and portion of costs of mandatory, and customary contributions and benefits related thereto, including employment taxes and other statutory employee benefits, insurance, sick leave, holidays, vacations, pensions, and similar contribution and benefits.

CITY COUNCIL REFERENCE ONLY

4. Contractor: Responsible for cost of revised Documents, obtaining and paying for review and plan check by authorities having jurisdiction, and cost of revised construction.

5. Revised drawings: Submit with Record Documents.

1.04 SUBMITTAL PROCEDURES

A. Supervising Construction Coordinator's Action: If necessary, Project Manager, or Project Landscape Architect, through Supervising Construction Coordinator, will request additional information or documentation for evaluation within one (1) week of receipt of request for substitution. Supervising Construction Coordinator will notify Contractor of acceptance or rejection of substitution within two (2) weeks of receipt of request of additional information or documentation, whichever is later. Acceptance will be in form of a Field Order or Field Change Order.

1. Supervising Construction Coordinator, Project Manager, or Landscape Architect, will not make exhaustive attempt to determine products proposed for substitution are equivalent to, or can be modified in order to be equivalent to specified products.

a. Where extensive investigation is required by Project Manager, or Landscape Architect, as determined by Supervising Construction Coordinator, Contractor shall reimburse Owner for Supervising Construction Coordinator, Project Manager, or Landscape Architect's time spent in processing additional re-submittals at rate of 3.25 times rate of Direct Personnel Expense (DPE).

2. Use product specified if the Project Manager, Landscape Architect, or Supervising Construction Coordinator cannot make decision on use of proposed substitute with time allocated.

3. If accepted by the Project Manager, or Landscape Architect, products proposed for substitution are accepted subject to modifications by manufacturer, if necessary, to meet detailed requirements of Drawings, and Specifications.

B. For Accepted Products: Submit shop drawings, product data, and samples in accordance with Section 01 30 00.

C. Contractor's submittal, and Architect's and Supervising Construction Coordinator's acceptance of Shop Drawings, Product Data, or Samples for construction activities not complying with Contract Documents to not constitute acceptable or valid request of substitution, nor do they constitute approval.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

Not applicable to this section.

PART 3 – EXECUTION

3.01 MEASUREMENT AND PAYMENT

A. Full compensation for conforming to the provisions in this section "**Product Substitutions**," not otherwise provided for, shall be considered as included

in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

B. No additional payment over the original bid prices will be allowed when approved substitutes are used in lieu of the originally specified materials.

END OF SECTION

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SECTION 01 72 40 Conformance Surveying

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. Conformance Surveying work shall be completed by a Licensed Surveyor and be based on established site bench marks, monuments, lines, and levels necessary for the work covered by this Contract.

B. Conformance surveying shall be done at the contractor's expense to confirm the as built conditions built by the contractor from staking and surveying initially laid out by the City of Fremont.

C. Scope of work:

Providing conformance surveying required for proper completion of the work may include, but may not be limited to:

1. Building Foundation Finished Floor Elevations
2. Concrete Pathway Finished Surface Elevations and Gradient

1.02 REFERENCES AND STANDARDS

A. Perform work in accordance with all applicable laws, codes, and regulations required by the City of Fremont, County of Alameda, State of California.

B. Reference to "Standard Specification" shall mean the current Standard Specifications of the State of California, Business and Transportation Agency, Department of Transportation, Caltrans.

C. California Code of Regulations, Title 24, current edition, also known as the California Building Code (CBC).

1.03 RELATED DOCUMENTS

A. These special provisions are part of the plans and shall include all labor, materials, equipment, reasonable incidentals, and services necessary to the execution of the work.

B. Refer to all other sections, determine the extent and character of related work, and coordinate all work to produce a complete, properly constructed product.

C. Related Sections (as applicable)

1. Section 01 30 00 – Submittals
2. Section 03 30 00 – Cast-in-Place Concrete
3. Section 31 23 16 – Excavation
4. Section 32 11 23 – Aggregate Base Courses
5. Section 32 13 13 – Site Work Cast-in-Place Concrete

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1.04 SUBMITTALS

A. Contractor will be required to submit three (3) hard copies and one (1) electronic copy (in AutoCAD or scaled PDF image) of all conformance surveys for the project. The Contractor shall ensure that all survey data is completed with the supervision of a licensed surveyor. The City Representative shall provide a written response within five (5) working days of receipt of said drawings and identify any areas out of tolerance.

1.05 QUALITY CONTROL AND REWORK

A. Any portion of the survey that does not conform to the grading tolerance requirements identified in this specification section will be corrected by the Contractor. Areas out of conformance will be resurveyed at the Contractor's sole expense (following the identical procedure stated above) by the Surveyor, and these revised points shall be added to the original digital file for resubmittal, review and acceptance by the City Representative.

B. All delays and costs incurred due to grades out of conformance are the sole responsibility of the Contractor. At any point during construction following acceptance of any portion of the survey by the City, the City reserves the right to recheck the finished surface grades (at no cost to the Contractor) to verify it is still in conformance. It is the Contractor's responsibility to protect the grading and compaction tolerances of the surveyed surface after conformance surveying operations are complete and accepted, and prior to installation of any subsequent materials. Any work identified by the survey that is outside of the acceptable tolerances shall be corrected by the Contractor at its sole expense.

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PART 2 MATERIALS (Not applicable)

PART 3 EXECUTION

3.01 LAYING OUT THE WORK

A. Contractor shall employ a Registered Civil Engineer or Licensed Land Surveyor (hereafter referred to as Surveyor) to perform any conformance surveying work required by the Contractor.

B. Prior to beginning work, Contractor shall secure the electronic grading plan from the City for use by the Surveyor. The surveyor shall provide all conformance survey drawings. The drawings shall provide both the design elevations and the as-constructed spot elevations. These elevations shall be for comparison to those on the contract documents for the same location. Contractor shall also show the difference in these two numbers. In addition, unique reference numbers shall be assigned to each point for reference purposes. For spacing requirements, refer to specific type of improvement identified in this specification section.

C. Accuracy of all surveys provided in this section shall be to 0.01 feet.

3.02 CONFORMANCE SURVEYING

A. Contractor shall verify that subgrade has been prepared according to specifications with regard to compaction, grade tolerances and is free of debris, non-compactable material, topsoil, or organics prior to beginning work.

B. Prior to acceptance of the subgrade, a conformance survey will be prepared by the Contractor and submitted to the City Representative. The Contractor will be responsible to provide a certified conformance survey prepared by a Licensed Surveyor. The survey shall be based on a 25 foot grid showing the field crown, slope, grade breaks, the center of the subgrade elevation of the subdrain trench edges, the perimeter of the field finished surface, top of curb elevations. The plan shall show the comparison of the design grades versus the as-constructed grades.

C. Top of subgrade elevations shall be verified using laser-operation survey instruments. Grades at each point must be within ½ -inch plus or minus from the elevations shown on the plans. In addition, no two adjacent points within the grid shall cumulatively deviate more than ¾-inch (0.06 feet) from the respective points' design grades. Contractor shall not install the stone base without written approval by the Supervising Construction Coordinator, City Inspector or Project Landscape Architect to proceed.

D. The finished grades and finished shall not vary from the specified grades more than one-quarter of one inch (¼", or 0.02 ft.) at any location when measured in any direction. .

E. The survey shall be based on a grid showing the finished surface elevations and finished floor elevations.

F. The plan shall show the comparison of the design grades versus the as-constructed grades.

G. Any portion of the survey that does not conform to the requirements identified above will be corrected by the Contractor. Areas out of conformance will be resurveyed (following the identical procedure stated above) by the Surveyor, and these revised points shall be added to the original digital file for review and acceptance by the City's Representative.

H. All delays and costs incurred due to grades out of conformance are the sole responsibility of the Contractor. It is the Contractor's responsibility to protect the grading and compaction tolerances of the base after conformance survey is complete and prior to installation of the synthetic turf.

I. Finish surface planarity shall be verified, and if necessary adjusted, by the Contractor using string line method. A mason's line held taught between two workman separated by a distance of approximately 40 feet, shall be placed directly on the finished surface, parallel to the direction of greatest slope. A third workman shall check for separations between the mason's line and the finished surface that are equal to or greater than the specified tolerances. Areas of separation shall be outlined with marking paint and the depth of separation indicated.

J. Entire finished surface shall be "walked" with mason's line in increments of approximately 3 feet.

3.03 MEASUREMENT AND PAYMENT

A. Full compensation for conforming to the provisions in this section "**Conformance Survey**," not otherwise provided for, shall be considered as included in prices paid

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for the various contract items of work involved and no additional compensation will be allowed therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 01 74 14 Cleaning

Part 1 - General

1.01 Section Includes

A. Cleaning and cleanup during construction.
B. Dust control.
C. Disposal of debris.
D. Final cleaning of station facilities and ancillary buildings.
E. Final site cleanup.

1.02 Related Sections

A. Refer to Section 01 57 00, Temporary Controls, for basic mud control and dust abatement requirements.
B. Refer to Section 01 81 13, Sustainability Requirements, for required documentation submittals.
C. When demolition is involved, refer to Section 02 41 19, Selection Structure Demolition, as applicable, for additional dust abatement requirements.

1.03 Cleaning and Cleanup During Construction

A. The entire site of the Work, including the Contractor's work and storage areas, shall be kept in a neat, clean, and orderly condition at all times during the course of this Contract. The Engineer may, at any time during construction, order a general cleanup of the site as a part of the Work, and there shall be no additional cost to the City therefore. The Contractor shall provide general daily clean-up and disposal service for removal of waste, rubbish, trash, and debris away from the Worksite.
B. Perform cleaning of all facilities and ancillary buildings as required during construction to prevent accumulations of dust, dirt, soil, trash, and debris, so that a clean and safe working environment will be present at all times.
C. Walkways over exposed earth surfaces shall also be kept neat and free of pebbles and other obstacles to walking comfortably, equivalent to broom clean of paved surfaces.
D. The Contractor shall remove all graffiti placed during the course of the Work within the Contractor’s enclosed secured areas at the work site. The Contractor shall remove the graffiti within 24 hours after its detection in these areas.

1.04 Dust Control

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A. Clean interior spaces prior to the start of finish painting and the application of other finishes, and continue cleaning as required until such work is completed.

B. Schedule operations to prevent dust and other contaminants, resulting from cleaning operations, from adhering to set or newly finished surfaces.

C. Also, schedule operations to prevent dust and other flying particles from contaminating sensitive train control equipment in Train Control Rooms. Enforce tight controls as required to provide absolute dust control and abatement in these areas.

1.05 Disposal of Debris

A. Dispose of waste, trash, and debris in a safe, acceptable manner, in accordance with applicable laws and ordinances and as prescribed by authorities having jurisdiction. Bury no waste material and debris on the site. Burning of trash and debris on the site will not be permitted.

B. Location of disposal site for trash and debris and length of haul are the Contractor's responsibility.

1.06 Final Cleaning of Park Facilities and Ancillary Buildings

A. Prior to final inspection by the City, and after all construction work is essentially complete, thoroughly clean the construction site and ancillary buildings and structures, utilizing professional building cleaners where appropriate.

B. Items to be cleaned include all glass, doors, hardware, opening frames, grilles, trim, exposed non-ferrous metal surfaces, plastics, floor coverings, light fixtures and plates, plumbing fixtures and trim, and all finish surfaces throughout the construction.

C. Vacuum-clean where appropriate and remove all spots, smears, dust, debris, hand prints, and defacements of every sort, including those of vandals. Use commercial cleaning compounds where necessary.

D. Follow the recommendations of the manufacturers of the materials and items to be cleaned for all cleaning, polishing, and treatment such as waxing or sealing. Polish all stainless steel and other non-ferrous metal surfaces.

E. Clean permanent filters of the air-conditioning system and replace disposable filters of units operated during construction. Clean ducts, blowers, and coils if units were operated without filters during construction.

1.07 Final Site Cleanup

A. Prior to Final Inspection, thoroughly clean the entire site and put it into a clean and neat, acceptable condition. Remove from the site all construction waste and unused

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materials, dunnage, loose rock and stones, excess earth, and debris of any description resulting from the Work.

B. Hose down and scrub clean where necessary all pavement and paved walks. Any runoff from this activity must be vacuumed or diverted as necessary away from the underground storm drain system.

C. Thoroughly remove mortar droppings from concrete slabs and pavement where they occur. Hose down and scrub clean all concrete flatwork and exposed vertical surfaces of concrete and masonry. Any runoff from this activity must be vacuumed or diverted as necessary away from the underground storm drain system.

D. Free and clear all new and existing drainage systems.

E. Clean and protect all conduit openings.

F. Prior to Final Inspection, the Contractor shall remove all markings from streets, sidewalks, walls and other City facilities within the enclosed secured area at the work site.

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Part 2 - Products

2.01 Cleaning Products

A. Utilize cleaning products that meet the requirements of the Green Seal GS-37 standard or comply with the requirements and maximum VOC limits of Title 17, California Code of Regulations, Division 3, Chapter 1, Subchapter 8.5, Article 2, Regulation for Reducing VOC Emissions from Consumer Products (September 2001).

B. Utilize janitorial paper products and trash bags that meet the minimum percentages of post- consumer recycled content and recovered content requirements of EPA's Comprehensive Procurements Guidelines.

Part 3 - Execution

3.01 Measurement And Payment

Full compensation for conforming to the provisions in this Section, **Cleaning**, will be considered as included in the price paid for various contract items of work and no additional compensation will be allowed.

END OF SECTION

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CITY COUNCIL REFERENCE ONLY

SECTION 01 77 00 Project Closeout

Part 1 - General

1.01 Section Includes

A. Requirements preparatory to final inspection.

B. Final inspection.

C. Acceptance of the Work and final payment.

1.02 Related Sections

A. Article 11 – Completion and Warranty Provisions of the General Conditions.

1.03 Requirements Preparatory To Final Inspection

A. Prior to final inspection, the Contractor will perform or provide the following, as applicable:

1. Temporary facilities, except as may be required for punch list work, will be removed from the site.
2. The site and all applicable appurtenances and improvements will be cleaned as specified in Section 01 74 14 - Cleaning.
3. Record ("As-Built") drawings and specifications will be completed, signed, and submitted to the Engineer as specified in Section 01 78 39 - Project Record Documents.
4. Operating instructions for equipment will be properly mounted and posted as specified in Section 01 78 23 - Operation and Maintenance Data.
5. Guaranties and warranties will be submitted to the Engineer, as specified in the General Conditions and various sections of the Specifications, along with required operations and maintenance manuals as specified in Section 01 78 23 - Operation and Maintenance Data.

B. The Contractor will be represented by its principal superintendent and such Subcontractors and Suppliers as may be necessary to answer the questions of the Engineer's inspection team.

C. Certain elements of the Work, such as mechanical and electrical work, may be scheduled separately at appointed times in order to keep the preliminary inspection more focused and the number of persons in the Engineer's inspection team to a minimum.

D. From the information gathered from this inspection, the Engineer will prepare a punch list of work to be performed, corrected, or completed.

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E. All work on the punch list will be completed by the Contractor prior to requesting the final inspection.

1.04 Final Inspection

A. When all requirements of the above prepared punch list have been completed, the Contractor will request the final inspection.
B. The request will be made in writing, addressed to the Engineer, at least 14 calendar days in advance of the requested date of the final inspection.
C. The Contractor will be represented by its principal superintendent and such Subcontractors and Suppliers as may be necessary to verify the completion of the Work including punch list items.
D. Depending on the extensiveness of the punch list items, certain elements of the Work may be scheduled separately for final inspection at appointed times.

1.05 Acceptance of the Work and Final Payment

A. Acceptance of the Work will be made in accordance with Article 8.4, and Article 11.1(D) of the General Conditions.
B. Final payment will be made in accordance with Article 11.1(E) of the General Conditions.

CITY COUNCIL REFERENCE ONLY

Part 2 - Products

Not Used

Part 3 - Execution

3.01 Measurement and Payment

Full compensation for conforming to the provisions in this Section, "**Project Close-Out"**, will be considered as included in the price paid for various contract items of work and no additional compensation will be allowed.

END OF SECTION

SECTION 01 78 39 Project Record Documents

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Maintenance of Record Documents and Samples.
B. Drawings
C. Specifications
D. Submittal of Record Documents and Samples.

1.02 MAINTENANCE OF RECORD DOCUMENTS AND SAMPLES

A. Maintain at the Worksite one copy of the following documents for record purposes:
   1. Conformed Contract Documents
   2. Change Orders
   3. Approved Submittals
   4. Clarifications or Explanatory details or Request for Information (RFI)
   5. Inspection Reports
   6. Laboratory Test Records
   7. Field test Reports and Records.
   8. Factory Test Reports and Records
   9. Manufacturer's certificates.
B. Maintain for record purposes at a location approved by the City engineer, electronic files for those documents which are required to be submitted electronically. Ensure that backups of electronic files are made on a regular basis and stored at a remote location.
C. Store Record Documents and samples in field office apart from documents used for construction. Do not use record documents for construction for fabrication purposes.
D. Provide files, racks, and secure storage for record documents and samples.
E. Maintain record documents in a clean, dry and legible condition. Do not use record documents for construction purposes.
F. Label and file record documents and samples in accordance with section number listings in table of contents of this project manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
G. Keep record documents and samples available for inspection by Engineer at all times.

1.03 RECORDING

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A. Record information on a set of black line opaque drawings, and in a copy of a project manual. At completion of the project, transfer information from the black line prints onto media as directed by the Owner.

B. Maintain separate colors for each major system, for record information.

C. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.

D. Contract drawings and shop drawings: Legibly mark each item to record actual construction, including:

1. Measured horizontal locations for water, storm drainage, and sanitary sewer drainage piping and measured horizontal and vertical locations for all other underground utilities, referenced to permanent surface improvements.
2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of construction.
3. Field changes of dimension and detail.
4. Changes made by modifications, including all RFI's.
5. Details not on original contract drawings or SK drawings.
6. References to related shop drawings and modifications.

E. Other Documents: Maintain manufacturer's certifications, inspection certifications, field test records, and other documents required by individual specification sections.

CITY COUNCIL REFERENCE ONLY

1.04 SUBMITTALS

A. At Contract closeout, deliver Record Documents and samples under provisions of Section 01 77 00 - Project Closeout.

B. Transmit with cover letter in duplicate, listing:

1. Date.
2. Project title and number.
3. Contractor's name, address, and telephone number.
4. Number and title of each Record Document.
5. Signature of Contractor or authorized representative.

C. Product Data and Contact List:

1. Preparation of Submittals:
   a. Table of contents: Provide title of project; names, addresses, and telephone numbers of Architect/Engineer and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

b. For each product or system: List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

c. Product data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.

d. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use project record documents as informational drawings.

e. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

f. Warranties and Bonds: Bind in copy of each.

2. Form of Submittals:

a. Prepare data in the form of an instructional manual.

b. Binders: 8-1/2 x 11-inch three-ring binders with hardback, cleanable, plastic covers; 3-inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

c. Cover: Identify each binder with typed or printed title “Product DATA and Contact List”; list title of Project and identify subject contents.

d. Arrange content by systems, under section numbers and sequence of Table of Contents of this Project Manual.

e. Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

f. Text: Manufacturer's printed data, or typewritten data on 20 lb. paper.

g. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

3. Time of Submittals:

a. Submit one (1) copy of completed volumes in final form 15 days prior to final inspection. Copy will be returned after final inspection, with Engineer's comments. Revise content of documents as required prior to final submittal.

b. Submit two (2) copies of revised volumes of data in final form within 10 days after final inspection.

PART 2 PRODUCTS

Not Used.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

MEASUREMENT AND PAYMENT

Full Compensation for conforming to the provision in this section "**Project Record Documents**" not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefore.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

TECHNICAL SECTIONS

Division 02 – Existing Conditions

SECTION 02 41 10 BUILDING DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Obtain "J" number and other necessary permits before beginning any demolition work.
2. Selective demolition of material as described on the drawings.
3. Asbestos removal
4. Demolition and removal of buildings and site improvements.
5. Abandoning in-place and/or removing below-grade construction.
6. Disconnecting, capping or sealing, and abandoning in-place and/or removing site utilities.
7. Salvaging items for reuse by Owner.

1.02 RELATED SECTIONS

A. Section 02 82 00 Asbestos Remediation

1.03 MATERIALS OWNERSHIP

A. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.04 INFORMATIONAL SUBMITTALS

A. Proposed Protection Measures: Submit informational report, including Drawings, that indicates the measures proposed for protecting individuals and property for dust control. Indicate proposed locations and construction of barriers.

1. Adjacent Buildings: Detail special measures proposed to protect adjacent buildings to remain, including means of egress from those buildings.

B. Schedule of building demolition with starting and ending dates for each activity.

C. Inventory of items to be removed and salvaged.

D. Pre-demolition photographs.

E. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician.

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1.05 QUALITY ASSURANCE

A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

D. Pre-demolition Conference: Conduct conference at Project site.

1.06 PROJECT CONDITIONS

A. Buildings to be demolished will be vacated and their use discontinued before start of the Work.

B. Buildings immediately adjacent to demolition area will be occupied. Conduct building demolition so operations of occupied buildings will not be disrupted.

1. Provide not less than 72 hours' notice of activities that will affect operations of adjacent occupied buildings.

2. Maintain access to existing walkways, exits, and other facilities used by occupants of adjacent buildings.

a. Do not close or obstruct walkways, exits, or other facilities used by occupants of adjacent buildings without written permission from authorities having jurisdiction.

C. Owner assumes no responsibility for buildings and structures to be demolished.

1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

2. Before building demolition, Owner will remove the following items:

a. None.

D. On-site storage or sale of removed items or materials is not permitted.

E. Arrange demolition schedule so as not to interfere with Owner's on-site operations and operations of adjacent occupied buildings.

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PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting demolition operations.

B. Inventory and record the condition of items to be removed and salvaged.

3.02 PREPARATION

A. Refrigerant: Remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction before starting demolition.

B. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities serving buildings and structures to be demolished.

1. Arrange to shut off indicated utilities with utility companies.

2. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.

3. Cut off pipe or conduit a minimum of 24 inches (610 mm) below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of authorities having jurisdiction.

4. Do not start demolition work until utility disconnecting and sealing have been completed.

C. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.

D. Salvaged Items:

1. Clean salvaged items of dirt and demolition debris.

2. Pack or crate items after cleaning. Identify contents of containers.

3. Store items in a secure area until delivery to Owner.

4. Transport items to storage area designated by Owner.

5. Protect items from damage during transport and storage.

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3.03 PROTECTION

A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.

B. Existing Utilities: Maintain utility services to remain and protect from damage during demolition operations. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.

C. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Section 01 57 16 - Temporary Construction Fencing.

1. Protect adjacent buildings and facilities from damage due to demolition activities.

2. Protect existing site improvements, appurtenances, and landscaping to remain.

3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.

4. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

5. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.

6. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.

7. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.

D. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

3.04 DEMOLITION

A. General: Demolish indicated buildings and site improvements completely. Use methods required to complete the Work within limitations of governing regulations.

1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.

2. Maintain fire watch during and for at least four hours after flame cutting operations.

3. Maintain adequate ventilation when using cutting torches.

4. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.

C. Explosives: Use of explosives is not permitted.

D. Proceed with demolition of structural framing members systematically, from higher to lower level. Complete building demolition operations above each floor or tier before disturbing supporting members on the next lower level.

E. Remove debris from elevated portions of the building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

F. Salvage: Items to be removed and salvaged are indicated below:

1. None.

G. Demolish foundation walls and other below-grade construction.

1. Remove below-grade construction, including basements, foundation walls, and footings, completely.

H. Existing Utilities: Demolish existing utilities and below-grade utility structures.

CITY COUNCIL REFERENCE ONLY

I. Below-Grade Areas: Completely fill below-grade areas and voids resulting from building demolition operations with satisfactory soil materials according to backfill requirements in Section 31 20 00 "Rough Grading."

J. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

K. Promptly repair damage to adjacent buildings caused by demolition operations.

3.05 CLEANING

A. Remove demolition waste materials from Project site [and legally dispose of them in an EPA-approved landfill acceptable to authorities having jurisdiction]. See Section 01 74 19 "Construction Waste Management and Disposal" for recycling and disposal of demolition waste.

B. Do not burn demolished materials.

C. Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.

3.06 MEASUREMENT AND PAYMENT

A. The lump sum price paid for **"Demolition – Existing Buildings"** shall include full compensation for all labor materials, tools equipment, and incidentals for doing all the work covered in this section, including **Asbestos and Lead Remediation** and all related sections, complete and in place, including obtaining all required permits, as shown on the plans, as required by these special provisions and as directed by the City's Engineer, and no additional compensation will be allowed therefore.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

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CITY COUNCIL REFERENCE ONLY

SECTION 02 41 20 FLATWORK DEMOLITION

PART 1 GENERAL

1.01 SECTION REQUIREMENTS

A. Extent of demolition will be shown on Drawings and shall include sidewalks and misc hardscapes .

B. No demolition shall commence until prior written approval is obtained from the City's Representative.

C. Unless otherwise indicated, demolished materials become Contractor's property. Remove from Project site and dispose of legally and per Section 01 74 19 Construction and Demolition Debris Management.

D. Items indicated to be removed and salvaged remain City's property. Remove, clean, and deliver to City's designated storage area. Contractor shall coordinate any deliveries to City with City Engineer. Contractor is responsible for delivery to and from City designated storage site.

E. Comply with Environmental Protection Agency (EPA) regulations and disposal regulations of authorities having jurisdiction.

F. Prior to starting demolition of any building or structure, comply with requirements listed in Section 01 06 10 Regulatory Requirements – Hazardous Waste.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 DEMOLITION

A. Maintain and protect existing utilities to remain in service before proceeding with demolition, providing bypass connections to other buildings on the system.

B. Locate, identify, shut off, disconnect, and cap off utility services to be demolished.

C. Conduct demolition operations and remove debris to prevent injury to people and damage to adjacent buildings and site improvements.

D. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction.

E. Promptly patch and repair holes and damaged surfaces of building caused by demolition. Restore ex-posed finishes of patched areas and extend finish restoration into remaining adjoining construction.

F. Promptly remove demolished materials from City's property and legally dispose of them. Do not burn demolished materials.

CITY COUNCIL REFERENCE ONLY

3.02 MEASUREMENT AND PAYMENT

The lump sum contract price paid for "**Demolition – Existing Site Work**" shall include full compensation for the various items covered by this section, including furnishing all labor, materials, tools, equipment, and incidentals and doing all the work, including, but not limited to Potholing, Removal and Abandonment of Existing Utilities and Underground Piping, Sidewalk, Asphalt Pavement, Sawcutting, Utilities to remain and be protected, Clean-up, Disposal, and Complying with applicable Regulations, complete in place as shown in plans, as required by these Special Provisions, and as directed by the City Engineer.

END OF SECTION

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SECTION 02 82 00 ASBESTOS REMEDIATION

PART 1 GENERAL

1.01 SUMMARY OF WORK

This work plan described the performance standards for asbestos removal and decontamination at the **Warm Springs Restroom & Meeting Room,** Fremont, California. The intent of the project is to:

A. Remove, package and dispose of ACM coating sink

1.02 RELATED SECTIONS

A, Section 01 06 10 Regulatory Requirements – Hazardous Waste

1.03 CONTRACT REQUIREMENTS

A. The asbestos abatement contractor shall furnish all labor, material, facilities, equipment, services, employee training and testing, permits and agreements necessary to perform the work required for asbestos removal, encapsulation, decontamination, and all other work in accordance with Cleanup and Abatement Order 11-1116 (issued by the San Francisco Department of Public Health (SFDPH)), these specifications, the latest regulations from the US. Environmental Protections Agency (EPA), Cal-EPA, the Occupational Safety and Health Administration (OSHA), the State of California Department of Industrial Relations (Cal/OSHA), the recommendations of the National Institute of Occupations Safety and Health (NIOSH), and any other applicable federal state and local government regulations. Whenever there is a conflict or overlap of the above references, the most stringent provision is applicable.

B. The Contractor shall provide all labor, materials, services, insurance, bonding and equipment required to complete the hazardous materials abatement.

C. The Contractor must visit the work site to obtain first-hand knowledge of all existing conditions including ACM quantities. Contractor is responsible for all unusual conditions or deviations from the specifications that exist at the time of their site examination, and such conditions must be reflected in the bid proposal. Contractor will not be given extra payments above the accepted bid prices for conditions that can be determined by examining the site, all Contract Documents, and drawings prior to the submission of proposals.

D. The Contractor is responsible for all required notifications to regulatory agencies and other parties, within required time frames. The Contractor shall notify the City Project Manager, and the Environmental Consultant of any changes in the mobilization date or other key schedule dates at least one week in advance.

E. Electrical and water services will be provided by the facility. The Contractor is responsible for providing, installing, and removing temporary connections to these services, without damaging the owner's equipment or disrupting these services to the facility.

1.04 SCHEDULE

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Work shall be completed during normal business hours on normal business days, when possible, unless otherwise arranged. Time periods for removal and other work are to be coordinated in advance with The City's Project Manager and the Consultant.

1.05 SECURITY

A. The facilities are to be kept locked or secured at all times when not occupied. Access is to be arranged prior to mobilization through the City's Project Manager.

B. All Contractor personnel parking in the premises shall follow parking restrictions as directed by the City's Project Manager.

C. Containment structures and work areas shall be secured to restrict access. All work areas are to be clearly marked with caution tape and appropriate signage. The Contractor shall ensure that full access to emergency exits and to entrances to the structure and to surrounding facilities is maintained at all times.

D. The Contractor is responsible for securing its own equipment, supplies, and facilities, including lifts, trucks, ladders, and job boxes.

1.06 SUBMITTALS

A. Below is the detailed list of submittal requirements. The Contractor is responsible for any delays in project completion as a result of incomplete or inaccurate submittals.

1. Pre-job submittals are to be received by the project Environmental Consultant upon mobilization. Hazardous materials abatement, including pre-cleaning work, will not proceed until appropriate submittals are in place. Employees without proper training, medical, and respiratory protection documentation will not be allowed to work on the project.

2. Work-in-progress submittals are to be received on a daily or weekly basis, as appropriate. Post-abatement submittals are to be received within two weeks of on-site completion of abatement.

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Pre-job Submittals:	
•	BAAQMD Notifications (10 working days in advance)
•	Cal/OSHA Asbestos Abatement Notification per 8 CCR 1529 (twenty four (24) hours in advance)
•	Copy of current Contractors' State Licensing Board (CSLB) License
•	Copy of Cal/OSHA Asbestos Registration Certificate
•	Abatement work plan
•	Copies of asbestos training certificates for workers and the Competent Person
•	Copies of workers' annual medical exam and respirator approval
•	Copies of workers' twelve (12) month respirator fit testing records
•	Material Safety Data Sheets (MSDS) for chemicals used
•	Emergency phone and list

Periodic Submittals	
•	Personal air monitoring (daily)
•	Updated worker documentation (as needed)
•	Work area access logs (daily)
•	Copies of updated notification to regulatory agencies (as needed)

Project Close-out Submittals	
•	Copies of completed uniform waste manifests, including hazardous and non-hazardous waste
•	Foreman's daily job reports
•	Air sample results for all personnel, work areas and air filtration units

PART 2 EXECUTION

2.01 SCOPE OF WORK

Contractor shall properly remove, package, label and dispose of the following ACMs:

	Material Description	Material Location(s)	Approximate Quantity
1.	Black sink undercoating	Metal sink in Meeting/Rec Room	1 unit

2.02 WORK PRACTICES

A. Pre-Abatement Tasks:

1. Submit required pre-job submittals prior to mobilization
2. Fit test each worker with appropriate respiratory protection.
3. Install GFI power sources

B. Work Area Preparation:

1. Install Cal OSHA asbestos warning signs.

C. Asbestos Abatement Activities:

1. Perform cleaning and decontamination using standard manual removal, HEPA vacuuming and wet wipe procedures.
2. Removal ACM coated sink intact. Use wet method if any ACM becomes non-intact.
3. Following successful visual clearance, remove all barrier and demobilize.
4. Submit all project close-out submittal documents.

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2.03 PROHIBITED ACTIVITIES

A. The following work practices and engineering controls are prohibited and shall not be used under any circumstances:

1. High-speed abrasive disc saws that are not equipped at point of cut with HEPA filtered exhaust devices.
2. Compressed air used to removed hazardous materials, unless the compressed air is used in conjunction with an enclosed HEPA filtered ventilation system designed to capture the dust cloud created by the compressed air.
3. Dry sweeping, shoveling or other dry clean-up of debris containing hazards.
4. Employee rotation as a means of reducing employee exposure to asbestos.

B. Smoking, eating, drinking, applying cosmetics and chewing tobacco in regulated areas is prohibited. Hot work is prohibited unless authorized by the City.

2.04 AIR MONITORING

A. Compliance Air Monitoring:

1. Personal air monitoring "Exposure Monitoring". shall be performed by the contractor as required to meet Cal OSHA requirements:

2. If the Time Weighted Average (TWA) for any work shift or 8-hour period exceeds Cal-OSHA standards, stop all work, leave pressure differential system in operation and notify City's Representative. Do not recommence work until authorized in writing by City's Representative.

B. Project Clearance:

1. A visual clearance of the work areas will be performed The Consulting Group (TCG) determine if all clean-up and decontamination work is satisfactorily completed. Contractor shall bare all costs associated with any re-cleaning/decontamination work required by the Consultant.

2. No air samples will be collected. Clearance criteria for this project will be a successful visual inspection as determined by the Owner's 3rd party consultant.

3. The contractor may conduct his own sampling and laboratory testing if he elects to do so. The cost of such air monitoring and laboratory testing shall be at the Contractors expense.

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2.05 CONTROL WORK AREA ACCESS

A. The area where hazmat work takes place is considered a contaminated area.

B. Permit Access to the regulated area only to authorized personnel.

C. Warning signs that demarcate the regulated area shall be posted in accordance with Cal OSHA, EPA, CDPH, and all other applicable governing authorities. Signs shall be posted at all work area entrance and on the public side of all work area barriers that may be accessible to otherwise unknowing persons. Warning signs shall be posted in locations that would allow any person to read the signs from any approach to the work area. The warning signs shall bear the following language:

Asbestos:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY RESPIRATORS AND PROTECTION CLOTHING ARE REQUIRED IN THIS AREA

2.06 WORK AREA PREPARATION

A. Work Area:

1. The Contractor must completely isolate the work to prevent Hazmat dust or debris from passing beyond the isolated/regulated area.

B. Containment Barriers:

1. Critical barriers shall be constructed by applying a double layer of 6 mil plastic sheeting, in an airtight fashion, beneath and over all openings within, and proximate to, the Work Area including but not limited to: HVAC air intakes, vents, and penetrations.

2. ACM containing components shall be removed, intact, without disturbing the ACM. If for any reason intact removal is not possible and ACM will be disturbed, stop all work until an alternative plan is approved by the City's Project Manager.

3. All debris and waste generated during removal shall be promptly cleaned-up and packaged in leak-tight containers.

4. Windows located on the floor below the roof shall be closed and remain closed during abatement activities. Contractor shall coordinate with Owner as to schedule window closure.

5. The Contractor shall provide systems to prevent ACM roofing debris from falling over the edge of the roof. The Contractor shall use a perimeter barrier or other effective engineering control to protect non-work areas from ACM fall-out. A continuous drop-sheet shall be installed around the perimeter of the building to contain any accidental fall-out. The perimeter barrier shall be placed at the foot of the building and extend away from the structure as far as needed to capture potential fall-out. The barrier shall be of 6 mil polyethylene sheeting or other impermeable membrane of equivalent (or greater) durability and thickness

C. Hygiene Facilities:

1. Worker decontamination area(s) shall be contiguous to the work area and shall be located location(s) where workers enter or exit the work area. The decontamination area(s) shall comply with Cal-OSHA Class II work requirements.

2. Decontamination area(s) shall be equipped with a clean water source for each crew member (a bucket of water for shared uses shall not be permitted); clean, dry towels, HEPA equipped vacuum cleaner; storage area for workers street clothing.

D. Negative Pressure:

Not Required.

E. Negative Pressure Monitoring:

Not Required.

F. View Window:

Not Required.

G. GFI Electric Circuits:

1. Electric circuits located within the NPE shall be deactivated or equipped with ground-fault circuit interrupters.

2.07 GENERAL REQUIRMENTS

A. Receive authorization from the Client and/or Consultant prior to initiating any hazmat removal activity. Client or Consultant shall conduct a pre-abatement

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inspection to ensure compliance prior to authorizing start of any hazmat removal activities.

B. Inspect the integrity of all Regulated Area barriers at the beginning of each shift. Any detected leaks shall be sealed prior to start of work.

C. Perform all work using:

1. HEPA vacuum cleaners.

2. Wet methods.

3. Prompt clean-up and disposal of asbestos in leak-tight containers.

D. Ensure that the level of respiratory protection worn by Contractor's employees is adequate to protect the employees from exposure to airborne asbestos fibers above the Permissible Exposure Limits.

E. Notify the Client and/or Consultant immediately in the event of a breach of the containment barrier or spill of ACM outside of the Regulated Area. Take protective measures to ensure occupants adjacent to the spill or breach are not exposed to asbestos.

F. In the event of a breach of the containment barrier or hazmat spill outside of the Regulated Area, immediately stop work, repair the breach and clean-up the spilled material using wet methods and HEPA vacuuming.

G. In the event that a non-work area becomes contaminated with hazardous materials, the Contractor shall immediately and automatically stop all work. If the contaminated area is inside the building and outside of critical barriers, the Contractor shall erect new critical barriers to isolate the affected area from the balance of the building. Erect Critical Barriers at the next existing structural isolation of the involved space (e.g. wall, ceiling, floor, etc.). Decontaminate the affected area in accordance with this specification. Leave critical barriers in place until final visual and air clearance is given.

H. That Contractor shall perform all required cleaning and/or decontamination at no additional cost to the City.

I. The Contractor shall not encapsulate abated surfaces until the work area has passed final inspection as determined by the City or City's Representative.

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2.08 PACKAGING, LABELING, AND DISPOSAL OF ASBESTOS WASTE

A. Packaging, labeling, transporting, and disposing of hazardous waste shall comply with applicable Cal OSHA, AQMD, DTSC/Cal/EPA regulations under Title 22 CCR and the California Health and Safety Code, including completion of the Uniform Hazardous Waste Manifest Form. The Contractor shall prepare the form in typing in a neat, correct, and legible fashion.

B. Transportation and disposal of all hazardous waste shall be coordinated by the Contractor. The transporter shall possess a valid and current EPA Generator ID number. The Contractor shall notify the BCM/SAR Project Manager at least 24 hours in advance of the time at which the manifest is ready to be signed.

C. Labeling:

1. Asbestos disposal containers to be labeled as follows:

1. Asbestos disposal containers to be labeled as follows:

DANGER

CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

2. If ACM becomes friable/hazardous, additional labels shall be used as follows:

HAZARDOUS WASTE

STATE AND FEDERAL LAW
PROHIBITS IMPROPER DISPOSAL
IF FOUND, CONTACT THE NEAREST
POLICE OR PUBLIC SAFETY
AUTHORITY OR THE CALIFORNIA
DEPARTMENT OF
TOXIC SUBSTANCE CONTROL

Generator's Name
Address
Manifest No.

RQ, Asbestos, 9, NA2212, III

Cal/EPA & DOT Diamond Label

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2.09 FINAL CLEARANCE

A. The Consultant shall conduct a final inspection of the work area upon completion of Hazmat work. The contractor shall notify the Client/Consultant at least 24 hours in advance of the project completion.

2.10 MEASUREMENT AND PAYMENT

A. Full compensation for conforming to the provisions in this section "**Asbestos Remediation"** and work related to asbestos removal not otherwise provided for, shall be considered as included in lump sum price paid for **"Demolition-Existing Buildings"** and no additional compensation will be allowed therefor.

END OF SECTION

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SECTION 02 83 00 LEAD REMEDIATION

PART 1 GENERAL

1.01 SUMMARY OF WORK

A. This section deals with general requirements and procedures in conjunction with the work related to lead containing materials and lead-based paint to be performed by all Contractors who perform work on this project. High lead-content items are known to exist in the scope-of-work areas as follows:

B. Two types of lead-related construction materials have been found to be present in the project site, they are:

1. **High lead-containing construction materials - containing 1 mg/cm2 or greater.**
2. **Low lead-containing construction materials - containing less than 1 mg/cm2.**
3. **No lead construction materials – as determined by paint chip laboratory analysis.**

	High-Lead Components	Location
1.	Metal window sashes	Exterior

	Low-Lead Components	Location
1.	Wood walls	Interior & exterior recreation room
2.	Window casing	Interior recreation room
3.	Wood doors	Interior recreation room
4.	Metal door	Restroom
5.	Metal wall	Interior restroom
6.	Wood wall	Exterior restroom
7.	Wood fascia	Exterior
8.	Wood door	Restroom

B. Contractors are required to follow all federal, state, and local standards that regulate lead notification; lead-related construction work; lead work practices, safety, monitoring, disposal; accreditation of firms performing lead-related work; training of individuals performing lead related work, etc.

1.02 DEFINITIONS

A. Lead: Metallic lead, all inorganic lead compounds and organic lead soaps, and excluding all other organic lead compounds.

B. Lead-containing: Any material, coating, substrate or product, which contains metallic lead, all inorganic, lead compounds and organic lead soaps, and excluding all other organic lead compounds.

1.03 KNOWN LEAD

A. Lead-containing materials (LCM) and lead-based paint (LBP) have been identified on

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this project. Lead reports and lead data are included in these project documents. These data are being provided for the benefit, review, and evaluation of each Contractor whose employees will or may perform work on the Project.

B. Contractors/employers may need to obtain additional data to assess and prepare for regulatory lead compliance relative to their specific scope of work. If Contractor concludes (after a review of the lead reports) that existing data are insufficient to properly prepare for their particular scope of work, Contractor shall arrange to obtain sufficient data. In the absence of sufficient lead data, the contractor shall assume surface coatings contain lead.

C. Any/all costs associated with assessing the impact of lead on the project and lead exposure; preparing for and conducting worker protection, worker training, handling, removal, waste disposal, etc. shall be borne by the contractor.

D. Contractors/employers will be required to perform various tasks that could expose potential personnel to regulated levels of lead. The specific tasks required to complete this project that may impact lead components include:

1. Removal of designated flashings.
2. Removal of designated wood siding and wood fascia

E. General tasks that are required to complete this project that may impact lead components include:

1 Demolishing or salvaging items where lead or materials containing lead are present.

2 Removing materials containing lead.

3 Constructing, altering, repairing or renovating structures, substrates, or portions thereof, that contain lead or materials containing lead.

4 Cleaning-up lead contamination.

5 Transporting, disposing, storing, or containing lead or lead containing materials on the site where construction and renovation activities are performed.

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1.04 PUBLIC SAFETY AND PUBLIC CONVENIENCE

A. The Contractor(s) shall take all necessary measures to ensure the safety of the general public and adjacent residents throughout the course of this project. The Contractor shall take adequate measures to make the building or work areas inaccessible to the public (such as temporary fencing if necessary).

B. The Contractor shall ensure that lead (in any form) does not contaminate the site during this demolition process.

1.05 REGULATIONS

A. Contractors are required to follow all Federal, State, and local standards that regulate lead-related construction work and lead disposal including but not limited to: the U.S. Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), the California Department of Occupational Safety and Health (Cal-OSHA), and any other applicable federal, state and local government regulations pertaining to lead-based paints (LBP) and other lead-containing wastes.

B. The Contractor and all subcontractors shall ensure that each employee who will or may handle, impact, or otherwise disturb lead or encounter lead contaminated areas:

1 Receive proper and sufficient Cal OSHA compliant training.

2 Receive proper and sufficient personal protection equipment

C. Regulatory Statutes

1 Environmental Protection Agency National Ambient Air Quality

2 Standards, as applicable (40 CFR 61)

3 Occupational Safety and Health Administration (inclusive of OSHA 29 CFR 1919.134 and 1926.62)

4 California Department of Occupational Safety and Health (inclusive of Cal/OSHA 8 CCR 1532.1, 3203, 5155, 5194, 5216)

5 California Environmental Protection Agency (Cal-EPA), (22 CCR Section 66000, et seq.)

6 California Department of Health Services (17 CCR Sections 3500061000)

7 Resources Conservation and Recovery Act (42 U.S.C. Section 6901 et seq., and regulations 40CFR part 260 et seq.)

8 California Health and Safety Code (Division 20 and regulations, and 22 CCR section 66000 et seq.).

9 Resource Conservation and Recovery Act

10 Federal Occupational Safety and Health Administration (Fed/OSHA) (29CFR 1910.134 and 1926.62)

11 Federal Environmental Protection Agency (Fed/EPA) (40 CFR50 et seq.) Federal Department of Transportation (49 CFR)

12 Other applicable federal, state, and local governmental regulations pertaining to lead hazards and lead waste.

13 U.S. Department of Housing and Urban Development Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing

14 US Environmental Protection Agency (EPA) Lead-based Paint Hazards 40 CFR 745.80, Subpart E.

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1.06 REGULATORY COMPLIANCE

A. All Contractors/employers, whose employees may impact or perform trigger activity associated with lead-based paint or lead containing materials, shall comply with the requirements, standards and work practices codified by Cal OSHA lead construction standard per CCR Title 8 § 1532.1. Each Contractor/employer shall:

1. Make an assessment as to the applicability of the Cal OSHA lead construction standard relative to their specific work. Cal OSHA standards are designed to regulate and enforce on-the-job worker safety. Employers are required by law to ensure that employees are not exposed to airborne lead levels that exceed the permissible exposure limit (PEL). The standard requires worker exposure monitoring, medical surveillance, training, special work practices, etc.

2. Contractors/employers, whose employees will be working on this project, are required to assess lead exposure risk to their employees (as per Cal OSHA lead standard CCR Title 8 § 1532.1). In making this evaluation, contractors should:

a. Review all lead related documents and reports.

b. Become familiar and comply with Cal OSHA and other applicable lead regulations.

c. Make an assessment to determine potential worker exposure relative to the various lead-related construction work to be performed.

d. Collect supplemental data/samples if necessary.

e. Assess and monitor worker lead exposure levels during the performance of lead trigger tasks or other activities that may potentially expose workers to levels above the Cal OSHA permissible exposure level.

f. Determine compliance requirement relative to DOSH notification rules.

3. Cal OSHA requires compliance with their lead construction regulation when:

a. The permissible exposure limit (PEL) will or may be exceeded. The PEL is an exposure to airborne lead dust of 50 micrograms of lead per cubic meter of air (50 µg/m^3) over an 8 hour time weighted average (TWA).

b. Employees perform "trigger activities" that impact a material containing lead in any detectable amount. Cal OSHA mandates that an employer assume the PEL will be exceeded when his/her employees conduct "trigger activities" involving lead. Trigger activities are defined as follows:

Trigger Activity	Anticipated Exposure	Required Respirator
• Manual demolition • Manual scraping and sanding • Heat gun use • Use of power tools with dust collection systems • Spray painting with lead paint	50-100 µm/m^3	Half-mask, air purifying
• Any other activity that the employer has any reason to believe that an employee may be exposed in excess of the PEL.	50-100 µm/m^3	Half-mask, air purifying
• Using lead containing mortar • Lead burning • Rivet busting • Power tool cleaning without dust collection system • Clean-up of dry abrasive blast residue.	500-2500 µm/m^3	Full-face, air purifying, or Tight fitting PAPR, or Supplied air, contiguous flow
• Abrasive blasting • Welding • Cutting • Torch burning.	>2500 µm/m^3	Supplied air, pressure demand

4. If Cal OSHA lead compliance is required, contractor(s) shall adhere with the following requirements:

a. Construct Project Hygiene Facilities and implement decontamination policies in accordance with the Cal OSHA lead construction standard. Worker decontamination station shall be provided at all locations where workers enter or exit the work area. The decontamination station shall be placed at the most strategic location to allow easy worker access. The Contractor must install a filtering system for removing contaminants from the drained

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water. The system must have as a two stage cascading filtering system capable of filtering down to 5 µm or smaller. Filtered water may then be disposed of into the sanitary sewer. The Contractor shall maintain a supply of filters for the filtering system. The filters will be changed as often as needed to prevent the system from clogging.

b. Determine if any employee may be exposed to lead at or above the action level (30 mg/m^3). This assessment is made by taking at least one full shift personal air sample for each job classification.

c. Until an exposure assessment is made, any employee performing a trigger activity, shall be treated as if exposed above the personal exposure limit (PEL, 50 mg/m^3).

d. Until an exposure assessment is performed, the employer must implement employee protective measures per Cal OSHA - CCR Title 8 § 1532.1 including:

- Appropriate respiratory protection
- Appropriate personal protective clothing and equipment
- Appropriate change areas
- Appropriate hand wash facilities
- Biological monitoring (blood testing)
- Appropriate training

e. Implement engineering controls and work practice controls, including administrative controls, to reduce and maintain employee exposure to lead at or below the PEL or to the lowest feasible level. If engineering controls cannot reduce exposures below the PEL, supplement controls with appropriate respiratory protection.

f. Prior to the job, establish and implement a written compliance program to ensure that no employee is exposed to lead above the PEL. The program must address the specific issues outlined in Cal OSHA - CCR Title 8 § 1532.1.

g. Respirator use is required when:

- Employee exposure exceeds the PEL
- Employee requests it
- During the initial exposure assessment

h. If required, implement a respiratory protection program addressing the specific elements outlined in the OSHA respiratory protection standard (CCR Subchapter 7. General Industry Safety Orders § 5144).

i. If required, implement a medical surveillance program for employees exposed on any day to lead at or above the action level. The medical surveillance program must address the specific elements in the standard including (but not limited to):

- Initial medical surveillance consisting of biological monitoring (blood testing) and analysis for lead and zinc protoporphyrin levels.
- Employee notification of blood test results.
- Medical examinations and consultation under certain circumstances.

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j. Post appropriate warning signs (as prescribed in the standard) in each regulated area or work area where an employee's exposure to lead is above the PEL.

k. The employer must establish and maintain an accurate record of:

- Exposure assessment data
- Medical surveillance data
- Observation procedures

l. Contractors/Employers whose employees disturbs more that 100 sq ft of lead-based paint (LBP) are required to submit written notification to Cal OHSA (per Health and Safety Code, Title 17 CCR Section 36000 (c)).

1.07 CERTIFICATION AND TRAINING

A. Firms performing lead-based paint work in target housing or child occupied facilities must be certified by the US EPA (per 40 CFR 745.80, Subpart E).

B. Employers whose employees disturbed lead paint shall assure that each employee is trained in accordance applicable requirements specified by Cal OSHA (per Cal OSHA lead standard CCR Title 8 § 1532.1) and US EPA (per 40 CFR 745.80, Subpart E).

1.08 SITE PROTECTIVE CONTROLS

A. Perform all lead-related construction work in accordance with Cal OSHA lead construction standards and all other applicable regulatory requirements.

B. General Dust Controls: Implement engineering controls as necessary to reduce airborne exposures to lead to the greatest extent possible. Engineering controls shall include but not necessarily be limited to:

1. Misting of the work area as necessary to eliminate visible emissions beyond the regulated area during active demolition.
2. Collect all lead debris and lead contaminated waste for proper waste profiling, packaging, labeling, and disposal.
3. Power tools used for lead-paint removal (if performed) shall be equipped with attached HEPA vacuums to collect lead dust emissions generated by the power tool(s).
4. Install worker decontamination facilities immediately adjacent to the work area entry/exit.
5. If any of the containment systems are damaged in any way, repairs will be made immediately.

C. Warnings and Signs: Provide the following minimum signs and posting requirements where airborne concentrations of lead may exceed the permissible exposure limit (PEL):

1. The Contractor will establish a regulated area where (if) airborne concentrations of lead may exceed the PEL. Only authorized personnel may enter the regulated area. All persons entering the regulated area will be supplied with and required to wear appropriate personal protective equipment and respiratory protection.
2. Warning signs and caution tape will be posted at all approaches to the regulated

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area. Warning signs shall be visible from all vantage points approaching the work area so that untrained personnel and/or the public can take precautionary measures to avoid the restricted area. No unauthorized person will be allowed to be within 30 feet of active lead-related construction work. Lead warning signs will read as follows:

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING
AUTHORIZED PERSONNEL ONLY

C. Lockout/tag-out electrical equipment within the regulated area, as necessary.

1.09 WASTE DISPOSAL AND MANIFESTING PROCEDURES

A. All lead and lead-contaminated debris shall be collected and kept separate from all/any non-lead waste. Laboratory costs associated with analyses required for disposal, will be at the Contractor's expense. Lead-waste streams shall be tested to characterize hazard levels as follows:

Test 1 - California: SW846, Total Threshold Limit Concentration (TTLC)

If: TTLC is less than 50 mg/kg STOP testing - classify and dispose of as non-hazardous waste

If: TTLC is greater than 50 mg/kg but less than 350 mg/kg perform test 2

If: TTLC is greater than 1000 mg/kg perform test 3

Test 2 - California: Waste Extraction Test (WET), Soluble Threshold Limit Concentration (STLC)

If: STLC is less than 5 mg/l - classify and dispose of as Designated Class II Non Hazardous Waste

If: STLC is greater than 5 mg/l - classify and dispose of as Class I California Hazardous Waste and perform Test 3

Test 3 - Federal: Soluble Threshold Limit Concentration (TCLP)

If: TCLP is less than 5 mg/l - classify and dispose of as non-RCRA waste

If: TCLP is greater than 5 mg/l - classify and dispose of as RCRA waste, stabilize waste

B. The contractor will be responsible for the proper storage, packaging, labeling, manifesting, transportation, and disposal of lead containing and lead hazardous materials.

C. Packing, labeling, transporting, and disposing of hazardous waste shall comply with Cal-EPA regulations under 22 CCR, including completion of the Uniform Hazardous Waste Manifest Form (OTSC 8022A and EPA 8700-22).

D. Segregate, containerize, and characterize construction debris including rags, protective coveralls, polyethylene sheeting, and other consumable items. Waste will be packaged in accordance with the applicable U.S. Department of Transportation regulations included in 49 CFR Parts 173, 178, and 179.

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E. A "Waste Manifest" will be completed for disposal of hazardous waste. The transporter will possess a valid EPA Transporter ID number. The Contractor's Hazardous Materials Supervisor will notify the Owner's Inspector at least 48 hours before the time that the Manifest is required to be signed by the Owner.

F. Warning labels will be affixed to all waste containers that contain lead wastes in concentrations considered hazardous. The labels will conform to Cal OSHA, RCRA, DOT, and DTSC guidelines.

G. Any lead contaminated water generated during the work for decontamination purposes will be filtered to 5 µm and drummed. If TTLC/STLC testing can prove that the water is non-hazardous, it will be discharged into the sanitary sewer system. If the water is shown as hazardous per TTLC/STLC testing, it will be disposed as such.

1.10 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section **"Lead Remediation**" not otherwise provided for, shall be considered as included in lump sum price paid for "**Demolition – Existing Buildings**" and no additional compensation will be allowed therefore.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

Division 03 – Concrete

SECTION 03 20 00 Concrete Reinforcing

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Reinforcing bars.
2. Reinforcement accessories.

B. Related Sections:

1. Section 03 30 00 - Cast-In-Place Concrete.

1.02 REFERENCES

A. American Concrete Institute:

1. ACI 301 - Specifications for Structural Concrete.
2. ACI 318 - Building Code Requirements for Structural Concrete.
3. ACI 530.1 - Specifications for Masonry Structures.
4. ACI SP-66 - ACI Detailing Manual.

B. ASTM International:

1. ASTM A184 - Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
2. ASTM A615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
3. ASTM A704 - Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement.
4. ASTM A706 - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.

C. American Welding Society:

1. AWS D1.4 - Structural Welding Code - Reinforcing Steel.

D. Concrete Reinforcing Steel Institute:

1. CRSI - Manual of Standard Practice.
2. CRSI - Placing Reinforcing Bars.

1.03 SUBMITTALS

A. Section 01 30 00 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate bar sizes, spacing, locations, and quantities of reinforcing steel, bending and cutting schedules, and supporting and spacing devices.

C. Certificates: Submit AWS qualification certificate for welders employed on the Work.

D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1. Submit certified copies of mill test report of reinforcement materials analysis.

CITY COUNCIL REFERENCE ONLY

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 318.

B. Prepare shop drawings in accordance with ACI SP-66.

C. Maintain one copy copies of each document on site.

1.05 QUALIFICATIONS

Welders: AWS qualified within previous 12 months.

1.06 COORDINATION

A. Coordinate with placement of formwork, formed openings and other Work.

PART 2 PRODUCTS

2.01 REINFORCEMENT

Deformed and Plain Reinforcement: ASTM A615; 60 ksi yield strength, steel bars, unfinished.

2.02 ACCESSORY MATERIALS

A. Tie Wire: Minimum 16 gage annealed type.

B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions.

C. Special Chairs, Bolsters, Bar Supports, Spacers Adjacent to Weather Exposed Concrete Surfaces: Plastic-coated steel or Stainless steel type; size and shape to meet Project conditions.

2.03 FABRICATION

A. Fabricate concrete reinforcement in accordance with ACI 318.

B. Form standard hooks as indicated on Drawings.

C. Form reinforcement bends with minimum diameters in accordance with ACI 318.

D. Form ties and stirrups from the following:

1. For bars No. 10 and Smaller: No. 3 deformed bars, unless noted otherwise on plans.

E. Weld reinforcement in accordance with AWS D1.4.

F. Locate reinforcement splices not indicated on Drawings, at point of minimum stress. Review location of splices with Engineer.

2.04 SOURCE QUALITY CONTROL

A. Section 01 45 00 - Quality Control: Testing, inspection and analysis requirements.

B. Make completed reinforcement available for inspection at manufacturer’s factory prior to packaging for shipment. Notify Engineer at least seven days before inspection is allowed.

C. When fabricator is approved by authority having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.

CITY COUNCIL REFERENCE ONLY

1. Specified shop tests are not required for Work performed by approved fabricator.

PART 3 EXECUTION

3.01 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position beyond specified tolerance.

1. Do not weld crossing reinforcement bars for assembly except as permitted by Engineer.

B. Accommodate placement of formed openings.

C. Space reinforcement bars with minimum clear spacing in accordance with ACI 318

1. Where bars are indicated in multiple layers, place upper bars directly above lower bars.

D. Maintain concrete cover around reinforcement in accordance with ACI 318 as follows and as noted on plans:

Footings and Concrete Formed Against Earth		3 inches
Concrete exposed to earth or weather	No. 6 bars and larger	2 inches
	No. 5 bars and smaller	1-1/2 inches
Supported Slabs, Walls, and Joists	No. 14 bars and larger	1-1/2 inches
	No. 11 bars and smaller	3/4 inches
Beams and Columns		1-1/2 inches
Shell and Folded Plate Members	No. 6 bars and larger	3/4 inches
	No. 5 bars and smaller	1/2 inches

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3.02 ERECTION TOLERANCES

A. Section 01 45 00 - Quality Control: Tolerances.

B. Install reinforcement within the following tolerances for flexural members, walls, and compression members:

Reinforcement Depth	Depth Tolerance	Concrete Cover Tolerance
Greater than 8 inches	plus or minus 3/8 inch	minus 3/8 inch
Less than 8 inches	plus or minus 1/2 inch	minus 1/2 inch

C. Install reinforcement within the tolerances specified in ACI 530.1 for foundation walls.

3.03 FIELD QUALITY CONTROL

A. Perform field inspection in accordance with 2013 California Building Code requirements.

B. Provide free access to Work and cooperate with appointed firm.

C. Reinforcement Inspection:

1. Placement Acceptance: Specified and ACI 318 material requirements and specified placement tolerances.

2. Periodic Placement Inspection: Inspect for correct materials, fabrication, sizes, locations, spacing, concrete cover, and splicing.

3.04 MEASUREMENT AND PAYMENT

A. Payment for "**Concrete Reinforcement**" is considered to be included in the contract unit price paid for various concrete items of work that require concrete form work, concrete foundation work, and flat work, and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, complete in place, as shown on the plans, as required by the Special provisions, and as required by the Engineer, and no separate payment will be made therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 03 30 00 CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SUMMARY

A. Section includes cast-in-place concrete for the following:

1. Foundations and slab on grade.

B. Related Sections:

2. Section 03 20 00 - Concrete Reinforcing.

1.02 REFERENCES

A. American Concrete Institute:

1. ACI 301 - Specifications for Structural Concrete.
2. ACI 305 - Hot Weather Concreting.
3. ACI 306.1 - Standard Specification for Cold Weather Concreting.
4. ACI 308.1 - Standard Specification for Curing Concrete.
5. CI 318 - Building Code Requirements for Structural Concrete.

B. ASTM International:

1. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
2. ASTM C33 - Standard Specification for Concrete Aggregates.
3. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
4. ASTM C42 - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
5. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
6. ASTM C143 - Standard Test Method for Slump of Hydraulic Cement Concrete.
7. ASTM C150 - Standard Specification for Portland Cement.
8. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
9. ASTM C173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
10. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
11. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
12. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete.
13. ASTM C595 - Standard Specification for Blended Hydraulic Cements.
14. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
15. ASTM C685 - Standard Specification for Concrete Made By Volumetric Batching and Continuous Mixing.

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16. ASTM C1017 - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
17. ASTM C1064 - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.

1.03 SUBMITTALS

A. Section 01 30 00 - Submittal Procedures.

B. Product Data: Submit data on joint devices, attachment accessories and admixtures.

C. Design Data:

1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for the following:

a. Hot and cold weather concrete work.

b. Air entrained concrete work.

2. Identify mix ingredients and proportions, including admixtures.

D. Manufacturer's Installation Instructions: Submit installation procedures and interface required with adjacent Work.

E. Concrete strength test results for 7 day and 28 day break test results.

1.04 CLOSEOUT SUBMITTALS

A. Section 01 77 00 - Project Closeout: Closeout procedures.

B. Project Record Documents: Accurately record actual locations of embedded utilities and components concealed from view in finished construction.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 318.

B. Conform to ACI 305 when concreting during hot weather.

C. Conform to ACI 306.1 when concreting during cold weather.

D. Acquire cement and aggregate from one source for Work.

1.06 QUALITY ASSURANCE

A. Maintain one copy of each document on site.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Section 01 57 19.

B. Maintain concrete temperature after installation at minimum 50 degrees F for minimum 7 days.

1.08 COORDINATION

A. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS

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A. Cement: ASTM C150, Type I - Normal or Type II - Moderate. Limit chloride ions for pre-stressed concrete and concrete with aluminum embedded items. ACI 318 defines limits of chloride ions based on type of concrete and concrete exposure.

B. Select proportions for normal weight concrete in accordance with ACI 301 Method 1.

C. Provide concrete to the following criteria:

Material and Property	Measurement
Compressive Strength (28 day) a) Foundations & slabs on grade b) Retaining walls c) Slab over steel decking	 3,000 psi 4,000 psi 4,000 psi
Cement Type	ASTM C150
Cement Content (minimum)	517 pounds/cu. yd.
Aggregate Type	normal weight
Water-Cement Ratio (maximum)	0.55 by weight
Aggregate Size (maximum)	1 inch
Slump	4 inches maximum, unless otherwise approved by the Engineer.

D. Ready Mixed Concrete: Mix and deliver concrete in accordance with ASTM C94.

E. Site Mixed Concrete: Mix concrete in accordance with ACI 318.

2.02 GROUT MATERIALS

A. Grout shall be non-shrinking grout with a minimum 28 day compressive strength of 7,000 psi.

PART 3 EXECUTION

3.01 EXAMINATION

A. Contractor shall coordinate special inspection for all concrete in accordance with the 2010 California Building Code. Submit all special inspection reports to the Engineer. Special inspection costs shall be paid for by the owner.

B. Verify requirements for concrete cover over reinforcement.

C. Verify anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

3.02 PREPARATION

A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Remove laitance, coatings, and unsound materials.

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B. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

C. Remove debris and ice from formwork, reinforcement, and concrete substrates.

D. Remove water from areas receiving concrete before concrete is placed.

3.03 PLACING CONCRETE

A. Place concrete in accordance with ACI 318.

B. Notify testing laboratory and Engineer minimum 24 hours prior to commencement of operations.

C. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints, and are not disturbed during concrete placement.

D. Deposit concrete at final position. Prevent segregation of mix.

E. Place concrete in continuous operation for each panel or section determined by predetermined joints.

F. Consolidate concrete.

G. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

3.04 CONCRETE FINISHING

A. Provide formed concrete surfaces to be left exposed with smooth rubbed finish.

3.05 CURING AND PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Protect concrete footings from freezing for minimum 5 days.

C. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

D. Cure floor surfaces in accordance with ACI 318.

E. Spraying: Spray water over floor slab areas and maintain wet for 7 days.

3.06 FIELD QUALITY CONTROL

A. Section 01 45 00 - Construction Quality Control and 01 77 00 - Project Closeout: Field inspecting, testing, adjusting, and balancing.

B. Field inspection and testing will be performed by Owner's testing laboratory in accordance with ACI 318. Provide special inspections and testing in accordance with ACI 318 and 2013 California Building Code, for special inspections or reinforcement placement.

C. Provide free access to Work and cooperate with appointed firm.

D. Submit proposed mix design to inspection and testing firm for review prior to commencement of Work.

E. Concrete Inspections:

1. Continuous Placement Inspection: Inspect for proper installation procedures.

2. Periodic Curing Inspection: Inspect for specified curing temperature and procedures.

F. Strength Test Samples:

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1. Sampling Procedures: ASTM C172.
2. Cylinder Molding and Curing Procedures: ASTM C31, cylinder specimens, field cured.
3. Sample concrete and make one set of three cylinders for every 150 cu. yds. or less of each class of concrete placed each day and for every 5,000 sf of surface area for slabs and walls.
4. When volume of concrete for any class of concrete would provide less than 5 sets of cylinders, take samples from five randomly selected batches, or from every batch when less than 5 batches are used.
5. Make one additional cylinder during cold weather concreting, and field cure.

G. Field Testing:
1. Slump Test Method: ASTM C143.
2. Air Content Test Method: ASTM C173.
3. Temperature Test Method: ASTM C1064.
4. Measure slump and temperature for each compressive strength concrete sample.

H. Cylinder Compressive Strength Testing:
1. Test Method: ASTM C39.
2. Test Acceptance: In accordance with ACI 318.
3. Test one cylinder at 7 days.
4. Test two cylinders at 28 days.
5. Dispose remaining cylinders when testing is not required.

I. Maintain records of concrete placement. Record date, location, quantity, air temperature and test samples taken.

3.07 PATCHING

A. Allow Engineer to inspect concrete surfaces immediately upon removal of forms.

B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.

C. Patch imperfections in accordance with ACI 318.

3.08 DEFECTIVE CONCRETE

A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

B. Repair or replacement of defective concrete will be determined by Engineer.

C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Engineer for each individual area.

3.09 MEASUREMENT AND PAYMENT

A. Payment for "**cast in place concrete**" as it appears in the new bathroom is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**cast in place concrete**" as it appears in the new meeting room is considered as included in the contract lump sum cost paid for "**New Meeting**

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Room Structure" and no additional payment or separate price will be paid therefor.

END OF SECTION

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Division 04 – Masonry (Not Used)

Division 05 – Concrete (Not Used)

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Division 06 – Wood, Plastics and Composites

SECTION 06 10 00 ROUGH CARPENTRY

PART 1 GENERAL

1.01 SUMMARY

Types of work in this section include rough carpentry for wood framing, timbers for posts and beams, rooftop equipment bases and support curbs, wood grounds, nailers and blocking, wood furring, sheathing, subflooring and underlayment.

1.02 GENERAL REQUIREMENTS

This Section shall be performed in accordance with the General Conditions, Supplementary Conditions and all Sections in Division 1 of these Specifications. These documents must be read with the other Contract Documents and Sections as a whole to complete the intent of the contract.

1.03 SUBMITTALS

Make submittals to the Owner's Representative in accordance with the provisions of Section 01 30 00 of these specifications.

1.04 PRODUCT HANDLING

A. Delivery and Storage: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber as well as plywood and other panels; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar materials.

B. For lumber and plywood pressure treated with waterborne chemicals, sticker between each course to provide air circulation.

1.05 PROJECT CONDITIONS

Coordination: Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds and similar supports to allow attachment of other work.

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PART 2 PRODUCTS

2.01 LUMBER, GENERAL

A. Lumber Standards: Manufacture lumber to comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.

B. Inspection Agencies: Inspection agencies and the abbreviations used to reference with lumber grades and species include the following:

1. RIS Redwood Inspection Service.
2. WCLIB West Coast Lumber Inspection Bureau.
3. WWPA Western Wood Products Association.

C. Grade Stamps: Factory-mark each piece of lumber with grade stamp of inspection agency evidencing compliance with grading rule requirements and

identifying grading agency, grade, species, moisture content at time of surfacing, and mill.

1. For exposed lumber apply grade stamps to ends or back of each piece, or omit grade stamps entirely and issue certificate of grade compliance from inspection agency in lieu of grade stamp.

D. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.

1. Provide dressed lumber, S4S, unless otherwise indicated.

2. Provide seasoned lumber with 19 percent maximum moisture content at time of dressing and shipment for sizes 2" or less in nominal thickness, unless otherwise indicated.

2.02 DIMENSION LUMBER

A. For light framing provide material complying with the following requirements:

1. Douglas Fir, grade as shown on drawings.

B. For exposed framing lumber provide material complying with the following requirements:

1. Definition: Exposed framing refers to dimension lumber which is not concealed by other work and is indicated to receive a stained or natural finish.

2. Grading: Hand select material at factory from lumber of species and grade indicated below for compliance with "Appearance" grade requirements of ALSC National Grading Rule; issue inspection certificate of inspection agency for selected material.

3. Same species and grade as indicated for structural framing.

C. For timbers (5" and thicker), provide material complying with the following requirements:

1. Douglas Fir Select, grade as shown on drawings.

2. Free of heart center.

2.03 BOARDS

A. Exposed Boards: Where boards will be exposed in the finished work, provide the following:

1. Moisture Content: 15 percent maximum, "MC-15".

2. Where transparent or natural finish or no finish is indicated, provide Redwood, Select Heart Grade (RIS).

3. Where painted finish is indicated, provide Select Merchantable Boards per WCLIB rules, or No. 2 Common Boards & Better per WWPA rules.

2.04 MISCELLANEOUS LUMBER

A. Provide wood for support or attachment of other work including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping and similar members. Provide lumber of sizes indicated, worked into shapes shown, and as follows:

B. Moisture content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.

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C. Grade: Standard Grade light framing size lumber of any species or board size lumber as required. No. 3 Common or Standard grade boards per WCLIB or WWPA rules or No. 3 boards per SPIB rules.

2.05 CONSTRUCTION PANELS

A. Construction Panel Standards: Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood" for plywood panels and, for products not manufactured under PS 1 provisions, with American Plywood Association (APA) "Performance Standard and Policies for Structural-Use Panels", Form No. E445.

B. Trademark: Factory-mark each construction panel with APA trademark evidencing compliance with grade requirements.

C. Concealed APA Performance-Rated Panels: Where construction panels will be used for the following concealed types of applications, provide APA Performance-Rated Panels complying with requirements indicated for grade designation, span rating, exposure durability classification, edge detail (where applicable) and thickness.

1. Wall Sheathing: APA RATED SHEATHING.

a. Exposure Durability Classification: EXPOSURE 1.

b. Span Rating: As required to suit stud spacing indicated.

2. Roof Sheathing: APA RATED SHEATHING.

a. Exposure Durability Classification: EXPOSURE 1.

b. Span Rating: As required to suit rafter spacing indicated.

D. Plywood Backing Panels: For mounting electrical or telephone equipment, provide fire-retardant treated plywood panels with grade designation, APA C-D PLUGGED INT with exterior glue, in thickness indicated, or, if not otherwise indicated, not less than 15/32".

2.06 FASTENERS AND ANCHORAGE

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering metal connectors which may be incorporated in the work include, but are not limited to, the following:

1. Simpson Company.

2. Silver Metal Products.

3. K C Metals.

B. Use common wire nails throughout. Pre-drill if required to prevent wood from splitting. Hot dip galvanize all wire nails that are exposed to weather.

C. Machine bolts: Hex head conforming to ASTM A307 with malleable washers under head and/or nut when bearing against wood unless otherwise noted.

D. Powder Driven Fasteners: RAMSET, Drive-it, or HILTI installed as details and in size, number, and type shown or recommended in manufacturer's printed literature for use intended.

E. Wood Screws: Bright Steel.

F. Lag Screws: Hex head with gimlet point.

2.07 MISCELLANEOUS MATERIALS

A. Building Paper: ASTM D 226, Type I; asphalt saturated felt, non-perforated, 15-

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lb. type.

B. Air Infiltration Barrier: Provide 6.1 mil thick fabric composed of very fine, high density polyethylene fibers with vapor transmission rate of 51.30 grams per 100 sq. in. in 24 hours; weight of 8.81 lbs. per 1000 sq. ft.; bursting strength of 105 psi; tear resistance of 32.5 lbs. for length, 24.8 lbs. for width; air porosity of 7.6 seconds; water resistance of 99.3 cm of water head.

1. Product: Subject to compliance with requirements, provide Tyvek; Textile Fibers Dept., DuPont Co.

2.08 WOOD TREATMENT BY PRESSURE PROCESS

A. Preservative Treatment: Where lumber or plywood is indicated as "PT" or "Treated," or is specified herein to be treated, comply with applicable requirements of AWPB Standards listed below. Mark each treated item with the AWPB Quality Mark Requirements.

1. Pressure-treat above-ground items with water-borne preservatives to comply with AWPB LP-2. After treatment, kiln-dry lumber and plywood to a maximum moisture content, respectively, of 19 percent and 15 percent. Treat indicated items and the following:

a. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers and waterproofing.

b. Wood sills ledgers, sleepers, blocking, furring, stripping and similar members in contact with masonry or concrete.

c. Wood framing members less than 18" above grade.

d. Wood floor plates installed over concrete slabs directly in contact with earth.

2. Complete fabrication of treated items prior to treatment, where possible. If cut after treatment, coat cut surfaces with heavy brush coat of same chemical used for treatment and. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

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PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

A. Discard units of material with defects which might impair quality of work, and units which are too small to use in fabricating work with minimum joints or optimum joint arrangement.

B. Set carpentry work to required levels and lines, with members plumb and true to line and cut and fitted.

C. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards.

D. Countersink nail heads on exposed carpentry work and fill holes.

E. Use common wire nails, except as otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required.

F. Do not cut or notch structural members except as shown on drawings.

3.02 WOOD GROUNDS, NAILERS, BLOCKING AND SLEEPERS

A. Provide wherever shown and where required for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.

B. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.

3.03 WOOD FURRING

A. Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finished work.

1. Firestop furred spaces on walls at each floor level and at ceiling line of top story, with wood blocking or noncombustible materials, accurately fitted to close furred spaces.

B. Furring to Receive Plywood Paneling: Unless otherwise indicated, provide 1" x 3" furring at 2' o.c., horizontally and vertically. Select furring for freedom from knots capable of producing bent-over nails and resulting damage to paneling.

C. Furring to Receive Gypsum Drywall: Unless otherwise indicated, provide 1" x 2" furring at 16" o.c., vertically.

D. Furring to Receive Plaster Lath: Unless otherwise indicated, provide 1" x 2" furring at 16" o.c., vertically.

E. Suspended Furring: Provide size and spacing shown, including hangers and attachment devices. Level to a tolerance of 1/8" in 10', except 1/4" in 10' for thick-coat plaster work.

3.04 WOOD FRAMING, GENERAL

A. Provide framing members of sizes and on spacings shown, and frame openings as shown, or if not shown, comply with recommendations of "Manual for House Framing" of National Forest Products Association (N.F.P.A). Do not splice structural members between supports.

B. Anchor and nail as shown, and to comply with Building Code.

C. Firestop concealed spaces of wood framed walls and partitions at each floor level and at the ceiling line of the top story. Where firestops are not automatically provided by the framing system used, use closely-fitted wood blocks of nominal 2" thick lumber of the same width as framing members.

3.05 STUD FRAMING

A. General: Provide stud framing of size and spacing indicated or, if not otherwise indicated, of the following sizes and spacings. Arrange studs so that wide face of stud is perpendicular to direction of wall or partition and narrow face is parallel. Provide single bottom plate and double top plates using 2" thick members with widths equaling that of studs; except single top plate may be used for non-load-bearing partitions. Nail or anchor plates to supporting construction.

B. Sills:

1. Set level to 1/16 inch in 6 feet. Grout shall be used when necessary to achieve full bearing.

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2. Secure sills with 5/8 inch anchor bolts embedded in the structural slab a minimum of 8 inches, spaced a maximum of 4 feet on center. Locate one bolt 6 inches minimum and 12' maximum from each end and 9 inches to each side of notches for pipes. Two bolts minimum per sill piece. Provide additional or other anchorage as required on they drawings.

3. Sills shall be set to the exact dimensions shown on the drawings with a tolerance of 1/2 inch in either direction. The Architect shall be immediately notified if this condition would be violated.

4. Allow no crooks or waves in sills that will not a provide straight line for stud work.

C. Construct corners and intersections with not less than 3 studs. Provide miscellaneous blocking and framing as shown and as required for support of facing materials, fixtures, specialty items and trim.

1. Provide continuous horizontal blocking row at mid-height of single-story partitions over 8' high and at midpoint of multi-story partitions, using 2" thick members of same width as wall or partitions.

3.06 RAFTER FRAMING

A. Rafters: Provide member size and spacing shown. Notch to fit exterior wall plates and toe nail or use special metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing (if any), and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.

B. Provide special framing as shown for eaves, overhangs, dormers and similar conditions, if any.

3.07 TIMBER FRAMING

A. Provide wood beams and girders of the size and spacing shown. Install with crown edge up and provide not less than 4" bearing on supports. Provide continuous members unless shown; tie together over supports if not continuous.

B. Where beams or girders are framed into pockets of exterior concrete or masonry walls, provide 1/2" air space between sides and ends of wood members and supporting wall.

C. Where built-up beams or girders of nominal 2" dimension lumber on edge are shown, fasten together with 2 rows of 20d nails spaced not less than 32" o.c. Locate one row near top edge and other near bottom edge. Locate end joints in members over supports; for continuous members, stagger ends at quarter points between supports.

D. Provide wood posts of the sizes shown. Provide metal anchoring and attachment devices as shown.

3.08 STRUCTURAL PLYWOOD SHEATHING (ROOF)

A. Install plywood with face grain perpendicular to supports. Stagger joints parallel to short axis.

B. Allow 1/16 inch maximum space between end joints and 1/8 inch at edge joints for expansion and contraction of panels. If wet conditions are present double these spacings.

C. Suitable edge support shall be provided where indicated on the Drawings by

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lumber blocking between joists.

D. Panel end joints shall occur over framing.

E. See Drawings for nailing requirements. Nail heads shall be driven flush with plywood face. All joints of plywood shall be on solid bearing. Surfaces shall be free from warp, twist, buckles, holes and other defects. Sheathing shall be applied with joints in locations shown on drawings.

3.09 WALL SHEATHING

A. Allow spacing similar to roof sheathing and as shown on Drawings. Panels may be installed with face grain horizontal or vertical. Block all edges.

B. See Drawings for nailing schedule.

C. Where plywood wall sheathing is specified on the drawings for shear at portions of a wall length, the entire length of wall shall receive plywood to achieve a uniform wall finish.

D. At All EIFS applications over framed walls, provide 1/2" plywood wall sheathing.

3.10 INSTALLATION OF CONSTRUCTION PANELS

A. General: Comply with applicable recommendations contained in Form No. E 30F, "APA Design/Construction Guide - Residential & Commercial," for types of construction panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:

1. Sheathing: Nail to framing.

2. Plywood Backing Panels: Nail to supports.

3.11 AIR INFILTRATION BARRIER

Cover wall sheathing with air infiltration barrier to comply with manufacturer's printed directions.

3.12 ROUGH HARDWARE

A. Nails and Spikes:

1. Nailing of wood members shall conform to UBC Table 25-Q as indicated. Box nails are not permitted.

2. Penetration: Half length of nail into piece receiving point.

3. Do not drive nails closer together than half their length, nor closer to edge of piece of lumber than 1/4 their length.

4. Spacing and size of nails to be such that splitting will not occur. Prebore holes for nails wherever necessary to prevent splitting. Bore diameter of holes smaller than diameter of nail or spike (3/4 dia.).

5. Use galvanized staples throughout.

6. Use galvanized nails where exposed to weather.

B. Screws:

1. Screws are to be turned into place, not driven. Use self-tapping screws where required for fastening to metal framing.

2. Countersink where heads will interfere or as required.

3. Screw bore holes the same diameter and depth as shank; bore holes for

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threaded portion of screws with bit no larger than base of thread.

4. Use galvanized or cadmium plated screws on all fastenings exposed to weather.

C. Bolts:

1. Install bolts in drilled holes the diameter of the bolt, plus 1/16 inch oversize.

2. Bolting of wood members shall conform to UBC requirements and as called for on Drawings.

3. Washers: Provide all bolts bearing on wood, unless noted otherwise on at Drawings, with malleable iron washers under heads and nuts.

4. Use galvanized bolts, nuts and washers where exposed to weather.

D. Lag Bolts:

1. Install lag bolts in lead holes. Drill holes same diameter and depth as shank. Then drill hole same diameter as at base thread for the threaded portion. Use malleable iron washers as required for same bolt size.

2. The threaded portion of the screw shall be inserted in its lead hole by turning with a wrench, not by driving with a hammer. Malleable iron washers shall be provided under heads of lag bolts which bear on wood.

E. Powder Driven Pins:

1. Sill plate of interior non-bearing partitions bearing directly on the concrete floor may be attached with powder driven pins.

2. Diameter of pin shall be 1/4"; use 2" diameter 12 gauge washer under head and minimum penetration of 1-1/2" into concrete, spaced not more than 32" apart.

3. There shall be a minimum of two pins for each piece of sill plate.

F. Pneumatic gun nailing:

1. Pneumatic gun nails shall be nails with the same diameter as common nails with penetration into framing as follows:

   a. 6d 1-1/4 inches

   b. 8d 1-1/2 inches

   c. 10d 1-5/8 inches

   d. 16d 1-3/4 inches

2. Minimum distance of nail from edge of plywood and framing shall be 3/8".

3. Spacing of nails shall be as specified for common nails.

4. "Shiners" or nails which do not penetrate into framing or blocking shall be removed and replaced.

5. Underdriving of pneumatic gun nail will require nail to be driven with hammer so that head of nail is flush with top surface of plywood.

6. Overdriving of pneumatic gun nails such that the head of nail is more than 1/32" below the top surface of plywood shall not be permitted and will result in rejection of that portion of the work.

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7. Walls with structural plywood on both faces shall have pneumatic gun nailing one face only.

3.13 MEASUREMENT AND PAYMENT

Payment for "**Rough Carpentry**" as it appears in the new bathroom is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

Payment for "**Rough Carpentry**" as it appears in the new meeting room is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 06 15 16 WOOD ROOF DECKING

PART 1 GENERAL

1.01 SUMMARY

Section includes solid-sawn wood roof decking.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. LEED Submittals:

1. Product Certificates for Credit MR 5: For wood roof decking. Include statement indicating cost.

a. Include statement indicating location of manufacturer and distance to Project.

b. Include statement indicating location of manufacturer, point of harvest, and distance to Project.

2. Certificates for Credit MR 6: Chain-of-custody certificates indicating that wood roof decking complies with forest certification and chain-of-custody requirements. Include statement indicating cost for each certified wood product.

3. Product Data for Credit IEQ 4.1: For sealants, documentation including printed statement of VOC content.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body.

B. Vendor Qualifications: A vendor that is certified for chain of custody by an FSC-accredited certification body.

PART 2 PRODUCTS

2.01 WOOD ROOF DECKING, GENERAL

A. General: Comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.

B. Regional Materials: Wood roof decking shall be manufactured within 500 miles (800 km) of Project site.

C. Certified Wood: Wood roof decking shall be certified as "FSC Pure" or "FSC Mixed Credit" according to FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship," and to FSC STD-40-004, "FSC Standard for Chain of Custody Certification."

2.02 SOLID-SAWN WOOD ROOF DECKING

A. Standard for Solid-Sawn Wood Roof Decking: Comply with AITC 112.

B. Roof Decking Species: Balsam fir, Douglas fir-larch, Douglas fir-larch (North), hem-fir, hem-fir (North), southern pine, spruce pine-fir (North), western hemlock, or western hemlock (North).

C. Retain one size option in "Roof Decking Nominal Size" Paragraph below, or

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delete all options and indicate size on Drawings. Sizes listed are from AITC 112; verify availability before retaining. Note that sizes are simply designations; for actual sizes, see DOC PS 20 or grading rules of inspection agencies certified by ALSC's Board of Review.

D. Roof Decking Nominal Size: as shown on drawings.

E. Roof Decking Grade: as shown on Drawings.

F. Grade Stamps: Factory mark each item with grade stamp of grading agency. Apply grade stamp to surfaces that are not exposed to view.

G. Moisture Content: Provide wood roof decking with 15 percent maximum moisture content at time of dressing.

H. Face Surface: Smooth.

2.03 ACCESSORY MATERIALS

A. Fastener Material: Hot-dip galvanized steel.

B. Sealants: Latex, complying with ASTM C 834 Type OP, Grade NF and with applicable requirements in Section 07 92 00 "Joint Sealants," recommended by sealant manufacturer and manufacturer of substrates for intended application.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Building Systems; Sonolac.

b. Bostik, Inc; Chem-Calk 600.

c. Tremco Incorporated; Tremflex 834.

2. Sealants shall have a VOC content of 250 g/L or less.

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PART 3 EXECUTION

3.01 INSTALLATION

A. Install solid-sawn wood roof decking to comply with AITC 112.

Locate end joints for simple span lay-up.

B. Anchor wood roof decking, where supported on walls, with bolts as indicated.

C. Apply joint sealant to seal roof decking at exterior walls at the following locations:

1. Between roof decking and supports located at exterior walls.

2. Between roof decking and exterior walls that butt against underside of roof decking.

3. Between tongues and grooves of roof decking over exterior walls and supports at exterior walls.

3.02 PROTECTION

A. Provide water-resistive barrier over roof decking as the Work progresses to protect roof decking until roofing is applied.

3.03 MEASUREMENT AND PAYMENT

A. Payment for "**Wood Roof Decking**", as it appears in the new bathroom, is considered as included in the contract lump sum cost price paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Wood Roof Decking**", as it appears in the new meeting room, is considered as included in the contract lump sum cost price paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 06 16 00 SHEATHING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Wall sheathing.

2. Roof sheathing.

3. Composite nail base insulated roof sheathing.

4. Sheathing joint and penetration treatment.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements.

2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements.

B. LEED Submittals:

1. Certificates for Credit MR 6: Chain-of-custody certificates indicating that products specified to be made from certified wood comply with forest certification requirements. Include documentation that manufacturer is certified for chain of custody by an FSC-accredited certification body. Include statement indicating cost for each certified wood product.

2. Product Data for Credit IEQ 4.1: For adhesives, documentation including printed statement of VOC content.

3. Product Data for Credit IEQ 4.4: For composite wood products, documentation indicating that product contains no urea formaldehyde.

1.03 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For following products, from ICC-ES:

Preservative-treated plywood.

Fire-retardant-treated plywood.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory."

2.02 WOOD PANEL PRODUCTS

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A. Certified Wood: For the following wood products, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship":

Plywood.

Oriented strand board.

B. Plywood: Either DOC PS 1 or DOC PS 2 unless otherwise indicated.

C. Oriented Strand Board: DOC PS 2.

2.03 PRESERVATIVE-TREATED PLYWOOD

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2[for interior construction, Use Category UC3b for exterior construction].

B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.

C. Application: Treat items indicated on Drawings and plywood in contact with masonry or concrete or used with roofing, flashing, vapor barriers, and waterproofing.

2.04 FIRE-RETARDANT-TREATED PLYWOOD

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.

1. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.

2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.

3. Design Value Adjustment Factors: Treated lumber plywood shall be tested according ASTM D 5516 and design value adjustment factors shall be calculated according to ASTM D 6305. Span ratings after treatment shall be not less than span ratings specified.

C. Kiln-dry material after treatment to a maximum moisture content of 15 percent.

D. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.

E. Application: Treat plywood indicated on Drawings.

2.05 WALL SHEATHING

A. Plywood Wall Sheathing: Exterior, Structural I sheathing.

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B. Oriented-Strand-Board Wall Sheathing: Exposure 1, Structural I sheathing.

2.06 ROOF SHEATHING

A. Plywood Roof Sheathing: Exterior, Structural I sheathing.

B. Oriented-Strand-Board Roof Sheathing: Exposure 1, Structural I sheathing.

2.07 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

For roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

2.08 MISCELLANEOUS MATERIALS

A. Adhesives for Field Gluing Panels to Framing: Formulation complying with ASTM D 3498 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

1. Adhesives shall have a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.

2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."

D. Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

3.02 WOOD STRUCTURAL PANEL INSTALLATION

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:

1. Wall and Roof Sheathing:

a. A continuous bead of glue applied to framing at edges of wall sheathing panels helps seal panel joints so sheathing functions as an air barrier.

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b. Nail to wood framing. Apply a continuous bead of glue to framing members at edges of wall sheathing panels.

c. Screw to cold-formed metal framing.

d. Space panels 1/8 inch (3 mm) apart at edges and ends.

3.03 MEASUREMENT AND PAYMENT

A. Payment for "**Sheathing**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Sheathing**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 06 17 53 PRE-FABRICATED ROOF TRUSSES

PART 1 GENERAL

1.01 SUMMARY

Prefabricated wood trusses required for this Work are indicated on the Drawings and include, but are not necessarily limited to, furnishing and installing prefabricated wood trusses.

1.02 GENERAL REQUIREMENTS

This Section shall be performed in accordance with the General Conditions, Supplementary Conditions and all Sections in Division 1 of these Specifications. These documents must be read with the other Contract Documents and Sections as a whole to complete the intent of the contract.

1.03 QUALITY ASSURANCE

A. All trusses shall be manufactured by a current licensed truss fabrication company.

B. Erectors of all materials of this Section shall have not less than five years continuous experience in erection of the specified products and shall be subject to approval of the Owner Representative.

C. In addition to complying with all pertinent codes and regulations, manufacture, ship, and erect all prefabricated wood trusses in strict accordance with the current standards of the American Institute of Timber Construction for the grades specified.

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PART 2 PRODUCTS

2.01 WOOD TRUSSES

A. All wood trusses shall be sized as shown on the Drawings.

B. Roof trusses shall be designed by the supplier and approved by a registered California Civil Engineer. Roof truss dead loads shall be a minimum of 10 psf top chord minimum unless noted otherwise on plans, 10 psf bottom chord, plus weights of equipment shown on framing plans.

C. All lumber for trusses shall be Coast Region Douglas Fir meeting the requirements of CS 253-63 and all applicable local codes; stress graded with normal working stress values of 2400 psi in bending, 1600 psi in tension, 1500 psi in compression parallel to the grain, 165 psi in shear parallel to the grain, and 385 psi in compression perpendicular to the grain, for dry condition of use.

D. Hardware:

1. Design and provide all connection steel and hardware for joining truss members to each other and to their supports, exclusive of anchorage embedded in masonry, setting plates, and items field welded to structural steel.

2. Furnish all necessary data to other trades to enable fabrication of all other required hardware.

PART 3 EXECUTION

3.01 FABRICATION

Fabricate all products of this Section in strict accordance with the referenced standards, the original design, and the approved Shop Drawings.

3.02 INSTALLATION

A. Use only that equipment which is of the proper design and capacity and only such personnel as are thoroughly skilled in such work and are completely familiar with the planned method of erection.

B. Properly and adequately shore and brace all trusses; leave all shoring and bracing in place until the following work, and all other work necessary to provide stability for the roof structure, is complete:

1. All framing members in place and all fasteners tightened as required for the completed structure;

2. All roof decking and sheathing in place and completely nailed;

3. Walls on all four sides complete including plywood sheathing, tie-downs and anchor bolts;

4. All roof and wall connections complete, including all connections between columns and walls.

C. Erect all trusses in strict accordance with all pertinent codes and regulations, the referenced standards, the approved Shop Drawings, and the original design.

3.03 MEASUREMENT AND PAYMENT

A. Payment for "**Prefabricated Wood Trusses**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Prefabricated Wood Trusses**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 06 20 23 FINISH CARPENTRY

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Wood trim and finish.
2. Wood opening frames.
3. Wood doors.
4. Installation of steel doors and frames.

B. Related Work:

1. Finish painting.
2. Furnishing steel doors and frames.
3. Furnishing wood doors.
4. Furnishing finish hardware for doors.

1.02 SUBMITTALS

A. Samples and Product Data: Submit the following items for selection and approval:

1. Samples of each wood trim item, pieces full size by minimum 15" long.
2. Such other Samples or data Architect may request.

1.03 QUALITY ASSURANCE

Work of this Section shall conform to the Manual of Millwork of the Woodwork Institute of California (WIC), 2014 Edition as amended, grades as specified herein or indicated.

1.04 PROJECT/SITE CONDITIONS

Protection: After installing, temporarily cover and protect the millwork to prevent damage, staining, or marring by subsequent construction operations.

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PART 2 – PRODUCTS

2.01 MATERIALS AND MANUFACTURE

A. Conform to WIC Manual unless otherwise shown or specified. Details on Drawings and requirements specified herein govern the type, arrangement, sizes, construction, and fabrication. In all other respects, manufacture Work of this Section to conform to the WIC grades specified.

B. Interior Wood Trim and Finish. MDF fiberboard preprimed or approved equal for opaque paint finish. No finger jointed material shall be permitted. Conform to applicable provisions of Sections 10 and 11, "Custom" grade. Vertical trims shall be in one-piece heights without splicing. Horizontal trims shall be in long lengths with joints scarfed at splices.

C. Interior Wood Frames: MDF fiberboard preprimed or approved equal for opaque paint finish. No finger jointed material shall be permitted . Conform to applicable provisions of Sections 10 and 11, "Custom" grade. Vertical trims shall be in one-piece heights without splicing. Horizontal trims shall be in long lengths with joints

scarfed at splices.

PART 3 - EXECUTION

3.01 INSTALLATION OF FINISH CARPENTRY

Conform to requirements indicated, WIC Manual, and approved submittals. Repair all damage as approved.

3.02 INSTALLATION OF STEEL DOORS AND FRAMES

Conform to submittals approved under Related Sections. Install steel frames plumb, straight, correctly aligned, rigidly connected to walls and building structure. Erect in proper sequence with other trades to prevent delays. Erect within the tolerances specified or shown in the approved submittals. At exterior conditions, apply minimum 9" Moistop vapor barrier flashing interlocked with frame and building paper for a waterproof installation. Caulk frames according to requirements specified in Section 07920.

3.03 INSTALLATION OF WOOD DOORS

Install all doors according to the NWWDA requirements except as modified herein. Field trimming of prefit doors is not permitted. Fit doors square and plumb to frames with allowance for possible swelling and shrinking, maximum 1/8" clearance at the top, edges, and meeting stiles, with 3/8" clearance at sill unless otherwise indicated or required by floor or threshold finish. Round arises to 1/16" radius. Bevel lock stiles for lock and latch hardware.

3.04 INSTALLATION OF FINISH HARDWARE:

Install hardware supplied under Section 08710, excluding only hardware specified to be installed at the factory or under other Sections. Drill pilot holes for screws and screw home; hammer driving of screws is not allowed. Adjust hinges to swing smoothly but not loosely, without sticking or hingebound conditions. Adjust other hardware for correct operation.

3.05 MEASUREMENT AND PAYMENT

A. Payment for "**Finish Carpentry**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Finish Carpentry**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

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Division 07 – Thermal and Moisture Protection

SECTION 07 13 53 ELASTOMERIC SHEET WATERPROOFING

PART 1 GENERAL

1.01 SUMMARY

A. Furnish all labor, materials, equipment, facilities, transportation and services to complete all elastomeric membrane waterproofing.

B. General Provisions and Special Conditions of the contract apply to the work of this section the same as though written herein.

1.02 WORK INCLUDED

Furnish and install sheet membrane waterproofing material and labor as indicated on the drawing and as specified.

1.03 RELATED SECTIONS

A. Section 03 30 00 - Cast In Place Concrete

1.04 SUBMITTALS

A. Product Data:

Submit specifications, installation instructions and general recommendations from waterproofing materials manufacturer. Include data substantiating that materials comply with requirements specified herein.

B. Certificate:

Submit a letter from the applicator certifying that work has been installed in accordance with specifications and manufacturers written instructions.

C. Refer to special conditions for number and manner of submittals.

1.05 QUALITY ASSURANCE

A. Applicator Qualifications:

A firm specializing in installing the waterproofing types specified for not less than 3 years and acceptable to the manufacturer of waterproofing materials.

1.06 PROJECT CONDITIONS

A. Allow concrete masonry to cure for at least 28 days before application of membrane.

B. Weather:

Proceed with waterproofing and associated work only when weather conditions will permit work to be performed in accordance with manufacturer's recommendations and warranty requirements.

1.07 WARRANTY

A. In addition to the warranty and correction of work requirements of the general provisions, warrant work specified herein to be watertight for a period of 2 years from date of "Notice of Completion". Written warranty shall include materials and labor required to repair leaks that develop and make good damage to other work caused by such leaks.

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PART 2 PRODUCTS

2.01 MATERIALS

A. Elastomeric Membrane:

1. Self-adhering membrane of rubberized asphalt integrally bonded to polyethylene sheeting, formed into uniform flexible sheets of not less than 55 mils. Acceptable products include, but are not limited to the following:

a. W.R. Grace & Co.; Bituthene 3000.

b. Protecto Wrap Co.; Jiffy Seal 140/55 “Preferred.”

c. J & P Petroleum Products, Inc.; Aquasel 2001 Ad.

d. Poly-Guard Products, Inc.; Poly-Guard No. 650.

e. Tremco; Tremproof 1400.

B. Primer:

Provide type recommended by membrane manufacturer for priming substrates involved.

C. Liquid Membrane:

Two-component cold-applied material as recommended by membrane manufacturer for flashing and fillets at corners.

D. Mastic:

Provide types recommended by membrane manufacturer for sealing edges at adjoining surfaces.

E. Protection Board:

At vertical surfaces provide sub-surface drainage mat to protect membrane. Submit sample for approval by Engineer.

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PART 3 EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection:

1. Prior to work of this section, carefully inspect previously installed work. Verify all such work is complete to the point where this installation may properly commence.

2. Verify that work of this section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.

3. In the event of discrepancy, immediately notify the Architect.

4. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.02 PREPARATION

A. Remove mortar spatter, surface dirt and other foreign materials. Clean surfaces with high-pressure air to remove dust and debris.

B. Priming:

1. Prime surfaces by spray, roller, or brush, at a rate recommended by the waterproofing manufacturer. Allow to dry tack free. Re-prime areas not covered by membrane during the workday.

C. Examine wood subfloor to receive waterproof membrane to assure that joints have been blocked and nailed solidly.

3.03 INSTALLATION

A. Vertical Surfaces:

1. Membrane Installation:

Apply membrane vertically. Press membrane in place with heavy hand pressure or rollers.

2. Sealing Edges:

Where the membrane is terminated directly on the vertical surface, press membrane firmly to the wall and apply a troweled bead of mastic to all vertical and horizontal terminations.

3. Sealing Seams:

Overlap membrane edges at least 2-1/2 inches, stagger end laps. Seal laps within 12 inches of corners with a troweling of mastic.

4. Corners:

Form a fillet at inside corners, using materials recommended by the membrane manufacturer; do not use fiber or wood cants. Install a strip of membrane, at least 11 inches wide, at each inside and outside corner. Install membrane over strip.

B. Horizontal Surfaces:

1. Install sheet membrane over entire floor area to receive ceramic tile, including shower floors, allowing for upturn at curbs and walls, as recommended by the sheet membrane manufacturer. Turn the membrane up the wall not less than 6 inches and cut and fold the corners as recommended by the sheet manufacturer. Extend sheet membrane into clamping of floor drains and seal with manufacturer's recommended sealant.

2. Sealing Seams:

Overlap membrane edges at least 2-1/2 inches, stagger end laps. Seal laps within 12 inches of corners with a troweling of mastic.

3. At intersection of horizontal and vertical applications form a fillet using materials recommended by the membrane manufacturer; do not use fiber or wood cants. Install a strip of membrane, at least 11 inches wide, at each inside and outside corner. Install membrane over strip.

4. Secure membrane by pressing firmly to substrate and trowel a bead of mastic at all vertical and horizontal terminations.

5. Protect membrane from puncture and damage until installation of mortar setting bed.

3.04 FIELD QUALITY CONTROL

A. Inspection:

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Immediately before covering the membrane with protection board inspect the membrane. Patch holes, tears, misaligned or wrinkled seams or other discontinuities with membrane or mastic. Where patches of membrane are used, seal edges with mastic.

3.05 PROTECTION

After flood test, apply protection panels over waterproofing, using manufacturer's approved adhesive. Butt joints tightly together.

3.06 MEASUREMENT AND PAYMENT

A. Payment for "**Elastomeric Sheet Waterproofing**", as it appears in the new bathroom. is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Elastomeric Sheet Waterproofing**", as it appears in the new bathroom. is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 07 19 00 GRAFFITI RESISTANT COATINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Clear water repellent coating applied to interior and exterior surfaces.

1.02 SYSTEM DESCRIPTION

B. Performance Requirements:

1. Reduce absorption of water and waterborne contaminants into substrate.
2. Permit water vapor transmittance.
3. No change to slight darkening of substrate after application.

1.03 SUBMITTALS

A. Submit under provisions of Section 01 30 00:

1. Product Data: Include manufacturer's specifications, surface preparation and application instructions, recommendations for each surface to receive water repellent, protection, and cleaning requirements.
2. Certificate: Manufacturer's installer approval certificate.

1.04 QUALITY ASSURANCE

A. Mockups:

1. Apply water repellent to actual substrates under provisions of Section 01430.
2. Size: 100 square feet (9 sq. m) of each substrate.
3. Location: Approved by Architect/Engineer.
4. Determine optimum coverage rate for application.
5. Water test after curing to verify sufficient coverage to repel moisture from surface.
6. Verify that application of water repellent to substrate will not produce surface stains or discoloration.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle products under provisions of Section [01600].

B. Store materials in a dry area at a temperature between 32º and 100º F (0 to 38 degrees C). Provide adequate ventilation and keep away from ignition sources.

1.06 PROJECT CONDITIONS

A. Environmental Requirements:

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1. Ambient and surface temperatures between 40 and 100 degrees F (4 and 38 degrees C).
2. Do not apply if rain or temperatures below 40 degrees F (4 degrees C) are expected within 6 hours after application.
3. Do not apply during winds that could carry water repellent to adjacent surfaces, properties, or vegetation.
4. Do not apply sooner than 24 hours after surface has been exposed to rain or other water source.

B. Substrate:

1. Cured minimum 30 days.
2. Not frozen or frost covered.
3. Clean, sound, and dry.

C. Ensure adequate ventilation in application areas.

D. Joint sealers, paints, and glazing compounds and sealants fully cured.

1.07 SEQUENCING

Apply water repellents after installation of joint sealers.

1.08 WARRANTIES

Provide manufacturer's 5 year material replacement warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURER

Chemical Products Industries, Inc.

7649 SW 34th Street

Oklahoma City, OK 73179

(800) 624-4356

Substitutions: Permitted, under provisions of Section 01 25 00.

2.02 MATERIALS

A. Sacrificial Anti-Graffiti Water Repellent

1. Product: CP-Graffiti & Water Repellent
2. Description: Water-based sacrificial anti-graffiti coating for most vertical building surfaces.
3. Attributes:
   a. Form: Milky white semi-opaque liquid.
   b. Specific gravity: .980.
   c. Weight/gallon: 8.05 lbs.

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d. Flash point: 212°F/100°C.

e. Freeze point: 32°F/0°C.

PART 3 - EXECUTION

3.01 PREPARATION

A. Clean surface using a TAZ™ Construction Cleaner to remove loose and foreign matter that could interfere with application or performance of coating. Contact Chemical Products Industries, Inc. for cleaning procedures, technical data and product availability of TAZ™ High-Performance Construction Cleaners.

1. Allow surfaces to dry completely before beginning application.

2. Repoint loose mortar; allow to dry 72 hours before applying water repellent.

3. Protect adjacent and underlying surfaces from overspray and rundown.

3.02 APPLICATION

A. Follow manufacturer's instructions for application and coverage, and procedures established during preparation of mockup.

B. Vertical Surfaces:

1. Apply from bottom of wall up using low pressure sprayer at 10 to 25 psi (69 to 172 Kpa).

2. Flood surface until material runs down 6 to 8 inches (150 to 200 mm) below spray pattern before being absorbed.

3. Re-apply (wet-on-wet) within 5 minutes to ensure complete coverage.

C. Apply to following coverage rates unless otherwise determined by testing of mockup:

1. [Portland cement plaster] [Stucco]: 80 to 150 square feet per gallon (2.0 to 3.7 sq m/L).

3.03 FIELD QUALITY CONTROL

Inspection: Inspect the water repellent work with the Contractor, Architect, applicator or CPI representative, and compare with test panel results approved by the Architect. Determine if the substrates are suitably protected by the water repellents. After coating has dried, test surfaces with water spray and Material Absorption Tube test; reapply to any areas showing water absorption.

3.04 FINAL CLEANING

A. Clean site of all unused water repellents, residues, rinse water, wastes, and effluents in accordance with environmental regulations.

B. Remove and dispose of all materials used to protect surrounding areas and non-masonry surfaces, following completion of the work of this section.

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C. Repair, restore, or replace to the satisfaction of the Architect, all materials, landscaping, and non-masonry surfaces damaged by exposure to water repellents.

3.05 MEASUREMENT AND PAYMENT

A. Payment for "**Graffiti Resistant Coatings**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Graffiti Resistant Coatings**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 07 21 00 THERMAL INSULATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Thermal batt insulation for exterior walls and under roof.
2. Rigid board insulation for under roof.
3. Sound insulation in interior partitions and ceilings, and in stud and joist cavities containing waste piping.
4. Electrical outlet box pads.

B. Related Work:

1. Insulation for mechanical systems.
2. Energy Compliance requirements for air infiltration.

1.02 SUBMITTALS

Refer to Section 01 30 00 for procedures.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Thermal Batt Insulation: Conforming to ASTM C665, Type I in walls and Type II under roofs, friction fit, thermal resistance as required by energy compliance calculations.

B. Sound Insulation: Friction fit type incombustible fibrous glass batts or blankets, ASTN C665, Type I, nominal 0.70 - 2.50 pcf density. Furnish unfaced batts and blankets, equal to OCF unfaced "Noise Barrier Batts" and "Friction Fit Building Insulation". Sound insulation shall be as indicated on the drawings.

C. Surface Burning Characteristics: All insulation shall have flame spread of 25 or less and smoke developed of 50 or less per ASTM E84 test

D. Electrical Outlet Box Pads: For all types of electrical and communication outlet boxes in located sound insulated walls and partitions, provide "Lowry's Outlet Box Pads" by Harry A Lowry & Associates, 213/875-0223, "Sound Pad #68" by L.H. Dottie Co. (213) 269-3161, or equal, sizes and types as required.

PART 3 - EXECUTION

3.01 INSTALLATION OF THERMAL INSULATION BATTS

Install batts with close snug friction fit, free of gaps, holes, or sagging. Maintain nominal 3/4" air space between thermal insulation and the interior wall or ceiling finish. Supplement the installations with wire ties or adhesive where required to prevent sagging.

3.02 SOUND INSULATED PARTITIONS

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Install sound insulation continuously between studs from the finish floor to top of wall. Snugly fit all sound insulation in place free of gaps or holes. Install outlet box pads at electrical type outlet boxes in sound insulated walls; plug unused knock-outs in boxes with knock-out caps before installing pads.

3.03 SOUND INSULATED FLOOR/CEILING ASSEMBLIES

Install sound insulation in the joist spaces as indicated. Snugly fit sound insulation in place free of gaps or holes.

3.04 WASTE PIPING

Pack stud and joist cavities containing either horizontal or vertical waste piping full with sound insulation.

3.05 CERTIFICATE

Upon completion, Contractor shall inspect all insulation and submit a written certification that all materials and workmanship conform to Specifications and Code requirements. Contractor shall also post such certification as required by governing energy compliance requirements.

3.07 MEASUREMENT AND PAYMENT

A. Payment for "**Thermal Insulation**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Thermal Insulation**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 07 26 00 UNDER-SLAB VAPOR BARRIER

PART 1 GENERAL

1.01 SUMMARY

Products Supplied Under This Section

Vapor Barrier, seam tape, mastic, pipe boots, detail strip for installation under concrete slabs

1.02 RELATED SECTIONS

A. Section 03 30 00 Cast-in-place Concrete

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. ASTM E 1745-97 (2004) Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs
2. ASTM E 154-99 (2005) Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs
3. ASTM E 96-05 Standard Test Methods for Water Vapor Transmission of Materials
4. ASTM F 1249-06 Standard Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor
5. ASTM E 1643-98 (2005) Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs

B. American Concrete Institute (ACI)

1. ACI 302.1R-04 Vapor Barrier Component (plastic membrane) is not less than 10 mils thick

1.04 SUBMITTALS

Section 01 30 00

PART 2 PRODUCTS

2.01 MATERIALS

A. Vapor Barrier must have all of the following qualities:

1. Permeance of less than 0.01 Perms [grains/(ft2 *hr * in.Hg)] per ASTM F 1249 or ASTM E 96
2. Maintain permeance of less than 0.01 Perms [grains/(ft2 *hr * in.Hg)] after mandatory conditioning tests per ASTM E 154 Sections 8,11,12, and 13.
3. ASTM E 1745 Class A

B. Vapor Barrier products:

1. Stego Wrap Vapor Barrier (15-mil) by Stego Industries LLC, (877) 464-7834 www.stegoindustries.com.

CITY COUNCIL REFERENCE ONLY

2. Or approved Equal that meets all of the performance requirements.

2.02 ACCESSORIES

A. Seam Tape

1. Tape must have the following qualities:

2. Water Vapor Transmission Rate ASTM E 96 0.3 perms or lower

B. Vapor Proofing Mastic

1. Mastic must have the following qualities:

2. Water Vapor Transmission Rate ASTM E 96 0.3 perms or lower

C. Pipe Boots

1. Construct pipe boots from vapor barrier material, pressure sensitive tape and/or mastic per manufacturer's instructions.

D. Vapor Stakes

1. Stakes must have the following qualities:

a. Density ASTM D 1505 0.0289 lb/in3

b. Specific Gravity ASTM D 792 0.0477

PART 3 EXECUTION

3.01 PREPARATION

A. Ensure that subsoil is approved by architect or geotechnical firm

1. Level and tamp or roll aggregate, sand or tamped earth base.

3.02 INSTALLATION

A. Install Vapor Barrier/Retarder:

1. Installation shall be in accordance with manufacturer's instructions and ASTM E 1643-04.

a. Unroll Vapor Barrier/Retarder with the longest dimension parallel with the direction of the pour.

b. Lap Vapor Barrier/Retarder over footings and seal to foundation walls.

2. Seal to interior/perimeter footings using Vapor Proofing Mastic

a. Overlap joints 6 inches and seal with manufacturer's tape.

b. Seal all penetrations (including pipes) per manufacturer's instructions.

3. Single pipe penetrations may be sealed using pipe boot constructed from the product

a. Cut a piece of Plastic, width: minimum 12 inches length: 1 and ½ times the circumference of the pipe with scissors, cut slits half the width of the film.

b. Wrap boot around pipe; tape onto pipe and completely tape the base to the Vapor Barrier/Retarder

4. Multiple pipe penetrations in close proximity and very small pipes may be sealed using Vapor Proofing Mastic

a. Cut out a small area around pipes

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b. Cut a patch of Vapor Barrier/Retarder extending at least 6 inches past the cut out in all directions

c. Cut X's or small circles in the patch and install over pipes

d. Overlap at least 6 inches and tape

e. Build up 40-60 mils of mastic, or as needed to completely fill all voids between the pipe and Vapor Barrier/Retarder

f. No penetration of the Vapor Barrier/Retarder is allowed except for reinforcing steel and permanent utilities.

5. In the case that forms must be used vapor stakes should be used to hold forms in place.

a. Penetrate plastic with stake

b. Treat stake as pipe penetration (see above section d. 2. a) – e)) leave stake permanently in concrete

c. Using a power saw, cut the stake off above the seal, but below the concretes finished surface

d. The lower portion of the vapor stake remains in place, permanently plugging the penetration

e. Repair damaged areas by cutting patches of Vapor Barrier/Retarder, overlapping damaged area 6 inches and taping all four sides with tape.

3.03 MEASUREMENT AND PAYMENT

A. Payment for "**Under Slab Vapor Barrier**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Under Slab Vapor Barrier**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 07 31 13 ASPHALT SHINGLES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Asphalt shingles.

2. Underlayment.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For each exposed product and for each color and blend specified.

1.03 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Research/evaluation reports.

C. Warranties: Sample of special warranties.

1.04 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.05 QUALITY ASSURANCE

A. Fire-Resistance Characteristics: Where indicated, provide asphalt shingles and related roofing materials identical to those of assemblies tested for fire resistance per test method below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.

1. Exterior Fire-Test Exposure: Class A; ASTM E 108 or UL 790, for application and roof slopes indicated.

B. Pre-installation Conference: Conduct conference at Project site.

1.06 WARRANTY

A. Special Warranty: Standard form in which manufacturer agrees to repair or replace asphalt shingles that fail in materials or workmanship within specified warranty period.

1. Material Warranty Period: 40 years from date of Substantial Completion, prorated, with first twenty years non-prorated.

2. Algae-Discoloration Warranty Period: Asphalt shingles will not discolor five years from date of Substantial Completion.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturer: GAF®, 1361 Alps Rd. Wayne NJ 07470. Tel: 1-973-628-3000.

B. Request for substitutions will be considered in accordance with provision 01 60 00

2.02 SHINGLES

A. Heavyweight, granule surfaced, self sealing asphalt shingle with a strong fiberglass reinforced Micro Weave® core and a mineral granule surfacing. Architectural laminate styling provides a wood shake appearance with a 5 5/8 inch exposure. Features highly reflective roofing granules that bounce back the sun's rays and more effectively release absorbed heat. Rated by the Cool Roof Rating Council (CRRC) and meet initial EnergyStar® performance levels. UL 790 Class A rated with UL 997 Wind Resistance Label; ASTM D 7158, Class H; ASTM D 3161, Type 1; ASTM D 3018, Type 1; ASTM D 3462; AC438; CSA A123.5-98; Dade County Approved, Florida Building Code Approved, Texas Dept of Insurance Approved, ICC Report Approval, Title 24 compliant and Energy Star compliant. **Timberline® Cool Series** Energy-Saving Architectural Shingles, by GAF®.

1. Color: "Barkwood"

2.03 HIP AND RIDGE SHINGLES

A. Distinctive self-sealing hip and ridge cap shingle complementing the color of selected roof shingle. Each bundle covers approx. 31 lineal feet (9.45m) with an 8 inch (203mm) exposure. **Ridglass™ 12"** Ridge Cap Shingles by GAF®

2.04 STARTER STRIP

A. Self-sealing starter shingle designed for all roof shingles. Each bundle covers approx. 120 lineal feet (36.58m). **ProStart™** Starter Strip by GAF®.

2.05 UNDERLAYMENT MATERIALS

A. Felt: 30# **ASTM D 4869 Type II**, asphalt-saturated organic felts, nonperforated.

2.06 RIDGE VENTS

A. Rigid Ridge Vent: Manufacturer's standard, rigid section high-density polypropylene or other UV-stabilized plastic ridge vent with **external deflector** baffles; for use under ridge shingles.

1. Manufacturers: Subject to compliance with requirements, **Cobra® Ridge Runner™** Ridge Vent by GAF®.

2.07 ACCESSORIES

A. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.

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B. Roofing Nails: Standard round wire, zinc-coated steel or aluminum; 10 to 12 gauge, smooth, barbed or deformed shank, with heads 3/8 inch (9mm) to 7/16 inch (11mm) in diameter. Length must be sufficient to penetrate into solid wood at least 3/4 inch (19mm) or through plywood or oriented strand board by at least 1/8 inch (3.18mm).

1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.

C. Felt Underlayment Nails: Aluminum, stainless-steel, or hot-dip galvanized-steel wire with low-profile capped heads or disc caps.

2.08 METAL FLASHING AND TRIM

A. General: Comply with requirements in Section 07 62 00 "Sheet Metal Flashing and Trim."

1. 24 gauge hot-dip galvanized steel sheet, complying with ASTM A 653/A 653M, G90/Z275.

B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of the item.

PART 3 EXECUTION

3.01 UNDERLAYMENT INSTALLATION

A. General: Comply with underlayment manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.

B. Single-Layer Felt Underlayment: Install on roof deck parallel with and starting at the eaves. Lap sides a minimum of 2 inches (50 mm) over underlying course. Lap ends a minimum of 4 inches (100 mm). Stagger end laps between succeeding courses at least 72 inches (1830 mm).

3.02 METAL FLASHING INSTALLATION

A. General: Install metal flashings and other sheet metal to comply with requirements in Section 07 62 00 "Sheet Metal Flashing and Trim."

1. Install metal flashings according to recommendations in ARMA's "Residential Asphalt Roofing Manual" and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."

3.03 ASPHALT SHINGLE INSTALLATION

A. General: Install asphalt shingles according to manufacturer's written instructions, recommendations in ARMA's "Residential Asphalt Roofing Manual," and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."

B. Install starter strip along lowest roof edge, consisting of an asphalt shingle strip at least 7 inches (175 mm) wide with self-sealing strip face up at roof edge.

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1. Extend asphalt shingles 1/2 inch (13 mm) over fasciae at eaves and rakes.

2. Install starter strip along rake edge.

C. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.

D. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.

E. Install asphalt shingles by single-strip column or racking method, maintaining uniform exposure. Install full-length first course followed by cut second course, repeating alternating pattern in succeeding courses.

F. Fasten asphalt shingle strips with a minimum of 4, 5, or 6 roofing nails in accordance with the manufacturer's written instructions.

G. Open Valleys: Install valleys using the "open valley" method:

1. Snap diverging chalk lines on the metal flashing, starting at 3 inches (76mm) each side of top of valley, spreading at 1/8 inch per foot (9mm per meter) to the eaves.

2. Run shingles to chalk line.

3. Trim last shingle in each course to match the chalk line; do not trim shingles to less than 12 inches (305mm) wide.

4. Apply a 2 inch (51mm) wide strip of plastic cement under ends of shingles, sealing them to the metal flashing.

H. Ridge Vents: Install continuous ridge vents over asphalt shingles according to manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.

I. Ridge Cap Shingles: Maintain same exposure of cap shingles as roofing shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds. Fasten with roofing nails of sufficient length to penetrate sheathing.

1. Fasten ridge cap asphalt shingles to cover ridge vent without obstructing airflow.

CITY COUNCIL REFERENCE ONLY

3.04 MEASUREMENT AND PAYMENT

A. Payment for "**Asphalt Shingles**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Asphalt Shingles**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

SECTION 07 62 00 SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Manufactured reglets.
2. Formed roof-drainage sheet metal fabrications.
3. Formed low-slope roof sheet metal fabrications.
4. Formed wall sheet metal fabrications.

1.02 PRE-INSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site as required by contractor.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Distinguish between shop- and field-assembled work.
3. Include identification of finish for each item.

C. Samples: For each exposed product and for each color and texture specified.

1.04 INFORMATIONAL SUBMITTALS

A. Sample warranty.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1.07 WARRANTY

A. Finish Warranty Period: 10 years from date of Substantial Completion.

PART 2 PRODUCTS

CITY COUNCIL REFERENCE ONLY

2.01 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated in details.

C. SPRI Wind Design Standard: Manufacture and install [copings] [roof edge flashings] tested according to SPRI ES-1 and capable of resisting the following design pressure:

1. Design Pressure: UL580 for Class 90 wind uplift resistance.

2.02 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M and coating designation prepainted by coil-coating process to comply with ASTM A 755/A 755M.

1.. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Color: White or as selected by Architect from manufacturer's full range.

2.03 UNDERLAYMENT MATERIALS

A. Felt: ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felt; non-perforated.

B. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. minimum.

2.04 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

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a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.

b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.

c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.

2. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

C. Solder:

For Zinc-Coated (Galvanized) Steel: ASTM B 32, with maximum lead content of 0.2 percent.

D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, non-sag, non-toxic, non-staining tape 1/2 inch wide and 1/8 inch thick.

E. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

CITY COUNCIL REFERENCE ONLY

2.05 MANUFACTURED REGLETS

A. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Cheney Flashing Company.

b. Fry Reglet Corporation.

c. Heckmann Building Products, Inc.

d. Hickman, W. P. Company.

e. Hohmann & Barnard, Inc.

f. Keystone Flashing Company, Inc.

g. National Sheet Metal Systems, Inc.

h. Sandell Manufacturing.

i. Or other qualified manufacturer.

3. Material: Galvanized steel, 0.022 inch thick.

4. Finish: Mill with manufacturer's standard color coating: white.

2.06 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.

1. Obtain field measurements for accurate fit before shop fabrication.

2. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.

3. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.

2. Use lapped expansion joints only where indicated on Drawings.

C. Sealant Joints: Where movable, non-expansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.

D. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

E. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.

F. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.

G. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.

CITY COUNCIL REFERENCE ONLY

2.07 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Hanging Gutters: Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in minimum 96-inch-long sections. Furnish flat-stock gutter brackets and gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard but with thickness not less than twice the gutter thickness. Fabricate expansion joints, expansion-joint covers, and gutter accessories from same metal as gutters. Shop fabricate interior and exterior corners.

B. Downspouts: Fabricate rectangular open-face downspouts to dimensions indicated, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate elbows and leave in band clamps.

1. Hanger Style: Spike Nail & sleeve or as manufactures recommendation

2. Fabricate from the following materials:

a. Galvanized Steel: 0.022 inch thick.

PART 3 EXECUTION

3.01 UNDERLAYMENT INSTALLATION

A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches.

B. Synthetic Underlayment: Install synthetic underlayment, wrinkle free, according to manufacturers' written instructions, and using adhesive where possible to minimize use of mechanical fasteners under sheet metal.

C. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller. Cover underlayment within 14 days.

3.02 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.

2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

3. Space cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.

4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.

5. Torch cutting of sheet metal flashing and trim is not permitted.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Coat concealed side of sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.

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2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.

2. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches; however, reduce pre-tinning where pre-tinned surface would show in completed Work.

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3.03 ROOF-DRAINAGE SYSTEM INSTALLATION

A. General: Install sheet metal roof-drainage items to produce complete roof-drainage system according to cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

B. Hanging Gutters: Join sections with riveted and soldered joints. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchor them in position. Provide end closures and seal watertight with sealant. Slope to downspouts.

1. Install gutter with expansion joints at locations indicated, but not exceeding, 26 feet apart. Install expansion-joint caps.

C. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls. Locate hangers at top and bottom and at approximately 60 inches o.c.

3.04 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate.

C. Copings: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated.

D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless-steel draw band and tighten.

E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints minimum of 4 inches.

F. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof compatible with roofing system.

3.05 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Opening Flashings in Frame Construction: Install continuous head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings.

3.06 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

3.07 MEASUREMENT AND PAYMENT

A. Payment for “Sheet Metal Flashing and Trim”, as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for “**New Bathroom Structure**” and no additional payment or separate price will be paid therefor.

B. Payment for “Sheet Metal Flashing and Trim”, as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for “**New Meeting Room Structure**” and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 07 71 00 ROOF SPECIALTIES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Roof-edge flashings.
2. Roof-edge drainage systems.
3. Reglets and counterflashings.

1.02 PERFORMANCE REQUIREMENTS

A. Wind Design Standards: for Northern California Manufacture per CBC install roof-edge flashings capable of resisting the local area design pressures.

1.03 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.04 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.05 QUALITY ASSURANCE

A. As per contract.

1.06 WARRANTY

A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within 10 years from date of Substantial Completion.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

2.01 EXPOSED METALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M coating designation.

1. Surface: Smooth, flat finish.
2. Exposed Coil-Coated Finishes: Prepainted by the coil-coating process to comply with ASTM A 755/A 755M. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2.02 CONCEALED METALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M coating designation.

2.03 UNDERLAYMENT MATERIALS

A. Felt: ASTM D 226, Type II (No. 30), asphalt-saturated organic felt, non-perforated.

B. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F.

2. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F.

C. Polyethylene Sheet: 6-mil thick polyethylene sheet complying with ASTM D 4397.

D. Slip Sheet: Building paper, 3-lb/100 sq. ft. minimum, rosin sized.

2.04 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:

1. Exposed Penetrating Fasteners: Gasketed screws with hex washer heads matching color of sheet metal.

2. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A 153/A 153M or ASTM F 2329.

C. Elastomeric Sealant: ASTM C 920, elastomeric polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.

2.05 ROOF-EDGE DRAINAGE SYSTEMS

A. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:

B. Basis-of-Design Product: Subject to compliance with requirements, provide comparable product by one of the following:

1. Andreas Renner KG.
2. Architectural Products Company.
3. ATAS International, Inc.
4. Berger Building Products, Inc.

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5. Castle Metal Products.
6. Cheney Flashing Company.
7. CopperCraft by FABRAL; a Euramax company.
8. Hickman Company, W. P.
9. Klauer Manufacturing Company.
10. Merchant & Evans, Inc.
11. Metal-Era, Inc.
12. Metal-Fab Manufacturing, LLC.
13. MM Systems Corporation.
14. National Sheet Metal Systems, Inc.
15. Perimeter Systems; a division of Southern Aluminum Finishing Company, Inc.
16. Or equivalent manufacturer.

C. Gutters: Manufactured in uniform section lengths not exceeding 12 feet, with matching corner units, ends, outlet tubes, and other accessories. Elevate back edge at least 1 inch above front edge. Furnish flat-stock gutter straps, gutter brackets, expansion joints, and expansion-joint covers fabricated from same metal as gutters.

1. Fabricate from the following exposed metal:

a. Zinc-Coated Steel: Nominal 0.028-inch thickness.

2. Gutter Profile: Round – or as approved by Architect.

3. Corners: Factory mitered and mechanically clinched and sealed watertight.

4. Gutter Supports: Spikes and ferrules with finish matching the gutters.

D. Downspouts: Plain rectangular complete with machine-crimped elbows, manufactured from the following exposed metal. Furnish with metal hangers, from same material as downspouts, and anchors.

1. Zinc-Coated Steel: Nominal 0.028-inch thickness.

CITY COUNCIL REFERENCE ONLY

2.06 REGLETS AND COUNTERFLASHINGS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide comparable product by one of the following:

1. Castle Metal Products.

2. Cheney Flashing Company.

3. Fry Reglet Corporation.

4. Heckmann Building Products Inc.

5. Hickman Company, W. P.

6. Keystone Flashing Company, Inc.

7. Metal-Era, Inc.

8. Metal-Fab Manufacturing, LLC.

9. MM Systems Corporation.

10. National Sheet Metal Systems, Inc.

11. Or other qualified manufacturer.

C. Reglets: Manufactured units formed to provide secure interlocking of separate reglet and counterflashing pieces, from the following exposed metal:

1. Zinc-Coated Steel: Nominal 0.022-inch thickness.

2. Some manufacturers do not offer first two options in first subparagraph below.

3. Corners: Factory mitered and soldered.

D. Counter flashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches and in lengths not exceeding 12 feet designed to snap into reglets and compress against base flashings with joints lapped, from the following exposed metal:

1. Zinc-Coated Steel: 24 gauge minimum thickness.

E. Accessories:

1. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where reglet is provided separate from metal counterflashing.

2. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.

F. Zinc-Coated Steel Finish: Flat two-coat fluoropolymer.

1. Color: White as selected by Architect from manufacturer's full range.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

A. General: Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete roof-specialty systems.

1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.

2. Provide uniform, neat seams with minimum exposure of solder and sealant.

3. Install roof specialties to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.

4. Torch cutting of roof specialties is not permitted.

5. Install underlayment with adhesive for temporary anchorage. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.

1. Space movement joints at a maximum of 12 feet with no joints within 18 inches of corners or intersections unless otherwise shown on Drawings.

2. When ambient temperature at time of installation is between 40 and 70 deg, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.

D. Fastener Sizes: Use fasteners of sizes that will penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. Seal joints with sealant as required by roofing-specialty manufacturer.

F. Seal joints as required for watertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F.

CITY COUNCIL REFERENCE ONLY

3.02 ROOF-EDGE FLASHING INSTALLATION

A. Install cleats, cants, and other anchoring and attachment accessories and devices with concealed fasteners.

B. Anchor roof edgings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.

3.03 ROOF-EDGE DRAINAGE-SYSTEM INSTALLATION

A. General: Install components to produce a complete roof-edge drainage system according to manufacturer's written instructions.

B. Gutters: Join and seal gutter lengths. Allow for thermal expansion. Attach gutters to firmly anchored gutter supports spaced not more than 30 inches apart. Attach ends with rivets and solder to make watertight. Slope to downspouts.

1. Install gutter with expansion joints at locations indicated but not exceeding 26 feet apart. Install expansion joint caps.

2. Install continuous leaf guards on gutters with noncorrosive fasteners, removable for cleaning gutters.

C. Downspouts: Join sections with manufacturer's standard telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls and 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c.

3.04 REGLET AND COUNTERFLASHING INSTALLATION

A. Surface-Mounted Reglets: Install reglets to receive flashings where flashing without embedded reglets is indicated on Drawings. Install at height so that inserted counterflashings overlap 4 inches over top edge of base flashings.

B. Counterflashings: Insert counterflashings into reglets or other indicated receivers; ensure that counterflashings overlap 4 inches over top edge of base

flashings. Lap counterflashing joints a minimum of 4 inches and bed with sealant. Fit counterflashings tightly to base flashings.

3.05 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder and sealants.

C. Remove temporary protective coverings and strippable films as roof specialties are installed.

3.06 MEASUREMENT AND PAYMENT

A. Payment for "Roof Specialties", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "Roof Specialties", as it appears in the new restroom, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 07 92 00 JOINT SEALANTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Silicone joint sealants.

2. Urethane joint sealants.

3. Acoustical joint sealants.

1.02 PRECONSTRUCTION TESTING

A. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates. Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193.

1.03 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples: For each kind and color of joint sealant required.

C. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.

2. Joint-sealant manufacturer and product name.

3. Joint-sealant color to match adjacent material.

1.04 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Warranties.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

1.06 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 SILICONE JOINT SEALANTS

A. Mildew-Resistant Silicone Joint Sealant. ASTM C 920.

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1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. BASF Building Systems.

   b. Dow Corning Corporation.

   c. GE Advanced Materials - Silicones.

   d. May National Associates, Inc.

   e. Pecora Corporation.

   f. Polymeric Systems, Inc.

   g. Schnee-Morehead, Inc.

   h. Sika Corporation; Construction Products Division.

   i. Tremco Incorporated.

   j. Or other qualified manufacturer.

3. Type: Multicomponent (M).

4. Grade: Nonsag (NS).

5. Class: 100/50.

6. Uses Related to Exposure: Traffic (T).

2.02 URETHANE JOINT SEALANTS

A. Urethane Joint Sealant: ASTM C 920.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

   a. BASF Building Systems.

   b. Bostik, Inc.

   c. Lymtal, International, Inc.

   d. May National Associates, Inc.

   e. Pacific Polymers International, Inc.

   f. Pecora Corporation.

   g. Polymeric Systems, Inc.

   h. Schnee-Morehead, Inc.

   i. Sika Corporation; Construction Products Division.

   j. Tremco Incorporated.

   k. Or other qualified manufacturer

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3. Type: Multicomponent (M).

4. Grade: Nonsag (NS).

5. Class: 100/50

6. Uses Related to Exposure: Traffic (T).

2.03 ACOUSTICAL JOINT SEALANTS

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Pecora Corporation .

b. USG Corporation.

c. Or other qualified manufacturer.

2.04 JOINT SEALANT BACKING

A. Cylindrical Sealant Backings: ASTM C 1330, any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.05 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.

C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.

1. Remove laitance and form-release agents from concrete.

2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.02 INSTALLATION

A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.

2. Do not stretch, twist, puncture, or tear sealant backings.

3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.

2. Completely fill recesses in each joint configuration.

3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.

2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.

F. Acoustical Sealant Installation: Comply with ASTM C 919 and with manufacturer's written recommendations.

G. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.03 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:

CITY COUNCIL REFERENCE ONLY

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C .

B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.04 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.

1. Joint Locations:

a. Control and expansion joints in brick pavers.

b. Isolation and contraction joints in cast-in-place concrete slabs.

c. Tile control and expansion joints.

d. Joints between different materials listed above.

e. Traffic coating and tile flooring.

f. Other joints as indicated.

2. Joint Sealant: Silicone.

3. Joint Sealant: Urethane.

4. Joint-Sealant Color: Match color of adjacent materials..

B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal non-traffic surfaces.

1. Joint Locations:

a. Construction joints in cast-in-place concrete.

b. Joints in exterior insulation and finish systems.

c. Joints between different materials listed above.

d. Perimeter joints between materials listed above and frames of doors, windows, and louvers or Mechanical grills.

e. Control and expansion joints in ceilings and other overhead surfaces.

f. Other joints as indicated.

2. Joint Sealant: Silicone.

3. Joint Sealant: Urethane.

4. Joint-Sealant Color: Match color of adjacent materials.

C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.

1. Joint Locations:

a. Isolation joints in cast-in-place concrete slabs.

b. Control and expansion joints in tile flooring.

c. Other joints as indicated.

2. Joint Sealant: Silicone.

3. Joint-Sealant Color: Match color of adjacent materials.

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D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

a. Control and expansion joints on exposed interior surfaces of exterior walls.

b. Perimeter joints of exterior openings where indicated.

c. Tile control and expansion joints.

d. Vertical joints on exposed surfaces of walls and partitions.

e. Perimeter joints between interior wall surfaces and frames of interior doors windows and elevator entrances.

f. Other joints as indicated.

2. Joint Sealant: Silicone.

3. Joint-Sealant Color: Match color of adjacent materials.

E. Joint-Sealant Application: Interior acoustical joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Location:

a. Acoustical joints where indicated.

b. Other joints as indicated.

2. Joint Sealant: Acoustical.

3. Joint-Sealant Color: Match colors of adjacent materials.

CITY COUNCIL REFERENCE ONLY

3.05 MEASUREMENT AND PAYMENT

A. Payment for "**Joint Sealant",** when used of concrete flatwork shall be considered as included in the unit cost paid for "**4" Concrete Flatwork over 4 Aggregate Base**" respectively and no other additional payment will be made therefor.

B. Payment for "**Joint Sealant**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

C. Payment for "**Joint Sealant**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

SECTION 08 11 13 HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SUMMARY:

Division 1 applies to this Section. Provide steel doors and frames, complete. Door hardware is furnished under Section 08 71 00.

1.02 SUBMITTALS:

Refer to Section 01 30 00 for procedures.

1.03 QUALITY ASSURANCE:

A. Requirements of Regulatory Agencies: Provide labeled openings as indicated on drawings conforming to manufacturer's standard procedures filed with and approved by UL. Provide UL labels on doors and frames. Provide steel astragals for pairs of labeled doors unless steel astragals are supplied under Section 08 71 00 or the pair of doors is a tested assembly that does not require astragals and is installed with hardware conforming to the label approval.

B. Tolerances: Provide door and frame assemblies having a maximum 1/8" gap between top and side edges of wider door face and frame after installation, and maximum 1/4" clearance above finish floor except as otherwise required by floor finish material; provide maximum 1/8" gap between door edges at meeting stiles of pairs of doors.

1.04 DELIVERY, STORAGE, AND HANDLING:

Deliver with suitable spreaders or other method to prevent distortion of the frames, and with doors and frames wrapped in plastic sheeting or cartoned to prevent damage. Store within the building, and handle by means that prevent damage to shop prime coats or other damage.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

2.01 MATERIALS:

As supplied by one of the following manufacturers subject to conformance with requirements herein; refer to Section 01 25 00 for substitutions: Stanley, Amweld Metal Doors and Frames; Americraft; Krieger Steel Products Co.; Overly Manufacturing Co.; Steelcraft Manufacturing Co.; or Pacific Steel Products or approved equal.

A. Types: Sizes, types, thicknesses, profiles, details, and features shown for hollow metal govern. In all other respects, provide hollow metal items as standard with manufacturer except as specified herein.

B. Hollow Metal Doors: Flush panel seamless type with minimum 18 gage steel 1-piece face panels, all parts of face panel and edges continuously welded and finished flush and smooth. Reinforce the face panels with internal welded steel stiffeners, or bond to a plastic-treated honeycomb core or foamed plastic core except foamed plastic is not allowed for labeled doors. Fill hollow doors with mineral wool, or equal, to eliminate all metallic ring. Provide flush top edges at exterior doors with full welded steel closure plate; screw fastened inverted steel channel void filler is not acceptable. Reinforce door edges according to the manufacturer's standards. Finish both door faces and all door edges smooth and free of seams and distortion. Provide a 1-3/4" by 12 gage full-height steel

astragal on active leaf of pairs of doors unless astragals are furnished under Section 08 71 00.

1. Louvers: Manufacturer's standard inverted chevron steel louver units for interior doors, stormproof blade profile type with removable framed bronze or aluminum insect screens on interior side for exterior doors.

C. Hollow Metal Frames: Form the door stops integral with frames. Reinforce heads over 42" wide with full-length 12 gage channel. Provide zinc-coated steel plaster guards behind cutouts for hinges or mortised hardware for frames to be installed in concrete, masonry, or plaster. Fabricate frames with continuously welded joints, exposed welds ground smooth and flush. Fabricate of 14 gage or heavier gage steel if required by UL label requirements, and 16 gage steel at other openings.

D. Frame Anchors: Provide steel anchors of proper type for wall or partition construction, minimum 16 gage steel, each anchor prepared for not less than two self-drilling self-tapping "tek" type fasteners where secured to wall studs, not less than three anchors per jamb; if frame height exceeds 84", add an additional anchor for each 18" additional frame height or fraction thereof. Weld anchors into frame except provide adjustable type frame anchors for frames installed in masonry. Provide floor anchors where mortar setting bed or concrete floor fill occurs. Wall anchors shall be one-piece Z-shape steel anchors welded into frame horizontally; vertical Z-anchors are not acceptable. Floor anchors shall be similar, one-piece horizontal type of width same as wall anchors. Frames with bowed jamb or head members are not acceptable.

E. Hardware Preparation: Prepare, reinforce, mortise, drill, and tap hollow metal according to templates supplied by the hardware supplier, reinforcing as standard with hollow metal manufacturer except minimum 10 gage steel behind butt hinges and 12 gage steel for mortised or surface-applied hardware. Conform to ANSI A115 Series as applicable to the hardware specified in Section 08710 unless otherwise indicated.

F. Finish: Thoroughly clean metal surfaces and apply chemical treatment for paint adhesion. Paint inaccessible surfaces prior to assembling. Sand exposed surfaces of hollow metal and accessories and make smooth with mineral filler as required. Apply hollow metal manufacturer's standard rust inhibitive baked-on primer; include primer on all concealed surfaces of hollow metal door frames and anchors. Provide galvanized anchors where installed in concrete or masonry.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 INSTALLATION: Refer to Manufacturers guidelines.

3.02 MEASUREMENT AND PAYMENT

A. Payment for "**Hollow Metal Doors and Frames**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Hollow Metal Doors and Frames**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

SECTION 08 14 16 FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SUMMARY:

A. Division 1 applies to this Section. Provide wood grain textured 6- panel type wood doors as indicated, specified, and required. Door hardware is furnished under Section 08 71 00.

1.02 SUBMITTALS: Refer to Section 01 30 00 for procedures.

A. Product Data: Submit manufacturer's specifications including textured hardboard finish for all wood doors.

1.03 QUALITY ASSURANCE:

A. Reference Standard: National Wood Window and Door Association (NWWDA) Standards unless otherwise required herein.

B. Rejected Doors: Furnish replacement doors conforming to this Section for doors rejected for damaged surfaces, improper fitting or hardware preparation, or other cause, at no extra cost to the Owner. Patching is not permitted for correction of defects.

1.04 WARRANTY: Refer to Section 01 60 00 for warranty form. Furnish to Owner a written warranty, subject to provisions of the NWWDA "Standard Door Guarantee" except as modified herein, against defects in materials and workmanship for two years. Warp or twist in excess of 3/16" establishes a defective door.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

2.01 MANUFACTURER

A. The products and manufactures stated in the typical apartment unit schedule as listed on A-6.11 in the Construction Documents have president over this section in the specification.

B. By one of the following manufacturers subject to conformance with requirements shown or specified; Masonite, General Veneer Mfg., VT Industries, Haley Architectural Doors, Weyerhaeuser Co., Eggers, Glen-Mar, Mohawk, or Fenestra, or approved equal subject to conformance with requirements indicated and specified.

2.02 HOLLOW CORE DOORS:

A. Provide Masonite 6-panel hollow core “Colonist” at all interior door locations as indicated in the drawings.

2.03 SOLID CORE DOORS:

A. Provide particle board, glued block or structural composite lumber door with five or seven plies with stiles and rails bonded to core. Provide medium-density overlay finish.

2.04 FACTORY PREPARATION OF DOORS:

A. At Contractor's option, wood doors may be prefitted, prehung and premachined for hardware at factory or mill.

B. Prefitting: Prefit doors in accordance with referenced standard except as otherwise detailed, lock stiles beveled to conform to the hardware. Apply clear resin sealer on edges after sizing.

C. Hardware Preparation: Prepare doors to receive finish hardware, including mortises for butts, lock and latchsets, concealed closers, and all other door hardware furnished under Section 08710. Obtain required templates from hardware supplier. Coordinate placement with the metal frame supplier so that doors and frames are properly fitted and equipped when installed, 3/64" maximum tolerance allowed in placing hardware.

D. Sealing: Seal all mortises and cutouts with clear resin sealer.

PART 3 EXECUTION

3.01 INSTALLATION

A. Refer to Division 6, Section 06 10 00.

3.02 MEASUREMENT AND PAYMENT

A. Payment for "**Flush Wood Doors**", as it appears in the bathroom, is considered as included in the contract unit price paid for "**New Bathroom Structure**" and no separate price will be paid therefor.

B. Payment for "**Flush Wood Doors**", as it appears in the meeting room, is considered as included in the contract unit price paid for "**New Meeting Room Structure**" and no separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 08 51 13 ALUMINUM WINDOWS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes aluminum windows for exterior locations.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.

C. Samples: For each exposed product and for each color specified, 2 by 4 inches in size.

D. Product Schedule: For aluminum windows. Use same designations indicated on Drawings.

1.03 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Sample warranties.

1.04 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1.05 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace aluminum windows that fail in materials or workmanship within specified warranty period.

1. Warranty Period:

a. Window: 10 years from date of Substantial Completion.

b. Glazing Units: 10 years from date of Substantial Completion.

c. Aluminum Finish: 10 years from date of Substantial Completion.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Kawneer AA350 Aluminum Single Hung Thermal Window or comparable product by one of the following:

1. Jeld-Win Premium Atlantic Series.

2. Peerless Products Inc.

3. Thermal Windows, Inc.

4. TRACO.

5. Winco.

2.02 WINDOW PERFORMANCE REQUIREMENTS

A. Product Standard: AAMA/WDMA/CSA 101/I.S.2/A440.

1. Minimum Performance Class: AW.

2. Minimum Performance Grade: 50.

B. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of .39-.57.

C. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of 0.40.

D. Condensation-Resistance Factor (CRF): Provide aluminum windows tested for thermal performance according to AAMA 1503, showing a CRF of 57 for frame, 60 for glass.

2.03 ALUMINUM WINDOWS

A. Operating Types: Single Hung.

B. Frames and Sashes: Thermally broken aluminum extrusions complying with AAMA/WDMA/CSA 101/I.S.2/A440.

C. Glass: Clear annealed glass, ASTM C 1036, Type 1, Class 1, q3.

1. Kind: Fully tempered.

D. Insulating-Glass Units: ASTM E 2190.

1. Glass: ASTM C 1036, Type 1, Class 1, q3.

a. Tint: Clear.

b. Kind: Fully tempered.

2. Lites: Two.

3. Filling: Fill space between glass lites with argon.

4. Low-E Coating: Pyrolytic on second surface.

E. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.

F. Hardware, General: Manufacturer's standard corrosion-resistant hardware sized to accommodate sash weight and dimensions.

1. Exposed Hardware Color and Finish: As indicated by manufacturer's designations.

G. Hung Window Hardware:

1. Counterbalancing Mechanism: AAMA 902.

2. Locks and Latches: Operated from the inside only.

3. Tilt Hardware: Releasing tilt latch allows sash to pivot about horizontal axis.

H. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.

I. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.

1. Exposed Fasteners: Do not use exposed fasteners to the greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

CITY COUNCIL REFERENCE ONLY

2.04 ACCESSORIES

A. Subsills: Thermally broken, extruded-aluminum subsills in configurations indicated on Drawings.

B. Column Covers: Extruded-aluminum profiles in sizes and configurations indicated on Drawings.

C. Interior Trim: Extruded-aluminum profiles in sizes and configurations indicated on Drawings.

D. Panning Trim: Extruded-aluminum profiles in sizes and configurations indicated on Drawings.

E. Receptor System: Two-piece, snap-together, thermally broken, extruded-aluminum receptor system that anchors windows in place.

2.05 FABRICATION

A. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.

B. Glaze aluminum windows in the factory.

C. Weather strip each operable sash to provide weathertight installation.

D. Provide weep holes and internal passages to conduct infiltrating water to exterior.

E. Provide water-shed members above side-hinged sashes and similar lines of natural water penetration.

F. Provide mullions and cover plates, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections, as indicated. Provide mullions and cover plates capable of withstanding design wind loads of window units.

G. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation.

2.06 ALUMINUM FINISHES

A. Baked-Enamel Finish: Thermosetting, modified-acrylic or polyester enamel primer/topcoat system complying with AAMA 2603, medium gloss.

1. Color: White.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 INSTALLATION

A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E 2112.

B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.

C. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.

D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

E. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.

F. Clean exposed surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

G. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

3.02 MEASUREMENT AND PAYMENT

A. Payment for “Aluminum Windows”, as is it appears in the new bathroom, is considered as included in the contract lump sum cost paid for “**New Bathroom Structure**” and no additional payment or separate price will be paid therefor.

B. Payment for “Aluminum Windows”, as is it appears in the new meeting room, is considered as included in the contract lump sum cost paid for “**New Meeting Room Structure**” and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 08 71 00 DOOR HARDWARE

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:

1. Mechanical door hardware for the following:

a. Swinging doors.

2. Cylinders for door hardware specified in other Sections.

3. Refer to plans for key card system utilized by City of Fremont Building Maintenance for all City Buildings

B. Products furnished, but not installed, under this Section include the products listed below. Coordinating and scheduling the purchase and delivery of these products remain requirements of this Section.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For each exposed product and for each color and texture specified.

C. Other Action Submittals:

1. Door Hardware Schedule: Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

a. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.

b. Content: Include the following information:

1). Identification number, location, hand, fire rating, size, and material of each door and frame.

2). Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.

3). Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.

4). Description of electrified door hardware sequences of operation and interfaces with other building control systems.

2. Keying Schedule: Prepared by or under the supervision of Installer, detailing Owner's final keying instructions for locks.

1.03 QUALITY ASSURANCE

A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and an Architectural Hardware Consultant who is available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.

CITY COUNCIL REFERENCE ONLY

B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as follows:

1. For door hardware, an Architectural Hardware Consultant (AHC)

C. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meet requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.

1. Air Leakage Rate: Maximum air leakage of0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at the tested pressure differential of 0.3-inch wg (75 Pa) of water.

D. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

E. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines ICC/ANSI A117.1, and Part 2 of Title 24 of the California Code of Regulations, also referred to as the California Building Standards Code, 2013 Edition.

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22.2 N).

2. Comply with the following maximum opening-force requirements:

a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.

3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than1/2 inch (13 mm) high.

4. Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.

F. Keying Conference: Conduct conference at Project site.

CITY COUNCIL REFERENCE ONLY

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

B. Deliver keys to Owner by registered mail or overnight package service.

1.05 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.

a. Exit Devices: Three years from date of Substantial Completion.

b. Manual Closers: 10 years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 SCHEDULED DOOR HARDWARE

A. Provide door hardware for each door as scheduled in Part 3 "Door Hardware Schedule" Article to comply with requirements in this Section.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated.

2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.

B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule" Article. Products are identified by using door hardware designations, as follows:

1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Schedule" Article.

2. References to BHMA Designations: Provide products complying with these designations and requirements for description, quality, and function.

CITY COUNCIL REFERENCE ONLY

2.02 HINGES

A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hager Companies.

b. IVES Hardware; an Ingersoll-Rand company.

c. McKinney Products Company; an ASSA ABLOY Group company.

2.03 MECHANICAL LOCKS AND LATCHES

A. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.

1. Flat-Lip Strikes: For locks with three-piece antifriction latch bolts, as recommended by manufacturer.

2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.

3. Electric Strikes: For use on doors specified with card reader featuring remote locking/ unlocking option.

B. Bored Locks: BHMA A156.2; Grade 2; Series 4000.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hager Companies.

b. SARGENT Manufacturing Company; an ASSA ABLOY Group company.

c. Schlage Commercial Lock Division; an Ingersoll-Rand company.

C. Mortise Locks: BHMA A156.13; Grade 1; stamped steel case with steel or brass parts; Series 1000.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hager Companies.

b. Falcon Lock; an Ingersoll-Rand company.

c. Schlage Commercial Lock Division; an Ingersoll-Rand company.

2.04 MANUAL FLUSH BOLTS

A. Manual Flush Bolts: BHMA A156.16; minimum 3/4-inch (19-mm) throw; designed for mortising into door edge.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hager Companies.

b. IVES Hardware; an Ingersoll-Rand company.

c. Trimco.

2.05 AUTOMATIC AND SELF-LATCHING FLUSH BOLTS

A. Automatic and Self-Latching Flush Bolts: BHMA A156.16; minimum 3/4-inch (19-mm) throw; designed for mortising into door edge.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hager Companies.

b. IVES Hardware; an Ingersoll-Rand company.

c. Trimco.

2.06 LOCK CYLINDERS

A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.

1. Manufacturer: Same manufacturer as for locking devices.

a. Hager Companies.

b. Falcon Lock; an Ingersoll-Rand company.

CITY COUNCIL REFERENCE ONLY

c. Schlage Commercial Lock Division; an Ingersoll-Rand company.

B. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.

2.07 KEYING

A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference.

1. Grand Master Key System: Change keys, a master key, and a grand master key operate cylinders.

B. Keys: Nickel silver.

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:

2. Quantity: In addition to one extra key blank for each lock, provide the following:

a. Cylinder Change Keys: Three.

b. Master Keys: Five.

c. Grand Master Keys: Five.

2.08 KEY CONTROL SYSTEM

A. Key Control Cabinet: BHMA A156.5; metal cabinet with baked-enamel finish; containing key-holding hooks, labels, 2 sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers; with key capacity of 150 percent of the number of locks.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following

a. Lund Equipment Co., Inc.

b. MMF Industries.

2. Wall-Mounted Cabinet: Cabinet with hinged-panel door equipped with key-holding panels and pin-tumbler cylinder door lock.

2.09 SURFACE CLOSERS

A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following.

a. Hager Companies.

b. LCN Closers; an Ingersoll-Rand company.

c. Norton Door Controls; an ASSA ABLOY Group company.

CITY COUNCIL REFERENCE ONLY

d. See Section 3.03 Door Hardware Schedule for Key Card Reader system closer requirements.

2.10 MECHANICAL STOPS AND HOLDERS

A. Wall- and Floor-Mounted Stops: BHMA A156.16;

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following

a. Hager Companies.

b. IVES Hardware; an Ingersoll-Rand company.

c. Rockwood Manufacturing Company.

2.11 OVERHEAD STOPS AND HOLDERS

A. Overhead Stops and Holders: BHMA A156.8.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following

a. Hager Companies.

b. Glynn-Johnson; an Ingersoll-Rand company.

c. SARGENT Manufacturing Company; an ASSA ABLOY Group company.

2.12 DOOR GASKETING

A. Door Gasketing: BHMA A156.22; air leakage not to exceed 0.50 cfm per foot (0.000774 cu. m/s per m) of crack length for gasketing other than for smoke control, as tested according to ASTM E 283; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following

a. Hager Companies.

b. National Guard Products.

c. Pemko Manufacturing Co.; an ASSA ABLOY Group company.

2.13 THRESHOLDS

A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following

a. Hager Companies.

b. National Guard Products.

c. Pemko Manufacturing Co.; an ASSA ABLOY Group company.

CITY COUNCIL REFERENCE ONLY

2.14 METAL PROTECTIVE TRIM UNITS

A. Metal Protective Trim Units: BHMA A156.6; fabricated from 0.050-inch- (1.3-mm-) thick stainless steel; with manufacturer's standard machine or self-tapping screw fasteners.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following

a. Hager Companies.

b. IVES Hardware; an Ingersoll-Rand company.

c. Rockwood Manufacturing Company.

2.15 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.

2. Fire-Rated Applications:

a. Wood or Machine Screws: For the following:

1). Hinges mortised to doors or frames; use threaded-to-the-head wood screws for wood doors and frames.

2). Strike plates to frames.

3). Closers to doors and frames.

b. Steel Through Bolts: For the following unless door blocking is provided:

1). Closers to doors and frames.

2). Surface-mounted exit devices.

3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.

4. Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, "Recommended Fasteners for Wood Doors."

5. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.16 FINISHES

A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.

CITY COUNCIL REFERENCE ONLY

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 EXECUTION

3.01 INSTALLATION

A. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

B. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.

2. Custom Steel Doors and Frames: HMMA 831.

C. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.

2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

D. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

E. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

F. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."

G. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.

H. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

I. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

J. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

K. Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that

CITY COUNCIL REFERENCE ONLY

cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.02 FIELD QUALITY CONTROL

A. Independent Architectural Hardware Consultant: Owner will engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.

3.03 DOOR HARDWARE SCHEDULE

Heading 1

Door # 1, 2

Each opening to receive

Qty.	Type	Description	Finish
4 ea.	Hinges	BB1199 x 4.5” x 4.5” x NRP	630
1 ea.	Key Card System	Cobra Controls PRX-3R Card Reader	
		Remote Lock/Unlock Capability	
		Electric Strike Option	-
1 ea.	Closer	5200 x HDSC	689
1 ea.	Overhead Stop	7016 x SRF	630
1 ea.	Armor Plate	194S- UL	630
1 ea.	Threshold	417S	MIL
1 ea.	Sweep	750SN	MIL
1 ea.	Weatherstrip	881SN	MIL

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Heading 2

Door # 3

Each opening to receive

Qty.	Type	Description	Finish
4 ea.	Hinges	BB1191 x 4.5” x 4.5” x NRP	630
1 ea.	Storeroom Lockset	3880 x SECT x WTN	626
1 ea.	Closer	5200	689

1 ea.	Armor Plate	194S- UL	630
1 ea.	Threshold	417S	MIL
1 ea.	Sweep	750SN	MIL
1 ea.	Weatherstrip	881SN	MIL

Heading 3

Door # 4

Each opening to receive

Qty.	Type	Description	Finish
3 ea.	Hinges	RC1741 3.5” x 3.5”	652
1 ea.	Passage	3510 x SECT x WTN	626
2 ea.	Hinge Pin Stops	301D	652

3.04 MEASUREMENT AND PAYMENT

A. Payment for “**Door hardware**”, as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for “**New Bathroom Structure**” and no additional payment or separate price will be paid therefor.

B. Payment for “**Door hardware**”, as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for “**New Meeting Room Structure**” and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 08 80 00 GLAZING

PART 1 GENERAL

1.01 SUMMARY

A. Division 1 applies to this Section. Provide glass and glazing, complete.

B. Section Includes:

1. Glass and glazing of opening frames.

1.02 SUBMITTALS

A. Refer to Section 01 30 00 for procedures.

1.03 QUALITY ASSURANCE

A. Glass installer shall have not less than five years glazing experience on comparable projects.

1.04 JOB CONDITIONS

A. Protect glazing until completion and final acceptance of the Work. Repair or replace damaged or defective glazing to original specified condition, at no extra cost to the Owner. Damaged or defective glazing includes glass that cannot be properly cleaned.

1.05 WARRANTY

A. Warranty exterior glass installations against loosening, air or water leakage, glass pop-outs, deterioration, and all other defects for 5 years.

B. Glazing Channels and Gaskets: Warranty for 5 years against all defective material or deterioration including, without limitation, shrinkage causing loss of seal and physical failure due to exposure to sun, ozone, elements, smog and other air pollution, and commercial glass cleaners.

C. Unframed Wall Mirrors: Warranty against silver spoilage for 10 years.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

2.01 GLASS MATERIALS:

A. General: Clear float glass conforming to ASTM C1036 Type I, Class I, Quality Q3, 1/4" thick unless otherwise indicated or specified.

B. Tempered Glass: Factory-processed glass in conformance with ANSI Z97.1, meeting CPSC 16 CFR 1201, ASTM 1048 safety requirements for Category I. Furnish factory fully tempered glass. Perform tempering by horizontal roller gas hearth process only; processes making gripper or tong marks are not acceptable. Handle and size glass according to manufacturer's instructions. On each sheet, include an inconspicuous but visible label fused to glass and placed in a lower corner, identifying the tempered glass. Provide fireman's tempered glass label where indicated or as required by the local Fire Department.

C. Wall Mirrors: Mirror quality float glass, 3/16" thick, edges finished and polished, double silvered with electro-deposited copper coating plus an organic protective coating, for butt-glazed and adhesion/clip mounted (frameless) applications.

2.02 GLAZING ACCESSORIES:

A. Setting Blocks: Solid neoprene of 70-90 Shore A durometer hardness, 4" x 3/8" x 1/4" high, or as recommended by the glass manufacturer.

B. Spacer Shims: Solid neoprene of 40-60 Shore A durometer hardness; 3" x 1/4" x 1/4", or as recommended by glass manufacturer.

C. Compressible Filler Rod: Resilient closed-cell elastomeric foam rod with compressive strength for 25% compression.

D. Preformed Glazing Sealer: Tape or ribbon (coiled on release paper) of polymerized butyl, or butyl and polyisobutylene compound with inert fillers and pigments, and fabric thread reinforcement.

E. Sealant: Refer to Section 07 92 00, in accordance with the requirements of this Section.

F. Mirror Setting Materials: Palmer Products Corp. "Mirro-Mastic" adhesive, "Mirro-Mastic Bond" primer, and "Mirro-Bac" backing paint.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine all framing and glazing channel surfaces, backings, removable stops, and the conditions under which glazing work is to be performed, and notify the Owner in writing of any condition detrimental to the proper and timely completion of the Work. Do not proceed with the glazing application until unsatisfactory conditions have been corrected in a manner acceptable to the Owner. Beginning glazing work means acceptance of related substrates. Ensure glass is free of edge damage or face imperfections before installing.

3.02 PREPARATION

A. Clean contact surfaces with solvent and wipe dry. Measure size of all frames to receive glass. Seal framing recesses as required. Remove protective coating from metal surfaces to be glazed; clean with cloth dampened with Xylol or as recommended.

3.03 GLAZING

A. Employ skilled and experienced glaziers. Set glass airtight and true with glazing channels or gaskets according to the "Glazing Manual" of Flat Glass Marketing Association, glass manufacturer's instructions, and as required herein to obtain weatherproof and waterproof installations. Conform glass edge clearances, and face and edge laps (bite), to Code and requirements herein. Set glass in rabbets with glazing blocks and spacers so glass does not contact frame and to preclude looseness and rattling. Use glass with straight smooth-finished edges free of cracks, chips, swiping, seaming, stress foci, or any other defects on surfaces or edges for all glass installations.

B. Setting Blocks: Unless otherwise recommended by glass manufacturer or in the FGMA "Glazing Manual" for type of glass installation, provide setting blocks of the correct size located at the bottom quarter points of each glass pane, and side blocks in both jambs in upper half of panes retained by metal stops.

C. Glazing Gaskets and Channels: Compress at least 15% by stops and at least 5% lengthwise to prevent corner pullout, but do not exceed allowable compressive forces on glass.

D. Glazing Sealant: Ensure sealant installations form a continuous airtight and watertight seal for entire perimeter of each glass pane. For glass secured by metal frames or stops on two or more edges, hold glazing gaskets or channels back at least 1/8" from the sight lines and fill the voids with glazing sealant finished flush with stops, sealant installed on interior side of glass.

E. Glazing in Wood Frames: Verify wood glazing rebates and stops are sealed and primed. Install glass according to FGMA Manual, glass set on blocks, and bedded both sides with elastomeric type wood glazing compound finished flush with edge of frame and stops.

F. Mirrors: Clean backings, apply primer, and allow to dry. Verify organic coating on the backs of mirrors is compatible with the adhesive; if not, apply the mirror adhesive manufacturer's recommended backing paint and allow to dry. Conform to the adhesive manufacturer's instructions and apply adhesive in spots that, when compressed, will cover not less than 60% of the mirror area. Allow 3/16" space between mirror back and substrate. If mirror is cut from a larger mirror sheet, apply backing paint on cut backing edge. Brace installed mirrors in place until adhesive is fully set. Bathroom mirrors to be set in aluminum “J” channel at bottom and secured to wall at top with plastic clips.

CITY COUNCIL REFERENCE ONLY

3.04 ADJUSTMENT

A. After glass and glazing work, operating door sashes shall be temporarily fixed so they cannot be operated until compounds have set. Ensure that installed glass is free from any defects. Defective glass shall be removed and replaced with new glass before final acceptance, without cost to the Owner.

3.05 COMPLETION

A. Conform to Section 01 77 00. Do not use any harsh or abrasive cleaning agents, caustics, or acids for cleaning. Wash and polish vision glass both sides and leave glass free of soiling, streaks and labels. Wash and polish mirrors. Remove from the site all containers and other debris resulting from glazing operations. Remove compound stains from glass and frames within working time of the material. Just prior to acceptance thoroughly clean both sides of all glass.

3.06 PROTECTION

A. On accessible areas, provide and attach crossed streamers or other markings, as required, for protection of both glass and personnel. Do not tape or secure streamers directly to the glass.

3.07 MEASUREMENT AND PAYMENT

Payment for "**Glazing**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

Payment for "**Glazing**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 08 83 00 MIRRORS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes the following types of silvered flat glass mirrors:

1. Annealed monolithic glass mirrors.

2. Film-backed glass mirrors qualifying as safety glazing.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Include mirror elevations, edge details, mirror hardware, and attachments to other work.

C. Samples:

1. Mirrors: 12 inches square, including edge treatment on two adjoining edges.

2. Mirror Clips: Full size.

3. Mirror Trim: 12 inches long.

1.03 INFORMATIONAL SUBMITTALS

A. Preconstruction test reports.

B. Warranty: Sample of special warranty.

1.04 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.05 QUALITY ASSURANCE

A. Glazing Publications: Comply with GANA's "Glazing Manual" and "Mirrors, Handle with Extreme Care: Tips for the Professional on the Care and Handling of Mirrors."

B. Safety Glazing Products: For film-backed mirrors, provide products complying with testing requirements in 16 CFR 1201 for Category II materials.

1.06 WARRANTY

A. Special Warranty: Manufacturer's standard form in which mirror manufacturer agrees to replace mirrors that deteriorate within specified warranty period. Deterioration of mirrors is defined as defects developed from normal use that are not attributed to mirror breakage or to maintaining and cleaning mirrors contrary to manufacturer's written instructions. Defects include discoloration, black spots, and clouding of the silver film.

1. Warranty Period: Five years from date of Substantial Completion.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

2.01 SILVERED FLAT GLASS MIRRORS

A. Glass Mirrors, General: ASTM C 1503; manufactured using copper-free, low-lead mirror coating process.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Arch Aluminum & Glass Co., Inc.

b. Avalon Glass and Mirror Company.

c. Binswanger Mirror; a division of Vitro America, Inc.

d. D & W Incorporated

e. Donisi Mirror Company.

f. Gardner Glass, Inc.

g. Gilded Mirrors, Inc.

h. Guardian Industries.

i. Head West.

j. Independent Mirror Industries, Inc.

k. Lenoir Mirror Company.

l. Maran-Wurzell Glass & Mirror.

m. National Glass Industries.

n. Stroupe Mirror Co., Inc.

o. Sunshine Mirror; Westshore Glass Corp.

p. Virginia Mirror Company, Inc.

q. Walker Glass Co., Ltd.

r. Or other qualified manufacturer.

B. Clear Glass: Mirror Glazing Quality; float glass with a minimum 91 percent visible light transmission.

1. Nominal Thickness: 4.0 mm.

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2.02 MISCELLANEOUS MATERIALS

A. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

B. Edge Sealer: Approved by mirror manufacturer.

C. Mirror Mastic: An adhesive setting compound, asbestos-free, produced specifically for setting mirrors.

D. Film Backing for Safety Mirrors: Film backing and pressure-sensitive adhesive; both compatible with mirror backing paint as certified by mirror manufacturer.

2.03 MIRROR HARDWARE

A. Top and Bottom Aluminum J-Channels: Aluminum extrusions with a return deep enough to produce a glazing channel to accommodate mirrors of thickness indicated and in lengths required to cover bottom and top edges of each mirror in a single piece.

1. Finish: Clear bright anodized.

B. Mirror Bottom Clips: As provided by selected manufacturer.

C. Mirror Top Clips: As provided by selected manufacturer.

D. Fasteners: Fabricated of same basic metal and alloy as fastened metal and matching it in finished color and texture where fasteners are exposed.

E. Anchors and Inserts: Provide devices as required for mirror hardware installation.

2.04 FABRICATION

A. Mirror Edge Treatment: Flat polished. Seal edges of mirrors with edge sealer.

B. Film-Backed Safety Mirrors: Apply film backing with adhesive coating over mirror backing paint as recommended in writing by film-backing manufacturer.

PART 3 EXECUTION

3.01 INSTALLATION

A. Examine substrates, over which mirrors are to be mounted, with Installer present, for compliance with installation tolerances, substrate preparation, and other conditions affecting performance of the Work.

1. Verify compatibility with and suitability of substrates, including compatibility of mirror mastic with existing finishes or primers.

2. Proceed with installation only after unsatisfactory conditions have been corrected and surfaces are dry.

B. Comply with mastic manufacturer's written installation instructions for preparation of substrates, including coating substrates with mastic manufacturer's special bond coating where applicable.

C. General: Install mirrors to comply with mirror manufacturer's written instructions and with referenced GANA publications. Mount mirrors accurately in place in a manner that avoids distorting reflected images.

D. Wall-Mounted Mirrors: Install mirrors with mastic and mirror hardware. Attach mirror hardware securely to mounting surfaces with mechanical fasteners installed with anchors or inserts as applicable. Install fasteners so heads do not impose point loads on backs of mirrors. Apply mastic to comply with mastic manufacturer's written instructions for coverage and to allow air circulation between back of mirrors and face of mounting surface.

E. Protect mirrors from breakage and contaminating substances resulting from construction operations.

F. Do not permit edges of mirrors to be exposed to standing water.

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G. Maintain environmental conditions that will prevent mirrors from being exposed to moisture from condensation or other sources for continuous periods of time.

H. Wash exposed surface of mirrors not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash mirrors as recommended in writing by mirror manufacturer.

3.02 MEASUREMENT AND PAYMENT

Payment for "**Mirrors** is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

Division 09 – Finishes

SECTION 09 29 00 GYPSUM BOARD

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the following:

1. Interior gypsum wallboard.
2. Tile backing panels.
3. Texture finishes.

1.02 SUBMITTALS

A. Product Data: For each product indicated.

1.03 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: For gypsum board assemblies with fire-resistance ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

B. Sound Transmission Characteristics: For gypsum board assemblies with STC ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.
2. Products: Subject to compliance with requirements, provide one of the products specified.
3. Product: Subject to compliance with requirements, provide the product specified.

2.02 PANEL PRODUCTS

A. Panel Size, General: Provide in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.

B. Gypsum Wallboard: ASTM C 36.

1. Regular Type: In thickness indicated and with long edges tapered.
2. Type X: In thickness indicated and with long edges tapered.

C. Sag-Resistant Gypsum Wallboard: ASTM C 36, manufactured to have more sag resistance than regular-type gypsum board, 1/2 inch (12.7 mm) thick, and with long edges tapered. Apply on ceiling surfaces.

D. Proprietary, Special Fire-Resistive Type: ASTM C 36, having improved fire resistance over standard Type X, complying with requirements of fire-resistance-rated assemblies indicated, in thickness indicated, and with long edges tapered.

E. Tile Backing Panels:

1. Water-Resistant Gypsum Backing Board: ASTM C 630/C 630M, with core type and in thickness indicated.

2. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with core type and in thickness indicated.

a. Product: G-P Gypsum Corp.; Dens-Shield Tile Backer.

3. Cementitious Backer Units: ANSI A118.9, in thickness indicated.

2.03 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Cornerbead: Use at outside corners, unless otherwise indicated.

2. Bullnose Bead: Use where indicated.

3. LC-Bead: Use at exposed panel edges.

4. L-Bead: Use where indicated.

5. U-Bead: Use where indicated.

6. Expansion (Control) Joint: Use where indicated.

7. Curved-Edge Cornerbead: With notched or flexible flanges; use at curved openings.

B. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.

1. Products, as indicated by designation on Drawings.:

a. Fry Reglet Corp.

b. Gordon, Inc.

c. MM Systems Corporation.

d. Pittcon Industries.

2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221 (ASTM B 221M), alloy 6063-T5.

2.04 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475.

B. Joint Tape:

1. Interior Gypsum Wallboard: Paper.

2. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.

3. Tile Backing Panels: As recommended by panel manufacturer.

CITY COUNCIL REFERENCE ONLY

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.

2. Embedding and First Coat: For embedding tape and first coat on joints, flanges of trim accessories, and fasteners, use drying-type, all-purpose compound.

a. Use setting-type compound for installing paper-faced metal trim accessories.

3. Fill Coat: For second coat, use drying-type, all-purpose compound.

4. Finish Coat: For third coat, use drying-type, all-purpose compound.

5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose compound.

D. Joint Compound for Tile Backing Panels:

1. Water-Resistant Gypsum Backing Board: Use setting-type taping and setting-type, sandable topping compounds.

2. Glass-Mat, Water-Resistant Backing Panel: As recommended by manufacturer.

3. Cementitious Backer Units: As recommended by manufacturer.

2.05 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

1. Laminating Adhesive: Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Acoustical Sealant for Exposed and Concealed Joints: Nonsag, paintable, nonstaining, latex sealant complying with ASTM C 834 that effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

C. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.

2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

B. Isolation Strip at Exterior Walls:

1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.

2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch (3.2 mm) thick, in width to suit steel stud size.

CITY COUNCIL REFERENCE ONLY

C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

2.06 TEXTURE FINISHES

A. Primer: As recommended by textured finish manufacturer.

B. Interior Finish: As selected by Owner

PART 3 EXECUTION

3.01 PANEL PRODUCT INSTALLATION

A. Gypsum Board: Comply with ASTM C 840 and GA-216.

1. Space screws a maximum of 12 inches (304.8 mm) o.c. for vertical applications.

2. Space fasteners in panels that are tile substrates a maximum of 8 inches (203.2 mm) o.c.

3. On ceilings, apply gypsum panels before wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.

4. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

a. Stagger abutting end joints not less than one framing member in alternate courses of board.

c. At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.

5. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.

6. Single-Layer Fastening Methods: Apply gypsum panels to supports with steel drill screws.

7. Multilayer Fastening Methods: Fasten base layers and face layers separately to supports with screws.

8. Laminating to Substrate: Comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.

B. Tile Backing Panels:

1. Water-Resistant Gypsum Backing Board: Install with 1/4-inch (6.4-mm) gap where panels abut other construction or penetrations.

2. Glass-Mat, Water-Resistant Backing Panel: Install with 1/4-inch (6.4-mm) gap where panels abut other construction or penetrations.

3. Cementitious Backer Unit Application: ANSI A108.11.

3.02 FINISHING

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C. Installing Trim Accessories: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

D. Finishing Gypsum Board Panels: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration.

1. Prefill open joints, rounded or beveled edges, and damaged surface areas.

2. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

3. Glass-Mat Gypsum Sheathing Board: Finish according to manufacturer's written instructions for use as exposed soffit board.

4. Glass-Mat, Water-Resistant Backing Panels: Finish according to manufacturer's written instructions.

E. Cementitious Backer Units: Finish according to manufacturer's written instructions.

F. Gypsum Board Finish Levels: Finish panels to levels indicated below, according to ASTM C 840, for locations indicated:

1. Level 1: Embed tape at joints in ceiling plenum areas, concealed areas, and where indicated, unless a higher level of finish is required for fire-resistance-rated assemblies and sound-rated assemblies.

2. Level 2: Embed tape and apply separate first coat of joint compound to tape, fasteners, and trim flanges where panels are substrate for tile and where indicated.

3. Level 3: Embed tape and apply separate first and fill coats of joint compound to tape, fasteners, and trim flanges.

4. Level 4: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges at panel surfaces that will be exposed to view, unless otherwise indicated.

5. Level 5: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges, and apply skim coat of joint compound over entire surface where indicated.

CITY COUNCIL REFERENCE ONLY

3.03 APPLYING TEXTURE FINISHES

A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.

B. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture free of starved spots or other evidence of thin application or of application patterns.

Prevent texture finishes from coming into contact with surfaces not indicated to receive texture finish by covering them with masking agents, polyethylene film, or other means. If, despite these precautions, texture finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to texture finish manufacturer's written recommendations.

3.04 MEASUREMENT AND PAYMENT

Payment for "**Gypsum Board**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

Payment for "**Gypsum Board**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 09 65 13 RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.01 SUBMITTALS:

As follows:

A. Product Data: For each type of product specified.

B. Samples: In manufacturer's standard sizes of each product color and pattern specified.

1.02 EXTRA MATERIALS:

Furnish not less than 10 linear feet for each 500 linear feet or fraction thereof, of each different type, color, pattern, and size of resilient product installed. Deliver extra materials to Owner.

PART 2 - PRODUCTS

2.01 AVAILABLE PRODUCTS:

Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, those indicated in the Resilient Wall Base and Accessory Schedule at the end of this Section.

Product: Shaw Silva Select Vinyl Plank

Color to be selected by owner

Wear Layer 6MIL, 2MM Vinyly thick, 6” X 18”, includes Armourbead and Congoleum Underfloorunderlayment on floor 3.

2.02 PRODUCTS

Subject to compliance with requirements, provide one of the products indicated for each designation in the Resilient Wall Base and Accessory Schedule at the end of this Section.

2.03 RUBBER WALL BASE:

Products complying with FS SS-W-40, Type I and with requirements specified in the Resilient Wall Base and Accessory Schedule.

2.04 VINYL WALL BASE:

Products complying with FS SS-W-40, Type II and with requirements specified in the Resilient Wall Base and Accessory Schedule.

2.05 RUBBER ACCESSORIES:

Products complying with requirements specified in the Resilient Wall Base and Accessory Schedule.

CITY COUNCIL REFERENCE ONLY

2.06 VINYL ACCESSORIES:

Products complying with requirements specified in the Resilient Wall Base and Accessory Schedule.

2.07 TROWELABLE LEVELING AND PATCHING COMPOUNDS:

Latex-modified, portland-cement-based formulation provided or approved by resilient product manufacturer for applications indicated.

2.08 ADHESIVES:

Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

PART 3 - EXECUTION

Examine substrates, areas, and conditions where installation of resilient products will occur, with Installer present, for compliance with manufacturer's requirements, including those for maximum moisture content. Verify that substrates and conditions are satisfactory for resilient product installation and comply with requirements specified. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.01 PREPARATION:

Comply with manufacturer's written installation instructions for preparing substrates indicated to receive resilient products.

3.02 INSTALLATION:

Install resilient products according to manufacturer's written installation instructions.

A. Apply resilient wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

1. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
2. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
3. Do not stretch base during installation.
4. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
5. Form corners on job, from straight pieces of maximum lengths possible, without whitening at bends.

B. Place resilient products so they are butted to adjacent materials and bond to substrates with adhesive. Install reducer strips at edges of flooring that would otherwise be exposed.

CITY COUNCIL REFERENCE ONLY

C. Apply resilient products to stairs as indicated.

3.04 Clean and protect resilient products according to manufacturer's written recommendations. Clean resilient products after installation and not more than 4 days before dates scheduled for inspections intended to establish date of Substantial Completion in each area of Project.

3.05 MEASUREMENT AND PAYMENT

A. Payment for "**Resilient Base and Accessories**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Resilient Base and Accessories**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 09 80 00 SPECIAL PROTECTIVE TREATMENT

PART 1 - GENERAL

1.01 SUMMARY

A. General requirements of the Maintenance Schedule Manual shall apply to all work specified in this section.

1.02 QUALITY ASSURANCE

A. Installer (installers shall be proficient in anti-graffiti protective treatment systems)

1. Installer shall be trained, by Adsil or its appointed agents, using Specification AD1000-01 procedures, established in accordance with Adsil methods and standards for application of its anti-graffiti clear protective treatment.

2. Installer shall ensure that all technicians utilized for work in this section are – a. Trained & certified journeymen in the Adsil MicroGuard® clear protective treatment system.

3. Installer shall ensure that any specialized equipment, as required by the manufacturer, will be used for work in this section.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical information, including Product Technical Data Sheets, Material Safety Data Sheets, detailing job site and personal safety instructions, product mixing instructions and application instructions for each material specified. Identify by manufacturer's catalog number and general classification:

1. Technical Sheet TS-45; MicroKleenTM Industrial Cleaner & Degreaser PLC-1

2. Technical Sheet TS-44; MicroKleenTM Equipment Cleaner AD1-919

3. Technical Sheet TS-43; MicroKleenTM Retarder Solvent AD1-103

4. Technical Sheet TS-34; MicroGuard® Clear Waterproofing Sealer AD702 (Optional; tile or concrete)

5. Technical Sheet TS-52; MicroGuard® Anti-Graffiti Clear Gloss Surface Treatment AD00

1.04 DELIVERY AND STORAGE

A. Deliver materials in sealed containers with manufacturer's labels intact.

B. Store materials in a protected area at a temperature range between 600 and 850 F.

1.05 JOB CONDITIONS

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A. Apply MicroGuard® AD00 Anti-Graffiti Clear Surface Treatment only under the following prevailing conditions:

1. Air, surface and material temperatures are not below 600 F. or above 950 F.

2. Prevent wide temperature variations, which might result in condensation forming on the freshly treated surfaces or could negatively affect hydrolyzing or curing of the treatment.

3. Avoid product mixing or application of MicroGuard® AD00 when rain, heavy dew or fog conditions are imminent or could occur within 4 hours of treatment installation.

B. Mask, drop cloth or construct adequate containment in order to protect surfaces not to be cleaned or protective treated.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Retain "Basis-of-Design Product" Subparagraph and list of manufacturers below to identify a specific product or a comparable product from manufacturers listed. Retain option and delete insert note if manufacturer's name and model number are indicated on Drawings.

C. Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. MicroGuard by Adsil, or approved equal

2.02 MATERIALS

A. Surface Cleaners and Conditioners

1. Adsil MicroKleenTM PLC-1 Industrial Cleaner & Degreaser

2. Adsil MicroKleenTM AD1-919 Equipment Cleaner

B. Clear Protective Surface Treatments

1. Adsil MicroGuard® AD00 Anti-Graffiti Clear Gloss Surface Treatment

2. Adsil MicroGuard® AD702 Clear Waterproofing Sealer (Optional; tile or concrete)

C. Reducing Solvent Blend for MicroGuard® AD00

1. Adsil MicroKleenTM AD1-103 Retarder Solvent

2.03 PRODUCT REQUIREMENTS

A. Surface Cleaners

1. Cleaners shall be free from any known carcinogens or teratogen materials.

2. Cleaners shall be free from d'limonene.

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B. Clear Surface Treatment

1. Surface Treatment shall be inorganic, ambient temperature cured film structures. Surface Treatment shall be non-sacrificial type and must pass 50 standard MEK solvent rub cycles.

2. Surface Treatment shall adhere to reactive (bare, non-ferrous metal) substrates by direct atom-to-atom covalent bonding methods. Surface Treatment shall adhere by London Force bonding method on properly prepared bare concrete, rigid fiberglass or fully cured painted surfaces.

3. Surface Treatment shall produce a dry film thickness no greater than 12 to 15 microns, on average (1 mil = 25.4 microns).

4. Surface Treatment shall have passed ASTM G-21 testing, with a zero (0) microbial spore growth development rating. The standard ASTM G-21 test must have been conducted and verified by an accredited, third party, independent laboratory.

C. Graffiti Removal Cleaners

1. Any commercially available remover followed by pressure washing.

2.04 MATERIAL PREPARATION

A. Catalyze and/or mix materials strictly in accordance with manufacturer's most current printed technical literature.

B. Thinning/Reducing: Use MicroKleenTM AD1-103 Retarder Solvent only, for reducing MicroGuard® AD00 Anti-Graffiti Clear Gloss Surface Treatment.

PART 3 - EXECUTION

3.01 PRE-WORK INSPECTION

A. Examine all surfaces to be treated and report any conditions that would adversely affect the appearance or performance of the anti-graffiti treatment system and which cannot be put into an acceptable condition by specified surface preparation methods.

B. Remove, repair and/or replace any surfaces, which cannot be put into an acceptable condition.

C. Do not proceed with the mixing or application of the specified protective treatment until all surfaces can be placed into an acceptable condition.

3.02 EQUIPMENT REQUIREMENTS

A. Spray Equipment for MicroKleenTM PLC-1 Cleaner & Degreaser application:

1. Pressure Washer with soap injection capability.

B. Spray Equipment (option 1) for MicroGuard® AD00 Anti-Graffiti Clear Surface Treatment

1. Airless Sprayer; either piston or diaphragm pump, capable of pumping 1/3 gallon of material, per minute of continuous operation.

2. A liquid filled glycerin gauge to be mounted between the pump and fluid hose.

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3. Standard production airless gun capable of accepting in excess of 3,000 psi.

4. Reverse-a-clean tip, from a 313 to a 613 orifice/fan size.

5. Standard chemical resistant airless fluid hose with swivel whip attachment.

C. Spray Equipment (option 2) for MicroGuard® AD00 Anti-Graffiti Clear Surface Treatment.

1. Binks HVLP Mach 1 Gun (maximum of 18 psi), or equivalent

2. Fluid Nozzles from 9 to 12 orifice/fan size

3. External Mix Air Cap

4. Air Hose rated up to 200 psi

5. Oil & Water Separators

6. Dual Regulated Pressure Pot

7. Air Compressor (pressure gauge adjustable) capable of delivering 3 CFM @ 90 PSI.

D. Pressure Washer capable of delivering 3 GPM @ 1,200 PSI.

E. Natural Hair Bristle or Nylon Trim Brushes.

F. Lambs wool or mohair ¼" to ½" nap roller covers, roller frame, extension handle, roller screen.

G. Clean, white HDPE plastic buckets (5 gallon size)

H Adsil Product Mixer with timer.

I. Assorted tools, extension cords, water hose & nozzle, clean buckets, clean cotton cloths, scrub brushes mounted on pole extension handles, ladders, etc;

J. 180 to 220 grit sandpaper/screen.

K. Rolls of 6 mil plastic sheathing and/or other drop cloths.

L. Hygrometer and Standard Probe Moisture Meter. Distilled water and pH paper kit.

M. Latex gloves, safety glasses, NIOSH carbon-filtered respirator.

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3.03 SURFACE PREPARATION

A. General Area Preparation

1. Prior to all surface preparation operations, completely mask, tarp, build containment, remove or otherwise adequately protect all surfaces not to be cleaned and/or protective treated.

2. Using 6 mil plastic sheathing or drop cloth, completely protect any areas not to be cleaned. Remove automobiles from the area (spray coating in exterior locations).

3. Cordon off and place signage indicating work is in process. The work area is closed to any/all persons not involved in the coating process.

B. Specific Cleaning (previously painted surfaces)

1. Lightly abraid glossy painted surfaces in acceptable condition with 180 to 220 grit spaper in order to open the surface film and develop a fine surface profile (SSPC SP2 or SP3 Methods).

2. Using a pressure washer with soap injection apply the properly diluted MicroKleenTM PLC-1 Cleaner & Degreaser to the area to be cleaned.

3. Using the pressure washer, thoroughly flush the area with clean water. Repeat the cleaning process, if necessary. Continue working until the entire surface area has been thoroughly and completed cleaned free from surface contamination, e.g., graffiti, oxidation, exhaust fumes, oil, fluids, bond release agents, dirt, bird droppings, mildew, mold, etc;

C. Specific Cleaning (bare concrete or rigid fiberglass)

1. Using a pressure washer with soap injection apply the properly diluted MicroKleenTM PLC-Cleaner & Degreaser to the area to be cleaned.

2. For difficult or deep seated oily residues, scrub the surface with a stiff bristled brush mounted on a pole extension handle, until all surface contaminates dislodge from the surface.

3. Using the pressure washer, thoroughly flush the area with clean water. Repeat the cleaning process, if necessary. Continue working until the entire surface area has been thoroughly and completed cleaned free from surface contamination.

D. In some jurisdictions, the use and collection of cleaning materials may (and generally are) regulated. It is the responsibility of the Installer to be aware of any such regulations and to take appropriate steps to collect and dispose of cleaning materials, in accordance with any such regulations.

1. In these instances, the Installer must control the material waste stream.

2. To provide a means of diking or containment of material and collection of material for proper disposal, according to regulations.

3. To collect, place in sealed drums and properly label any regulated waste stream material per the specifications outlined in Section E.

E. Waste Disposal (Jobsite)

1. All liquid composed of cleaning solution, coatings and solvents must be poured into closed top drums and these drums must be sealed with bungs, when not in use, as required by the regulatory agency of the State (Installer responsibility).

2. All drums must be properly labeled, according to the hazardous rating of the material in the drum, complete with accumulation date (Installer responsibility).

3. All empty coating bottles, with caps removed, must be deposited into a designated roll-off area that is provided by the Customer's Environmental Department (Installer & Customer responsibility).

4. Drums must be picked up for disposal on a first-in-first-out (FIFO) basis and within 90 days of the accumulation date (Customer responsibility).

5. Drums containing spent cleaning solution, solvents and coating will require weekly inspection (Installer & Customer responsibility).

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6. Any leaking drums must be transferred immediately by notification to the Customer's Environmental Department (Installer & Customer responsibility).

7. The Installer must notify the Customer's Environmental Department of all full drums that are ready to be picked up or are approaching the 90 day accumulation date (Installer responsibility).

8. All usable coating containers and solvent containers must be kept in a designated place and must be marked clearly for good housekeeping practice (Installer responsibility).

9. Every effort should be made to avoid spills, to the ground, or by overfilling the drums, causing spills to the ground. Notify the Customer's Environmental Department immediately of any spills (Installer responsibility).

F. Specific Priming/Sealing (Bare Concrete)

1. Dense vertical concrete, such as tilt-up or pre-cast should be sealed preliminary to the installation of MicroGuard® AD00. Use MicroGuard® AD702 Clear Sealer. Follow manufacturer's label instructions.

2. Standard concrete masonry unit (CMU) block and mortar should be filled with quality concrete block filler, per label instructions. Coat block-filled concrete to desired color with appropriate paint. a. Note: Extremely porous concrete surfaces such as split-faced block, cinder block or heavy textured stucco are not suitable surfaces to receive MicroGuard® AD00.

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3.04 MIXING AND CATALYZING

A. MicroGuard® AD00 Anti-Graffiti Clear Surface Treatment 1. MicroGuard® AD00 is a three-component material and must be properly mixed for drying and curing to occur. This product is packaged, in kit form, with separate containers for Components A, B & C. Mix in strict accordance with manufacturer's most current Technical Sheet TS-52. Access current Technical Sheets by going to www.mymicroguard.com; technical document section.

3.05 APPLICATION OF PROTECTIVE TREATMENT

A. Strictly follow these Adsil recommendations and instructions regarding product material and mixing, so as to provide the best quality work.

B. All materials shall be applied under adequate illumination, evenly distributed and properly applied.

C. Never mix or apply MicroGuard® AD00 Anti-Graffiti Clear Surface Treatment if the ambient temperature is, or will be, below 600 F. for 5 days or above 950 F during installation.

D. Never apply MicroGuard® AD00 if the ambient air temperature is within 50 of dew point.

E. All materials shall be applied in an even and full continuous film, free from skips, holidays or pinholes and at a maximum of 1.5 mils, wet film thickness or 12 to 15 microns, dry film thickness.

1. MicroGuard® AD00 is best applied by Airless Spray @ 600 psi, 513 tip or HVLP/Conventional Spray as alternate methods.

2. Use good journeyman spray techniques in order to achieve a thin, uniform film deposit at 1.5 mils WFT, 12 to 15 microns DFT and free from skips, holidays or runs. If runs occur, use a natural hair bristle or nylon brush to feather the runs into a smooth and continuous film.

F. The surface being treated and method of application will ultimately dictate the square foot per gallon yield of MicroGuard® AD00. As a general rule of thumb, the following guidelines can be used; 500 - 650 ft2/gallon, depending on surface density. 1. Continue application until the entire surface has been protective treated. MicroGuard® AD00 Anti-Graffiti Clear will dry to touch in approximately 2 hours and will thoroughly cure within about 5 days, depending on prevailing ambient temperature ranges. Never conduct any post graffiti removal procedures for at least 72 hours following application of AD00.

3.06 CLEAN UP

A. Job Site Clean Up – General

1. Remove all 6 mil plastic sheathing material. Double bag into plastic garbage bags and dispose of this material consistent with environmental or land fill regulations.

2. Any working materials, such as contaminated cloths, need to be disposed of in a safe and proper manner and consistent with site specifications, environmental or land fill regulations.

3. All empty containers of Adsil products must be collected and placed in appropriate collection bins for proper disposal (designated roll-off area).

4. Remove all masking and other associated debris from the job site and leave the storage area clean.

3.07 INSPECTION

A. Inspect and repair all work that is not acceptable to the Specifier and request the final acceptance.

3.08 PROTECTIVE SURFACE TREATMENT SCHEDULE

A. As indicated on this schedule

1. Clear Anti-Graffiti Treatment installation onto all designated surfaces.

a. Apply MicroGuard® AD00 Anti-Graffiti Clear Surface Treatment onto cleaned and properly prepared surfaces, per Project Manual.

2. Graffiti removal from all designated surfaces.

a. Allow the MicroGuard® AD00 film to cure for a minimum of 72 hours before attempting graffiti removal.

b. Most common graffiti; e.g. off-the-shelf aerosol paints, permanent markers, ink, et al, can be most efficiently removed

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using commercially available graffiti removers, either in liquid or paste form, followed by pressure washing.

c. For more textured surfaces, the use of a stiff bristled scrub brush may be required to remove graffiti 'shadowing' from recessed areas. Depending on the depth of texture, all shadowing may not be fully removed.

3.09 ADSIL SPECIFICATION AD1000-01

A. This Specification is a general work order specification. It is intended for use, as a general guideline, for the successful application of Adsil MicroGuard® AD00 Anti-Graffiti Clear Surface Treatment onto stainless steel, non-ferrous metals, bare concrete or rigid fiberglass sound barrier surfaces, or pre-painted bridge/wall surfaces, which are subject to various graffiti tagging conditions. Extensive laboratory and field testing has shown that the inorganic film structure of cured MicroGuard® AD00 is non-sacrificial and resistant to a wide variety of aromatic solvents and cleaners associated with positive graffiti removal.

3.10 MEASUREMENT AND PAYMENT

A. Payment for "Special Protective Treatment", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "Special Protective Treatment", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 09 90 00 PAINTING

PART 1 GENERAL

1.01 SUMMARY

A. Provide painting for all Architectural elements relating to the building's structure and envelope as shown on the Drawings and specified herein. The type of material to be used and the number of coats to be applied are listed in the "Painting Schedule" in Part 3.00 of this Section of these Specifications. The term "paint", as used herein, included enamels, epoxies, paints, sealers, fillers, emulsions, and other coatings, whether used as prime, intermediate, or finish coats.

B. Related Sections. See Related Sections for additional requirements applicable to this Section (typical).

1. Drawings and general provisions of the Contract, including General Conditions, Special Provisions, and other Division 1 Specifications, apply to this section.

1.02 RELATED WORK

A. None

1.03 GENERAL REQUIREMENTS

A. This Section shall be performed in accordance with the General Conditions, Supplementary Conditions and all Sections in Division 1 of these Specifications. These documents must be read with the other Contract Documents and Sections as a whole to complete the intent of the contract.

1.04 SUBMITTALS

A. The CONTRACTOR shall submit to the ENGINEER, as provided in Sections 01 30 00, reports of tests of individual materials to indicate that the materials meet these specifications, prior to the materials being used in the Work.

1.05 AIR POLLUTANT CONTROL REQUIREMENTS

A. VOC Limits:

1. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3 of the 2010 California Green Building Standards Code, unless more stringent local limits apply.

2. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.36 and 4.37 of the 2007 California Air Resources Board, Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply.

B. Aerosol Paints and Coatings.

1. Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a) (3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of *California Code of Regulations*, Title 17, commencing with Section

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94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49.

1.06 MOCK-UPS

A. Full-coat finish Sample of each type of coating, color, and substrate, applied where directed.

1.07 PROJECT CONDITIONS

B. The General CONTRACTOR is responsible to ensure all materials used in this Section meet current California V.O.C. (volatile organic compounds/chemicals) Regulations. The ENGINEER shall be immediately notified of all V.O.C. conflicts. Work shall not proceed until conflicts are resolved.

1.08 EXTRA STOCK

A. Upon completion of this portion of the Work, deliver to the OWNER an extra stock of one gallon of each color and gloss used in each coating material used, with all such extra stock tightly sealed in clearly labeled containers.

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PART 2 PRODUCTS

2.01 PAINT MATERIALS

A. Manufacturer:

1. All paint materials selected for coating systems for each type of surface shall be the product of a single manufacturer.

2. Paint materials listed herein, unless otherwise designated in the "Painting Schedule", are the product of Kelly Moore and require no further approval as to manufacturer or catalog number.

3. Equivalent products of other major paint manufacturers may be used subject to approval by the ENGINEER of the materials list and manufacturers' recommendations required to be submitted under Article 1.03 above. Equivalent product manufacturers must provide a manufacturers product reference guide demonstrating the equivalence of the product substituted to the one specified.

B. Compatibility:

1. All paint materials and equipment shall be compatible in use; finish coats shall be compatible with prime coats; prime coats shall be compatible with the surface to be coated; all tools and equipment shall be compatible with the coating to be applied.

2. Thinners, when used, shall be only those thinners recommended for that purpose by the manufacturer of the material to be thinned.

C. Colors and glosses:

1. All glosses shall be indicated on the Painting Schedule. Colors are as follows:

P1: (Light Gray) Kelly Moore KM3837-2 “Gothic Gray”

P2: (Dark Gray) Kelly Moore KM3815-3 “Charcoal Shadow”

P3: (Gold) Kelly Moore KM3999-3 “Flax Seed”

P4: (White) Kelly-Moore 23 “Swiss Coffee”

PART 3 EXECUTION

3.01 PREPARATION OF SURFACES, GENERAL

A. Prior to all surface preparation and painting operations, completely mask, remove or otherwise adequately protect all hardware, accessories, machined surfaces, plates, lighting fixtures, and similar items in contact with painted surfaces but not scheduled to receive paint.

B. Spot prime all exposed nails and other metals which are to be painted with emulsion paints, using a primer recommended by the manufacturer of the coating system.

C. Before applying paint or other surface treatment, thoroughly clean all surfaces involved. Schedule all cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

3.02 PREPARATION OF METAL SURFACES

A. Galvanized metal:

1. Clean all surfaces thoroughly with solvent until they are completely free from dirt, soil, and grease.

2. Thoroughly treat the cleaned surface with phosphoric acid etch.

3. Remove all excess etching solution and allow to dry completely before application of paint.

B. Other metals:

1. Thoroughly clean all surfaces until they are completely free from dirt, oil, grease and old paint.

2. Allow to dry thoroughly before application of paint.

3.03 PAINT APPLICATION

A. General:

1. Paint all surfaces, except glass, flat concrete, and similar items, not prefinished and not called out as unfinished.

2. Paint all grilles and other prefinished items where the factory prefinish is not in accordance with the Painting Schedule and color selection or where a prefinished item is not the same color as the adjacent surface. Paint to match adjacent surface.

B. Drying:

1. Allow sufficient drying time between coats.

2. Modify the period as recommended by the material manufacturer to suit adverse weather conditions.

C. Environmental conditions:

1. Comply with the manufacturer's recommendations as to environmental conditions under which the coating systems may be applied.

2. Do not apply paint in areas where dust is being generated.

A. Defects:

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1. Sand and dust between coats to remove all defects visible to the unaided eye from a distance of five feet.

B. Color of undercoats

1. Slightly vary the color of succeeding coats.

3.04 INSPECTION

A. Do not apply additional coats until completed coat has been inspected and approved by the ENGINEER.

B. Only inspected and approved coats of paint will be considered in determining the number of coats applied.

3.05 RE-INSTALLATION OF REMOVED ITEMS

A. Following completion of painting in each space, promptly reinstall all items removed for painting, using only workmen skilled in the particular trade.

3.06 CLEANING UP

A. During progress of the Work, do not allow the accumulation of empty containers or other excess items except in areas specifically set aside for that purpose. Prevent accidental spilling of paint materials and, in event of such spill, immediately remove all spilled material and the waste or other equipment used to clean up the spill, and wash the surfaces to their original undamaged condition, all at no additional cost to the OWNER.

B. Upon completion of this portion of the Work visually inspect all surfaces and remove all paint and traces of paint from surfaces not scheduled to be painted.

3.07 PAINTING SCHEDULE

Apply the finishes to the areas designated on the plans in the color designated on the plans.

3.08 MEASUREMENT AND PAYMENT

A. Payment for "**Painting**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Painting**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

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END OF SECTION

SECTION 09 97 23 CONCRETE SEALERS

PART 1 GENERAL

1.01 SUMMARY

A. This Section specifies an applied sealer for horizontal cast-in-place concrete surfaces.

B. Related Sections: Refer to the following specification sections for coordination.

1. Section 03 30 00 “Cast-In-Place Concrete”

2. Section 32 13 13 – “Sitework Cast-In-Place Concrete”

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions.

B. Mock-Up: Prepare a test area minimum 2 by 2 feet in size to verify suitability of the sealer and final appearance.

1.03 QUALITY ASSURANCE

A. Manufacturer: Minimum 10 years experience producing concrete coatings.

B. Installer: Licensed installers experienced and trained in the use of specified products.

C. Suitability of Substrate: Concrete surface must be clean and dry with all stains, oil, grease, dust and dirt removed prior to application. A thorough pressure washing is highly recommended.

D. Regulatory Requirements: Comply with requirements of authorities having jurisdiction and applicable codes at the location of the project.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver materials and products in unopened factory labeled packages. Protect from damage.

B. Store in a safe place, out of direct sunlight. Keep containers tightly sealed. Do not allow product to freeze. Use within manufacturer’s recommended shelf life, approximately 12 months.

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PART 2 PRODUCTS

2.01 MATERIALS

A. Concrete Sealer: High-performance, non-yellowing, clear acrylic-based sealer by Concrete Coatings Inc., 1105 North 1600 West, Layton, UT 84041, 800-443-2871, www.concretecoatingsinc.com. Provide the following:

1. Sealer with Gloss Finish: CCI GemKote 100, with 100 g/L VOC.

2. Sealer with Gloss Finish: CCI GemKote 350, with 350 g/L VOC.

3. Sealer with Gloss Finish: CCI GemKote 400, with 400 g/L VOC.

4. Sealer with Gloss Finish: CCI SuperSeal 2000, with 600 g/L VOC.

5. Sealer with Matte Finish: CCI GemKote 100-M, with 100 g/L VOC.

6. Sealer with Matte Finish: CCI GemKote 350-M, with 350 g/L VOC.

7. Sealer with Matte Finish: CCI GemKote 400-M, with 400 g/L VOC.

8. Sealer with Matte Finish: CCI SuperSeal 2000-M, with 600 g/L VOC.

9. Performance: Concrete sealers shall meet or exceed the following:

   a. Coverage: As recommended by manufacturer.

   b. Moisture Retention, Test ASTM C 309: 0.21 kg/m² at 200 ft² per gallon and 0.32 kg/m² at 300 ft² per gallon.

   c. Gasoline Resistance: Slight dulling after15-minute exposure (ponding).

   d. Tg: 50°C.

   e. Tukon Hardness: 30 minutes at 180°F, 9.3; 30 minutes at 300°F, 13.7.

   f. Pencil Hardness: 30 minutes at 180°F, F; 30 minutes at 300°F, H.

   g. Spray Conditions, Viscosity: 19 seconds, No. 2 Zhan cup.

   h. Abrasion Resistance: 160 mg lost, CS-17 wheel, 1000 g load, 1000 cycles

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PART 3 EXECUTION

3.01 PREPARATION

A. Inspection: Prior to start of application, inspect existing conditions to ensure surfaces are suitable for installation including the following:

1. Concrete has cured for a minimum of 28 days prior to application of sealer.

2. Surface is completely free of sealers, oils, dirt, paint, alkali, penetrating sealers and foreign materials that would prevent the sealer from penetrating the concrete surface.

3. Concrete has been swept clean.

4. Test area has been approved.

3.02 APPLICATION

A. Concrete Sealer: Strictly comply with manufacturer's installation recommendations including the following.

1. Apply after stain has dried at rate recommended by manufacturer.

2. Clean surface as recommended by manufacturer.

3. All concrete flatwork designated as being sealed in the plans and specifications shall be sealed with 2-3 even coats of sealer, at the rate of approximately 150 to 200 square feet per gallon.

3.03 CLEANING AND PROTECTION

A. Protection: Do not cover, but protect floor area from paint and other contaminates that could inhibit the sealer.

3.04 MEASUREMENT AND PAYMENT

A. Payment for "**Concrete Sealers**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom**

Structure" and no additional payment or separate price will be paid therefor.

B. Payment for "**Concrete Sealers**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

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Division 10 – Specialties

SECTION 10 21 13 TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Solid-polymer toilet compartments configured as toilet enclosures and urinal screens.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For toilet compartments. Include plans, elevations, sections, details, and attachments to other work.

C. Samples for each exposed product and for each color and texture specified.

1.03 INFORMATIONAL SUBMITTALS

A. Product certificates.

1.04 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.05 QUALITY ASSURANCE

A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84, or another standard acceptable to authorities having jurisdiction, by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 26-75 or less.

2. Smoke-Developed Index: 450 or less.

B. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA),Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities", ICC/ANSI A117.1 and California Code of Regulations Title 24/ California Building Code Chapter 11B for toilet compartments designated as accessible.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

2.01 MATERIALS

A. Adhesives: Manufacturer's standard product that complies with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.02 SOLID-POLYMER UNITS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Accurate Partitions Corporation, or comparable product by one of the following:

1. Bradley Corporation; Mills Partitions.

2. General Partitions Mfg. Corp.

3. Global Steel Products Corp.

4. Hadrian Manufacturing Inc.

B. Toilet-Enclosure Style: Floor anchored and overhead braced.

C. Urinal-Screen Style: Wall hung.

D. Door, Panel, and Pilaster Construction: Solid, high-density polyethylene (HDPE) panel material, not less than 1 inch (25 mm) thick, seamless, with eased edges, and with homogenous color and pattern throughout thickness of material.

1. Integral Hinges: Configure doors and pilasters to receive integral hinges.

2. Heat-Sink Strip: Manufacturer's standard continuous, extruded-aluminum strip fastened to exposed bottom edges of solid-polymer components to prevent burning.

3. Polymer Panel Finish: One color and pattern in each room.

a. Color and Pattern: White, smooth textured.

E. Pilaster Shoes and Sleeves (Caps): Manufacturer's standard design; stainless steel.

F. Brackets (Fittings):

1. Stirrup Type: Ear or U-brackets, clear-anodized aluminum.

G. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories.

1. Material: Clear-anodized aluminum.

2. Hinges: Manufacturer's standard integral hinge for solid-polymer doors

3. Latch and Keeper: Manufacturer's standard surface-mounted latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible.

4. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories.

5. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors and entrance-screen doors.

6. Door Pull: Manufacturer's standard unit at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible.

H. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.

I. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome-plated steel or brass, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel.

2.03 FABRICATION

CITY COUNCIL REFERENCE ONLY

A. Floor-Anchored and Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment at tops and bottoms of pilasters. Provide shoes and sleeves (caps) at pilasters to conceal anchorage.

B. Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide, in-swinging doors for standard toilet compartments and 36-inch- (914-mm-) wide, out-swinging doors with a minimum 32-inch- (813-mm-) wide, clear opening for compartments designated as accessible.

PART 3 EXECUTION

3.01 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.

B. Clearances: Maximum 1/2 inch (13 mm) between pilasters and panels; 1 inch (25 mm) between panels and walls.

C. Stirrup Brackets: Secure panels to walls and to pilasters with no fewer than three brackets attached at midpoint and near top and bottom of panel. Locate wall brackets so holes for wall anchors occur in masonry or tile joints. Align brackets at pilasters with brackets at walls.

3.02 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors and doors in entrance screens to return doors to fully closed position.

3.03 MEASUREMENT AND PAYMENT

Payment for "**Toilet Compartments**" is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

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CITY COUNCIL REFERENCE ONLY

SECTION 10 28 00 TOILET ACCESSORIES

PART 1 GENERAL

1.01 SUMMARY

A. Division 1 applies to this Section. Provide accessories for bathrooms and toilet rooms, as indicated on the Drawings and specified.

1.02 SUBMITTALS

A. Refer to Section 01 30 00 for procedures.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Deliver items in manufacturer's original unopened packaging, and store under protective cover until installed. Where accessories are furnished with strippable coatings, leave coatings intact until Substantial Completion.

1.04 PROJECT/SITE CONDITIONS

A. Obtain measurements at the site as affecting the Work of this Section, and coordinate with related trades for preparation of wall openings and locations of blocking and backing in walls.

1.05 WARRANTY

A. Conform to Section 01 77 00. Furnish a written warranty against all defects in material and workmanship, including mirror silver spoilage, for 10 years.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. All accessories shall be by Bobrick except toilet paper holder shall be by James River Commercial Products, and hand dryer shall be by Dyson. Diaper changing station shall be by Koala Kare.

2.02 MATERIALS:

A. Stainless Steel: ASTM A167, type 302 or 304, with No. 4 finish.

B. Steel: ASTM A366, commercial quality, cold rolled.

C. Zinc Coating: ASTM A123. Class G90.

D. Chromium Plating: ASTM B456, Type SC2.

E. Aluminum:

1. Extrusions: 6063 T5, satin anodized finish.
2. Sheet: 5005 1114.

F. Brass: Fed Spec (FS) WW-P-541, cast or forging quality alloy.

CITY COUNCIL REFERENCE ONLY

G. Mounting Devices: ASTM A123, galvanized steel.

H. Grab Bars: All indicated units (see “accessibility symbol” on floor plans) shall have grab bars installed in all bathtubs/ showers, installation per UFAS and Title 24 CCR requirements.

2.03 LIST OF ACCESSORIES:

Grab Bars	Bobrick Model # B-5806X36, and B-5806X42
Toilet Paper Holders	James River Commercial Products, Twinsavr Model # 757
Toilet Seat Covers	Bobrick Model # B-3013
Soap Dish	Bobrick Model # B-680
Mirrors	Bobrick Model # B-942
Hand Dryers	Dyson, Airblade V
Diaper Changing	Koala Kare Model # KB110-SSRE

Or Owner approved Equals

PART 3 EXECUTION

3.01 INSPECTION

A. Ensure that openings to receive accessories are constructed to correct size, are plumb, level, and in alignment with other items indicated. Make corrections as needed so that installed accessories will be flat, level, plumb, and fitted snugly against adjoining surfaces without gaps.

3.02 INSTALLATION

A. Install all accessories square, plumb and level. Securely anchor by mechanical means using stainless steel fasteners or other corrosive-resistant fasteners, utilizing tamperproof facilities and security spanner type of mounting. Conform to rough-in and installation templates. Exact locations shall be as indicated or approved by the Owner.

3.03 ADJUSTMENT AND CLEANING

A. Adjust accessories for smooth operation, and clean and polish surfaces. Deliver keys and maintenance instructions to construction project manager

3.04 MEASUREMENT AND PAYMENT

Payment for “**Toilet Accessories**” is considered as included in the contract lump sum cost paid for “**Bathroom Structure**” and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 10 44 16 FIRE EXTINGUISHERS

PART 1 GENERAL

1.01 SUMMARY

A. Provide and install hand portable fire extinguishers and metal brackets as shown on the Drawings and specified herein.

B. Related Sections. See Related Sections for additional requirements applicable to this Section (typical).

1. Drawings and general provisions of the Contract, including General Conditions, Special Provisions, and other Division 1 Specifications, apply to this section.

1.02 GENERAL REQUIREMENTS

A. This Section shall be performed in accordance with the General Conditions, Supplementary Conditions and all Sections in Division 1 of these Specifications. These documents must be read with the other Contract Documents and Sections as a whole to complete the intent of the contract.

1.03 SUBMITTALS

A. Make submittals to the ENGINEER in accordance with the provisions of Section 01 30 00 of these specifications.

B. Provide literature and/or drawings of fire extinguisher cabinets including lettering, colors and finish.

PART 2 PRODUCTS

2.01 FIRE EXTINGUISHERS

A. All fire extinguishers shall have a minimum UL rating of 2A:10BC and shall be Potter-Roemer Inc., Model #3005, or an equal approved in advance by the ENGINEER.

2.02 MOUNTING BRACKETS

A. Type and style:

1. Manufacturer's steel, designed to secure fire extinguishers to wall or structure, of sizes required for fire extinguishers indicated, with plated or baked enamel finish.

B. Manufacturers:

1. Design is based on Potter Roemer Inc.:

a. #3903 Wall Mounted Bracket

2. All fire extinguisher brackets shall be the products of the same manufacturer and shall be the ones upon which design was based, or an equal approved in advance by the ENGINEER.

3. All fire extinguisher brackets must be approved for use by local fire department.

PART 3 EXECUTION

CITY COUNCIL REFERENCE ONLY

3.01 SURFACE CONDITIONS

A. Coordinate with all other trades as required to ensure proper and adequate provision in framing and wall covering for the installation of the brackets in the locations required.

B. Prior to installation, verify that all necessary provisions have been made. In the event of discrepancy, immediately notify the ENGINEER. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.02 INSTALLATION

A. Install the firefighting devices where indicated on the Drawings and in full accordance with all pertinent regulations and the manufacturer's recommendations, setting the top of the cabinet as shown on the Drawings, anchoring all components firmly in place for long life under hard use.

3.03 SERVICE

A. Determine the approximate completion date of the Work and then inspect, charge, and tag the fire extinguishers at a date not more than ten days before actual completion date of the work.

3.04 MEASUREMENT AND PAYMENT

Payment for “Fire Extinguishers”, as they appear in the new bathroom, is considered as included in the contract lump sum cost paid for “**New Bathroom Structure**” and no additional payment or separate price will be paid therefor.

Payment for “Fire Extinguishers”, as they appear in the new meeting room, is considered as included in the contract lump sum cost paid for “**New Meeting Room Structure**” and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

Division 11 – Equipment (Not Used)

Division 13 – Special Construction (Not Used)

Division 14 – Conveying Equipment (Not Used)

FACILITY SERVICES

Division 21 – Fire Suppression (Not Used)

CITY COUNCIL REFERENCE ONLY

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CITY COUNCIL REFERENCE ONLY

Division 22 – Plumbing

SECTION 22 05 18 ESCUTCHEONS FOR PLUMBING PIPING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Escutcheons.

2. Floor plates.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 PRODUCTS

2.01 ESCUTCHEONS

A. One-Piece, Cast-Brass Type: With polished, chrome-plated finish and setscrew fastener.

1. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with chrome-plated finish and spring-clip fasteners.

2. One-Piece, Stamped-Steel Type: With chrome-plated finish and spring-clip fasteners.

2.02 FLOOR PLATES

A. One-Piece Floor Plates: Cast-iron flange with holes for fasteners.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.

B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

1. Escutcheons for New Piping:

a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.

b. Chrome-Plated Piping: One-piece, cast-brass type with polished, chrome-plated finish.

c. Insulated Piping: One-piece, stamped-steel type.

d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished, chrome-plated finish.

e. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, stamped-steel type.

CITY COUNCIL REFERENCE ONLY

f. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, cast-brass type with polished, chrome-plated finish.

g. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, stamped-steel type.

h. Bare Piping in Unfinished Service Spaces: One-piece, cast-brass type with rough-brass finish.

i. Bare Piping in Unfinished Service Spaces: One-piece, stamped-steel type.

j. Bare Piping in Equipment Rooms: One-piece, cast-brass type with rough-brass finish.

k. Bare Piping in Equipment Rooms: One-piece, stamped-steel type.

C. Install floor plates for piping penetrations of equipment-room floors.

D. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

1. New Piping: One-piece, floor-plate type.

3.02 FIELD QUALITY CONTROL

A. Replace broken and damaged escutcheons and floor plates using new materials.

3.03 MEASUREMENT AND PAYMENT

Payment for "**Escutcheons For Plumbing Piping**" is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and **"New Meeting Room Structure"** and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 22 05 23 GENERAL DUTY VALVES FOR PLUMBING PIPING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Brass ball valves.
2. Bronze ball valves.
3. Bronze swing check valves.
4. Iron swing check valves.
5. Bronze gate valves.
6. Iron gate valves.

B. Related Sections:

1. Division 22 plumbing piping Sections for specialty valves applicable to those Sections only.
2. Division 22 Section "Identification for Plumbing Piping and Equipment" for valve tags and schedules.
3. Division 33 water distribution piping Sections for general-duty and specialty valves for site construction piping.

1.02 SUBMITTALS

A. Product Data: For each type of valve indicated.

1.03 QUALITY ASSURANCE

A. ASME Compliance: ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.

B. NSF Compliance: NSF 61 for valve materials for potable-water service.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS FOR VALVES

A. Refer to valve schedule articles for applications of valves.

B. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

C. Valve Sizes: Same as upstream piping unless otherwise indicated.

D. Valve Actuator Types:

1. Handwheel: For valves other than quarter-turn types.
2. Handlever: For quarter-turn valves NPS 6 and smaller.

E. Valves in Insulated Piping: With 2-inch stem extensions and the following features:

1. Gate Valves: With rising stem.

CITY COUNCIL REFERENCE ONLY

2. Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.

F. Valve-End Connections:

1. Flanged: With flanges according to ASME B16.1 for iron valves.

2. Solder Joint: With sockets according to ASME B16.18.

3. Threaded: With threads according to ASME B1.20.1.

2.02 BRASS BALL VALVES

A. Two-Piece, Full-Port, Brass Ball Valves with Brass Trim:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.

b. Crane Co.; Crane Valve Group; Jenkins Valves.

c. Hammond Valve.

d. Milwaukee Valve Company.

e. NIBCO INC.

f. Red-White Valve Corporation.

2. Description:

a. Standard: MSS SP-110.

b. SWP Rating: 150 psig.

c. CWP Rating: 600 psig.

d. Body Design: Two piece.

e. Body Material: Forged brass.

f. Ends: Threaded.

g. Seats: PTFE or TFE.

h. Stem: Brass.

i. Ball: Chrome-plated brass.

j. Port: Full.

B. Two-Piece, Regular-Port, Brass Ball Valves with Brass Trim:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hammond Valve.

b. Jamesbury; a subsidiary of Metso Automation.

c. Legend Valve.

d. Marwin Valve; a division of Richards Industries.

e. Milwaukee Valve Company.

2. Description:

CITY COUNCIL REFERENCE ONLY

a. Standard: MSS SP-110.

b. SWP Rating: 150 psig.

c. CWP Rating: 600 psig.

d. Body Design: Two piece.

e. Body Material: Forged brass.

f. Ends: Threaded.

g. Seats: PTFE or TFE.

h. Stem: Brass.

i. Ball: Chrome-plated brass.

j. Port: Regular.

2.03 BRONZE BALL VALVES

A. One-Piece, Reduced-Port, Bronze Ball Valves with Bronze Trim:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Valve, Inc.

b. Conbraco Industries, Inc.; Apollo Valves.

c. NIBCO INC.

2. Description:

a. Standard: MSS SP-110.

b. CWP Rating: 400 psig.

c. Body Design: One piece.

d. Body Material: Bronze.

e. Ends: Threaded.

f. Seats: PTFE or TFE.

g. Stem: Bronze.

h. Ball: Chrome-plated brass.

i. Port: Reduced.

B. Two-Piece, Full-Port, Bronze Ball Valves with Bronze Trim:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Valve, Inc.

b. Conbraco Industries, Inc.; Apollo Valves.

c. Crane Co.; Crane Valve Group; Crane Valves.

d. Milwaukee Valve Company.

e. NIBCO INC.

f. Red-White Valve Corporation.

g. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

CITY COUNCIL REFERENCE ONLY

2. Description:

a. Standard: MSS SP-110.

b. SWP Rating: 150 psig.

c. CWP Rating: 600 psig.

d. Body Design: Two piece.

e. Body Material: Bronze.

f. Ends: Threaded.

g. Seats: PTFE or TFE.

h. Stem: Bronze.

i. Ball: Chrome-plated brass.

j. Port: Full.

2.04 BRONZE SWING CHECK VALVES

A. Class 125, Bronze Swing Check Valves with Bronze Disc:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Valve, Inc.

b. Crane Co.; Crane Valve Group; Crane Valves.

c. Crane Co.; Crane Valve Group; Jenkins Valves.

d. Crane Co.; Crane Valve Group; Stockham Division.

e. Hammond Valve.

f. Kitz Corporation.

g. Milwaukee Valve Company.

h. NIBCO INC.

i. Powell Valves.

j. Red-White Valve Corporation.

k. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

2. Description:

a. Standard: MSS SP-80, Type 3.

b. CWP Rating: 200 psig.

c. Body Design: Horizontal flow.

d. Body Material: ASTM B 62, bronze.

e. Ends: Threaded.

f. Disc: Bronze.

B. Class 125, Bronze Swing Check Valves with Nonmetallic Disc:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.

CITY COUNCIL REFERENCE ONLY

b. Crane Co.; Crane Valve Group; Jenkins Valves.

c. Crane Co.; Crane Valve Group; Stockham Division.

d. Hammond Valve.

e. Kitz Corporation.

f. Milwaukee Valve Company.

g. NIBCO INC.

h. Red-White Valve Corporation.

i. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

2. Description:

a. Standard: MSS SP-80, Type 4.

b. CWP Rating: 200 psig.

c. Body Design: Horizontal flow.

d. Body Material: ASTM B 62, bronze.

e. Ends: Threaded.

f. Disc: PTFE or TFE.

2.05 IRON SWING CHECK VALVES

A. Class 125, Iron Swing Check Valves with Metal Seats:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.

b. Crane Co.; Crane Valve Group; Jenkins Valves.

c. Crane Co.; Crane Valve Group; Stockham Division.

d. Hammond Valve.

e. Kitz Corporation.

f. Legend Valve.

g. Milwaukee Valve Company.

h. NIBCO INC.

i. Powell Valves.

j. Red-White Valve Corporation.

k. Sure Flow Equipment Inc.

l. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

m. Zy-Tech Global Industries, Inc.

2. Description:

a. Standard: MSS SP-71, Type I.

b. CWP Rating: 200 psig.

c. Body Design: Clear or full waterway.

d. Body Material: ASTM A 126, gray iron with bolted bonnet.

CITY COUNCIL REFERENCE ONLY

e. Ends: Flanged.

f. Trim: Bronze.

g. Gasket: Asbestos free.

B. Class 125, Iron Swing Check Valves with Nonmetallic-to-Metal Seats:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.

b. Crane Co.; Crane Valve Group; Stockham Division.

2. Description:

a. Standard: MSS SP-71, Type I.

b. CWP Rating: 200 psig.

c. Body Design: Clear or full waterway.

d. Body Material: ASTM A 126, gray iron with bolted bonnet.

e. Ends: Flanged.

f. Trim: Composition.

g. Seat Ring: Bronze.

h. Disc Holder: Bronze.

i. Disc: PTFE or TFE.

j. Gasket: Asbestos free.

2.06 BRONZE GATE VALVES

A. Class 125, NRS Bronze Gate Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Valve, Inc.

b. Crane Co.; Crane Valve Group; Crane Valves.

c. Crane Co.; Crane Valve Group; Jenkins Valves.

d. Crane Co.; Crane Valve Group; Stockham Division.

e. Hammond Valve.

f. Kitz Corporation.

g. Milwaukee Valve Company.

h. NIBCO INC.

i. Powell Valves.

j. Red-White Valve Corporation.

k. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

l. Zy-Tech Global Industries, Inc.

2. Description:

a. Standard: MSS SP-80, Type 1.

CITY COUNCIL REFERENCE ONLY

b. CWP Rating: 200 psig.

c. Body Material: ASTM B 62, bronze with integral seat and screw-in bonnet.

d. Ends: Threaded.

e. Stem: Bronze.

f. Disc: Solid wedge; bronze.

g. Packing: Asbestos free.

h. Handwheel: Malleable iron.

2.07 IRON GATE VALVES

A. Class 125, NRS, Iron Gate Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.

b. Crane Co.; Crane Valve Group; Jenkins Valves.

c. Crane Co.; Crane Valve Group; Stockham Division.

d. Flo Fab Inc.

e. Hammond Valve.

f. Kitz Corporation.

g. Legend Valve.

h. Milwaukee Valve Company.

i. NIBCO INC.

j. Powell Valves.

k. Red-White Valve Corporation.

l. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

m. Zy-Tech Global Industries, Inc.

2. Description:

a. Standard: MSS SP-70, Type I.

b. CWP Rating: 200 psig.

c. Body Material: ASTM A 126, gray iron with bolted bonnet.

d. Ends: Flanged.

e. Trim: Bronze.

f. Disc: Solid wedge.

g. Packing and Gasket: Asbestos free.

PART 3 EXECUTION

3.01 VALVE INSTALLATION

CITY COUNCIL REFERENCE ONLY

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Locate valves for easy access and provide separate support where necessary.

C. Install valves in horizontal piping with stem at or above center of pipe.

D. Install valves in position to allow full stem movement.

1. Install swing check valves for proper direction of flow and in horizontal position with hinge pin level.

3.02 ADJUSTING

Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.03 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valve applications are not indicated, use the following:

1. Shutoff Service: Ball, or gate valves.

B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP class or CWP ratings may be substituted.

C. Select valves, except wafer types, with the following end connections:

1. For Copper Tubing, NPS 2 and Smaller: Threaded ends except where solder-joint valve-end option is indicated in valve schedules below.

2. For Copper Tubing, NPS 2-1/2 to NPS 4: Flanged ends except where threaded valve-end option is indicated in valve schedules below.

3. For Steel Piping, NPS 2 and Smaller: Threaded ends.

4. For Steel Piping, NPS 2-1/2 to NPS 4: Flanged ends except where threaded valve-end option is indicated in valve schedules below.

3.04 DOMESTIC, HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 2 and Smaller:

1. Bronze Valves: May be provided with solder-joint ends instead of threaded ends.

2. Bronze Angle Valves: Class 125, bronze disc.

3. Ball Valves: Two piece, full port, bronze with bronze trim.

4. Bronze Swing Check Valves: Class 125, bronze disc.

5. Bronze Gate Valves: Class 125, NRS.

6. Bronze Globe Valves: Class 125, bronze disc.

B. Pipe NPS 2-1/2 and Larger:

1. Iron Valves, NPS 2-1/2 to NPS 4: May be provided with threaded ends instead of flanged ends.

2. Iron, Single-Flange Butterfly Valves: 200 CWP, EPDM seat, ductile-iron disc.

3. Iron Swing Check Valves: Class 125, nonmetallic-to-metal seats.

4. Iron Gate Valves: Class 125, NRS.

CITY COUNCIL REFERENCE ONLY

3.05 MEASUREMENT AND PAYMENT

A. Payment for "**Valves**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Valves**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

C. Payment for "**Valves"** servicing 4" Domestic Water - PVC are considered as included in the unit cost paid for "**4" Domestic Water – PVC"** and no additional payment or separate price will be paid therefor.

D. Payment for "**Valves**" servicing ½" Domestic Water are considered as included in the unit cost paid for **"½" Domestic Water – Copper"** and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

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CITY COUNCIL REFERENCE ONLY

SECTION 22 05 53 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Warning signs and labels.
3. Pipe labels.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 PRODUCTS

2.01 EQUIPMENT LABELS

A. Metal Labels for Equipment:

1. Material and Thickness: Brass, 0.032-inch or anodized aluminum, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.

2. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.

3. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

4. Fasteners: Stainless-steel rivets or self-tapping screws.

5. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Plastic Labels for Equipment:

1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.

2. Letter Color: Black.

3. Background Color: White.

4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.

5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.

6. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

7. Fasteners: Stainless-steel rivets.

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8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

C. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified.

D. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number and identify Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.02 WARNING SIGNS AND LABELS

A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.

B. Letter Color: White.

C. Background Color: Red.

D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.

E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.

F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

G. Fasteners: Stainless-steel rivets.

H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

I. Label Content: Include caution and warning information, plus emergency notification instructions.

2.03 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.

B. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

C. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.

1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.

2. Lettering Size: At least 1-1/2 inches (38 mm) high.

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PART 3 EXECUTION

3.01 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.02 EQUIPMENT LABEL INSTALLATION

A. Install or permanently fasten labels on each major item of mechanical equipment.

B. Locate equipment labels where accessible and visible.

3.03 PIPE LABEL INSTALLATION

A. Piping Color-Coding: Painting of piping is specified in Division 09 Section "Interior Painting."

B. Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:

1. Near each valve and control device.

2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.

3. Near penetrations through walls, floors, ceilings, and inaccessible enclosures.

4. At access doors, manholes, and similar access points that permit view of concealed piping.

5. Near major equipment items and other points of origination and termination.

6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.

7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

C. Pipe Label Color Schedule:

1. Domestic Water Piping:

a. Background Color: Green.

b. Letter Color: White.

3.04 MEASUREMENT AND PAYMENT

A. Payment for "**Plumbing Identification**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Plumbing Identification**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting**

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Room Structure" and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 22 07 00 PLUMBING INSULATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Insulation Materials:

a. Cellular glass.

b. Flexible elastomeric.

c. Polyolefin.

2. Adhesives.

3. Sealants.

4. Tapes.

5. Securements.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings:

1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.

2. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.

3. Detail application of field-applied jackets.

C. Field quality-control reports.

1.03 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Insulation and related materials shall have fire-test-response characteristics indicated, as determined by testing identical products per ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing and inspecting agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.

2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

PART 2 PRODUCTS

2.01 INSULATION MATERIALS

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A. Comply with requirements in Part 3 schedule articles for where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

E. Cellular Glass: Inorganic, incombustible, foamed or cellulated glass with annealed, rigid, hermetically sealed cells. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Cell-U-Foam Corporation; Ultra-CUF.

b. Pittsburgh Corning Corporation; Foamglas Super K.

F. Flexible Elastomeric: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials and Type II for sheet materials.

1. Products: Subject to compliance with requirements, [provide the following] [provide one of the following] [available products that may be incorporated into the Work include, but are not limited to, the following]:

a. Aeroflex USA Inc.; Aerocel.

b. Armacell LLC; AP Armaflex.

c. RBX Corporation; Insul-Sheet 1800 and Insul-Tube 180.

G. Polyolefin: Unicellular, polyethylene thermal plastic insulation. Comply with ASTM C 534 or ASTM C 1427, Type I, Grade 1 for tubular materials and Type II, Grade 1 for sheet materials.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Armacell LLC; Tubolit.

b. Nomaco Inc.; IMCOLOCK, IMCOSHEET, NOMALOCK, and NOMAPLY.

c. RBX Corporation; Therma-cell.

CITY COUNCIL REFERENCE ONLY

2.02 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.

B. Cellular-Glass Polystyrene Adhesive: Solvent-based resin adhesive, with a service temperature range of minus 75 to plus 300 deg F (minus 59 to plus 149 deg C).

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Childers Products, Division of ITW; CP-96.

   b. Foster Products Corporation, H. B. Fuller Company; 81-33.

2. For indoor applications, use adhesive that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II, Class I.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Aeroflex USA Inc.; Aeroseal.

   b. Armacell LCC; 520 Adhesive.

   c. Foster Products Corporation, H. B. Fuller Company; 85-75.

   d. RBX Corporation; Rubatex Contact Adhesive.

2. For indoor applications, use adhesive that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

D. Polystyrene Adhesive: Solvent- or water-based, synthetic resin adhesive with a service temperature range of minus 20 to plus 140 deg F (29 to plus 60 deg C).

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Childers Products, Division of ITW; CP-96.

   b. Foster Products Corporation, H. B. Fuller Company; 97-13.

CITY COUNCIL REFERENCE ONLY

2.03 SEALANTS

A. Joint Sealants:

1. Joint Sealants for Cellular-Glass Products: Subject to compliance with requirements, provide one of the following:

   a. Childers Products, Division of ITW; CP-76.

   b. Foster Products Corporation, H. B. Fuller Company; 30-45.

   c. Marathon Industries, Inc.; 405.

   d. Mon-Eco Industries, Inc.; 44-05.

   e. Pittsburgh Corning Corporation; Pittseal 444.

   f. Vimasco Corporation; 750.

2. Materials shall be compatible with insulation materials, jackets, and substrates.

3. Permanently flexible, elastomeric sealant.

4. Service Temperature Range: Minus 100 to plus 300 deg F.

5. Color: White or gray.

6. For indoor applications, use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.04 FIELD-APPLIED JACKETS

A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.

B. Aluminum Jacket: Comply with ASTM B 209, Alloy 3003, 3005, 3105 or 5005, Temper H-14.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Childers Products, Division of ITW; Metal Jacketing Systems.

b. PABCO Metals Corporation; Surefit.

c. RPR Products, Inc.; Insul-Mate.

2. Finish and thickness are indicated in field-applied jacket schedules.

3. Factory-Fabricated Fitting Covers:

a. Same material, finish, and thickness as jacket.

b. Preformed 2-piece or gore, 45- and 90-degree, short- and long-radius elbows.

c. Tee covers.

d. Flange and union covers.

e. End caps.

f. Beveled collars.

g. Valve covers.

h. Field fabricate fitting covers only if factory-fabricated fitting covers are not available.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

3.02 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of equipment and piping including fittings, valves, and specialties.

B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of equipment and pipe system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

F. Keep insulation materials dry during application and finishing.

G. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

H. Install insulation with least number of joints practical.

I. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

J. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

K. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

CITY COUNCIL REFERENCE ONLY

3.03 PENETRATIONS

A. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.

1. Seal penetrations with flashing sealant.

2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.

3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches (50 mm).

4. Seal jacket to wall flashing with flashing sealant.

B. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

C. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

1. Comply with requirements in Division 07 Section "Penetration Fire stopping" and fire-resistive joint sealers.

3.04 GENERAL PIPE INSULATION INSTALLATION

A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.

B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:

1. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.

2. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.

C. Install removable insulation covers at locations indicated. Installation shall conform to the following:

1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.

2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.

3. Construct removable valve insulation covers in same manner as for flanges except divide the two-part section on the vertical center line of valve body.

CITY COUNCIL REFERENCE ONLY

3.05 CELLULAR-GLASS INSULATION INSTALLATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of insulation to pipe with wire or bands and tighten bands without deforming insulation materials.

2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.

3. For insulation with factory-applied jackets on above ambient services, secure laps with outward clinched staples at 6 inches (150 mm) o.c.

4. For insulation with factory-applied jackets on below ambient services, do not staple longitudinal tabs but secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available. Secure according to manufacturer's written instructions.

2. When preformed sections of insulation are not available, install mitered sections of cellular-glass insulation. Secure insulation materials with wire or bands.

C. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of cellular-glass insulation to valve body.

2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.

3. Install insulation to flanges as specified for flange insulation application.

3.06 FLEXIBLE ELASTOMERIC INSULATION INSTALLATION

A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.

2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.

3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as pipe insulation.

4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of pipe insulation.

2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed valve covers manufactured of same material as pipe insulation when available.

2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.

3. Install insulation to flanges as specified for flange insulation application.

4. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.07 POLYOLEFIN INSULATION INSTALLATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Seal split-tube longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.

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2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.

3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of polyolefin sheet insulation of same thickness as pipe insulation.

4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of polyolefin pipe insulation.

2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install cut sections of polyolefin pipe and sheet insulation to valve body.

2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.

3. Install insulation to flanges as specified for flange insulation application.

4. Secure insulation to valves and specialties, and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

CITY COUNCIL REFERENCE ONLY

3.08 POLYSTYRENE INSULATION INSTALLATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of insulation with tape or bands and tighten bands without deforming insulation materials. Orient longitudinal joints between half sections in 3 and 9 o'clock positions on the pipe.

2. For insulation with factory-applied jackets with vapor barriers, do not staple longitudinal tabs but secure tabs with additional adhesive or tape as recommended by insulation material manufacturer and seal with vapor-barrier mastic.

3. All insulation shall be tightly butted and free of voids and gaps at all joints. Vapor barrier must be continuous. Before installing jacket material, install vapor-barrier system.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.

2. Make width of insulation section same as overall width of flange and bolts, same thickness of adjacent pipe insulation, not to exceed 1-1/2-inch (38-mm) thickness.

3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of polystyrene block insulation of same thickness as pipe insulation.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed insulation sections of same material as straight segments of pipe insulation. Secure according to manufacturer's written instructions.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed section of polystyrene insulation to valve body.

2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.

3. Install insulation to flanges as specified for flange insulation application.

3.09 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation.

C. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.10 PIPING INSULATION SCHEDULE, GENERAL

A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:

1. Drainage piping located in crawl spaces.

2. Underground piping.

3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.11 INDOOR PIPING INSULATION SCHEDULE

A. Domestic Cold, Hot, and Recirculated Hot Water: Insulation shall be one of the following:

1. Flexible Elastomeric: 3/4 inch thick.

2. Polyolefin: 3/4 inch thick.

3.12 OUTDOOR, ABOVEGROUND PIPING INSULATION SCHEDULE

A. Domestic Water Piping: Insulation shall be one of the following:

1. Flexible Elastomeric: 2 inches thick.

2. Polyolefin: 2 inches thick.

3. Polystyrene: 2 inches thick.

CITY COUNCIL REFERENCE ONLY

3.13 OUTDOOR, FIELD-APPLIED JACKET SCHEDULE

A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.

B. If more than one material is listed, selection from materials listed is Contractor's option.

3.14 MEASUREMENT AND PAYMENT

A. Payment for "**Plumbing Insulation**" as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Plumbing Insulation**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 22 11 16 DOMESTIC WATER PIPING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Underground and aboveground domestic water pipes, tubes, fittings, and specialties inside the building.

2. Specialty valves.

1.02 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Domestic water piping and support and installation shall withstand effects of earthquake motions determined according to ASCE/SEI 7.

1.03 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Field quality-control reports.

1.04 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF 61 for potable domestic water piping and components.

PART 2 PRODUCTS

2.01 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.02 COPPER TUBE AND FITTINGS

A. Hard Copper Tube: ASTM B 88, Type L water tube, drawn temper.

1. Cast-Copper Solder-Joint Fittings: ASME B16.18, pressure fittings.

2. Wrought-Copper Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.

3. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.

4. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.

5. Copper Pressure-Seal-Joint Fittings:

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a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1). Elkhart Products Corporation; Industrial Division.

2). NIBCO INC.

3). Viega; Plumbing and Heating Systems.

b. NPS 2 and Smaller: Wrought-copper fitting with EPDM-rubber O-ring seal in each end.

c. NPS 2-1/2 to NPS 4: Cast-bronze or wrought-copper fitting with EPDM-rubber O-ring seal in each end.

6. Copper Push-on-Joint Fittings:

a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1). NVent LLC.

2). NIBCO INC.

b. Description: Cast-copper fitting complying with ASME B16.18 or wrought-copper fitting complying with ASME B 16.22; with stainless-steel teeth and EPDM-rubber O-ring seal in each end instead of solder-joint ends.

B. Soft Copper Tube: ASTM B 88, Type K and ASTM B 88, Type L water tube, annealed temper.

1. Copper Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.

2. Copper Pressure-Seal-Joint Fittings:

a. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:

1). Elkhart Products Corporation; Industrial Division.

2). NIBCO INC.

3). Viega; Plumbing and Heating Systems.

b. NPS 2 and Smaller: Wrought-copper fitting with EPDM-rubber O-ring seal in each end.

c. NPS 3 and NPS 4: Cast-bronze or wrought-copper fitting with EPDM-rubber O-ring seal in each end.

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2.03 DUCTILE-IRON PIPE AND FITTINGS

A. Push-on-Joint, Ductile-Iron Pipe: AWWA C151, with push-on-joint bell and plain spigot end unless grooved or flanged ends are indicated.

1. Standard-Pattern, Push-on-Joint Fittings: AWWA C110, ductile or gray iron.

a. Gaskets: AWWA C111, rubber.

2. Compact-Pattern, Push-on-Joint Fittings: AWWA C153, ductile iron.

a. Gaskets: AWWA C111, rubber.

2.04 GALVANIZED-STEEL PIPE AND FITTINGS

A. Galvanized-Steel Pipe: ASTM A 53, Type E, Grade B, Standard Weight. Include ends matching joining method.

1. Galvanized-Steel Pipe Nipples: ASTM A 733, made of ASTM A 53 or ASTM A 106/A, Standard Weight, seamless steel pipe with threaded ends.

2. Galvanized, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.

3. Malleable-Iron Unions: ASME B16.39, Class 150, hexagonal-stock body with ball-and-socket, metal-to-metal, bronze seating surface, and female threaded ends.

4. Flanges: ASME B16.1, Class 125, cast iron.

2.05 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free, unless otherwise indicated; full-face or ring type unless otherwise indicated.

B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

D. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

2.06 SPECIALTY VALVES

A. Comply with requirements in Division 22 Section "General-Duty Valves for Plumbing Piping" for general-duty metal valves.

B. Comply with requirements in Division 22 Section "Domestic Water Piping Specialties" for balancing valves, drain valves, backflow preventers, and vacuum breakers.

2.07 TRANSITION FITTINGS

A. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

B. Sleeve-Type Transition Coupling: AWWA C219.

2.08 DIELECTRIC FITTINGS

A. General Requirements: Assembly of copper alloy and ferrous materials or ferrous material body with separating nonconductive insulating material suitable for system fluid, pressure, and temperature.

CITY COUNCIL REFERENCE ONLY

B. Dielectric Unions:

1. Description:

a. Pressure Rating: 150 psig at 180 deg F.

b. End Connections: Solder-joint copper alloy and threaded ferrous.

C. Dielectric Flanges:

1. Description:

a. Factory-fabricated, bolted, companion-flange assembly.

b. Pressure Rating: 150 psig.

c. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.

D. Dielectric Couplings:

1. Description:

a. Galvanized-steel coupling.

b. Pressure Rating: 300 psig (2070 kPa) at 225 deg F (107 deg C).

c. End Connections: Female threaded.

d. Lining: Inert and noncorrosive, thermoplastic.

E. Dielectric Nipples:

1. Description:

a. Electroplated steel nipple complying with ASTM F 1545.

b. Pressure Rating: 300 psig at 225 deg F.

c. End Connections: Male threaded or grooved.

d. Lining: Inert and noncorrosive, propylene.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 EARTHWORK

A. Comply with requirements in Division 31 Section "Earth Moving" for excavating, trenching, and backfilling.

3.02 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

B. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."

C. Install ductile-iron piping under building slab with restrained joints according to AWWA C600 and AWWA M41.

D. Install shutoff valve, hose-end drain valve, strainer, pressure gage, and test tee with valve, inside the building at each domestic water service entrance. Comply with requirements in Division 22 Section "Meters and Gages for Plumbing Piping" for pressure gages and Division 22 Section "Domestic Water Piping Specialties" for drain valves and strainers.

E. Install shutoff valve immediately upstream of each dielectric fitting.

F. Install water-pressure-reducing valves downstream from shutoff valves. Comply with requirements in Division 22 Section "Domestic Water Piping Specialties" for pressure-reducing valves.

G. Install domestic water piping level and plumb.

H. Rough-in domestic water piping for water-meter installation according to utility company's requirements.

I. Install seismic restraints on piping. Comply with requirements in Division 22 Section "Vibration and Seismic Controls for Plumbing Piping and Equipment" for seismic-restraint devices.

J. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.

K. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

L. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.

M. Install piping adjacent to equipment and specialties to allow service and maintenance.

N. Install piping to permit valve servicing.

O. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than system pressure rating used in applications below unless otherwise indicated.

P. Install piping free of sags and bends.

Q. Install fittings for changes in direction and branch connections.

R. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.

S. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Division 22 Section "Sleeves and Sleeve Seals for Plumbing Piping."

T. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Division 22 Section "Sleeves and Sleeve Seals for Plumbing Piping."

U. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Division 22 Section "Escutcheons for Plumbing Piping."

3.03 JOINT CONSTRUCTION

CITY COUNCIL REFERENCE ONLY

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads.

2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

D. Brazed Joints: Join copper tube and fittings according to CDA's "Copper Tube Handbook," "Brazed Joints" Chapter.

E. Soldered Joints: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."

F. Pressure-Sealed Joints: Join copper tube and pressure-seal fittings with tools recommended by fitting manufacturer.

G. Copper-Tubing, Push-on Joints: Clean end of tube. Measure insertion depth with manufacturer's depth gage. Join copper tube and push-on-joint fittings by inserting tube to measured depth.

H. Flanged Joints: Select appropriate asbestos-free, nonmetallic gasket material in size, type, and thickness suitable for domestic water service. Join flanges with gasket and bolts according to ASME B31.9.

I. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

CITY COUNCIL REFERENCE ONLY

3.04 VALVE INSTALLATION

A. General-Duty Valves: Comply with requirements in Division 22 Section "General-Duty Valves for Plumbing Piping" for valve installations.

B. Install shutoff valve close to water main on each branch and riser serving plumbing fixtures or equipment, on each water supply to equipment, and on each water supply to plumbing fixtures that do not have supply stops. Use ball or gate valves for piping NPS 2 and smaller. Use butterfly or gate valves for piping NPS 2-1/2 and larger.

1. Hose-End Drain Valves: At low points in water mains, risers, and branches.

2. Stop-and-Waste Drain Valves: Instead of hose-end drain valves where indicated.

3.05 TRANSITION FITTING INSTALLATION

A. Install transition couplings at joints of dissimilar piping.

B. Transition Fittings in Underground Domestic Water Piping:

1. NPS 1-1/2 and Smaller: Fitting-type coupling.

2. NPS 2 and Larger: Sleeve-type coupling.

3.06 DIELECTRIC FITTING INSTALLATION

A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.

B. Dielectric Fittings for NPS 2 and Smaller: Use dielectric couplings or unions.

C. Dielectric Fittings for NPS 2-1/2 to NPS 4: Use dielectric flanges.

3.07 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements in Division 22 Section "Vibration and Seismic Controls for Plumbing Piping and Equipment" for seismic-restraint devices.

B. Comply with requirements in Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment" for pipe hanger and support products and installation.

1. Vertical Piping: MSS Type 8 or 42, clamps.

2. Individual, Straight, Horizontal Piping Runs:

a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.

C. Support vertical piping and tubing at base and at each floor.

D. Rod diameter may be reduced one size for double-rod hangers, to a minimum of 3/8 inch.

E. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 3/4 and Smaller: 60 inches with 3/8-inch rod.

2. NPS 1 and NPS 1-1/4: 72 inches with 3/8-inch rod.

3. NPS 1-1/2 and NPS 2: 96 inches with 3/8-inch rod.

4. NPS 2-1/2: 108 inches with 1/2-inch rod.

5. NPS 3 to NPS 5: 10 feet with 1/2-inch rod.

6. NPS 6: 10 feet with 5/8-inch rod.

F. Install supports for vertical copper tubing every 10 feet.

G. Install hangers for steel piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/4 and Smaller: 84 inches with 3/8-inch rod.

2. NPS 1-1/2: 108 inches with 3/8-inch rod.

3. NPS 2: 10 feet with 3/8-inch rod.

4. NPS 2-1/2: 11 feet with 1/2-inch rod.

5. NPS 3 and NPS 3-1/2: 12 feet with 1/2-inch rod.

6. NPS 4 and NPS 5: 12 feet with 5/8-inch rod.

7. NPS 6: 12 feet with 3/4-inch rod.

a. Install supports for vertical steel piping every 15 feet.

CITY COUNCIL REFERENCE ONLY

b. Support piping and tubing not listed in this article according to MSS SP-69 and manufacturer's written instructions.

3.08 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment and machines to allow service and maintenance.

C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.

D. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:

1. Water Heaters: Cold-water inlet and hot-water outlet piping in sizes indicated, but not smaller than sizes of water heater connections.

2. Plumbing Fixtures: Cold- and hot-water supply piping in sizes indicated, but not smaller than required by plumbing code. Comply with requirements in Division 22 plumbing fixture Sections for connection sizes.

3. Equipment: Cold- and hot-water supply piping as indicated, but not smaller than equipment connections. Provide shutoff valve and union for each connection. Use flanges instead of unions for NPS 2-1/2 and larger.

3.09 IDENTIFICATION

A. Identify system components. Comply with requirements in Division 22 Section "Identification for Plumbing Piping and Equipment" for identification materials and installation.

B. Label pressure piping with system operating pressure.

3.10 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Piping Inspections:

1. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.

2. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:

a. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.

b. Final Inspection: Arrange final inspection for authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

CITY COUNCIL REFERENCE ONLY

3. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.

4. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

C. Piping Tests:

1. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.

2. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.

3. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.

4. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.

5. Repair leaks and defects with new materials and retest piping or portion thereof until satisfactory results are obtained.

6. Prepare reports for tests and for corrective action required.

D. Domestic water piping will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

CITY COUNCIL REFERENCE ONLY

3.11 CLEANING

A. Clean and disinfect potable domestic water piping as follows:

1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.

2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:

a. Flush piping system with clean, potable water until dirty water does not appear at outlets.

b. Fill and isolate system according to either of the following:

1). Fill system or part thereof with water/chlorine solution with at least 50 ppm of chlorine. Isolate with valves and allow to stand for 24 hours.

2). Fill system or part thereof with water/chlorine solution with at least 200 ppm of chlorine. Isolate and allow to stand for three hours.

c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.

d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedures if biological examination shows contamination.

B. Prepare and submit reports of purging and disinfecting activities.

C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

3.12 PIPING SCHEDULE

A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.

C. Underground domestic water, building service piping, NPS 3 and smaller, shall be the following:

1. Soft copper tube, Type K wrought-copper solder-joint fittings; and brazed joints.

D. Aboveground domestic water piping, NPS 2 and smaller shall be one of the following:

1. Galvanized-steel pipe and nipples; galvanized, gray-iron threaded fittings; and threaded joints.

2. Hard copper tube, Type L wrought copper solder-joint fittings; and soldered joints.

3. Hard copper tube, ASTM B 88, Type L; copper pressure-seal-joint fittings; and pressure-sealed joints.

4. Hard copper tube, ASTM B 88, Type L; copper push-on-joint fittings; and push-on joints.

E. Aboveground domestic water piping, NPS 2-1/2 to NPS 4, shall be one of the following:

1. Hard copper tube, ASTM B 88, Type L; wrought copper solder-joint fittings; and soldered joints.

2. Hard copper tube, ASTM B 88, Type L; copper pressure-seal-joint fittings; and pressure-sealed joints.

3. Galvanized-steel pipe and nipples; galvanized, gray-iron threaded fittings; and threaded joints.

4. Galvanized-steel pipe; grooved-joint, galvanized-steel-pipe appurtenances; and grooved joints.

3.13 VALVE SCHEDULE

A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:

CITY COUNCIL REFERENCE ONLY

1. Shutoff Duty: Use ball or gate valves for piping NPS 2 and smaller. Use butterfly, ball, or gate valves with flanged ends for piping NPS 2-1/2 and larger.

2. Throttling Duty: Use ball or globe valves for piping NPS 2 and smaller. Use butterfly or ball valves with flanged ends for piping NPS 2-1/2 and larger.

3. Hot-Water Circulation Piping, Balancing Duty: Memory-stop balancing valves.

4. Drain Duty: Hose-end drain valves.

B. Use check valves to maintain correct direction of domestic water flow to and from equipment.

C. Iron grooved-end valves may be used with grooved-end piping.

3.14 MEASUREMENT AND PAYMENT

A. Payment for "**Domestic Water Piping**" for 1" Domestic Water - PVC are considered as included in the unit cost paid for "**1" Domestic Water – PVC**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Domestic Water Piping**" for 2" Domestic Water – Copper are considered as included in the unit cost paid for "**2" Domestic Water – Copper**" and no additional payment or separate price will be paid therefor

C. Payment for "**Domestic Water Piping**" for 6" Fire Sprinkler Extension are considered as included in the unit cost paid for "**6" Fire Sprinkler**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

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SECTION 22 11 19 DOMESTIC WATER PIPING SPECIALTIES

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the following domestic water piping specialties:

1. Backflow preventers.
2. Hose bibbs.
3. Wall hydrants.
4. Water hammer arresters.
5. Trap-seal primer valves.

1.02 PERFORMANCE REQUIREMENTS

A. Minimum Working Pressure for Domestic Water Piping Specialties: 125 psig, unless otherwise indicated.

1.03 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Field quality-control test reports.

C. Operation and maintenance data.

1.04 QUALITY ASSURANCE

A. NSF Compliance:

B. Comply with NSF 61, "Drinking Water System Components - Health Effects; Sections 1 through 9."

PART 2 PRODUCTS

2.01 VACUUM BREAKERS

A. Pipe-Applied, Atmospheric-Type Vacuum Breakers :

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Ames Co.
2. Cash Acme.
3. Conbraco Industries, Inc.
4. FEBCO; SPX Valves & Controls.
5. Watts Industries, Inc.; Water Products Div.
6. Zurn Plumbing Products Group; Wilkins Div.

C. Standard: ASSE 1001.

D. Size: NPS 1/4 to NPS 3, as required to match connected piping.

E. Body: Bronze.

F. Inlet and Outlet Connections: Threaded.

G. Finish: Chrome plated.

H. Hose-Connection Vacuum Breakers :

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

CITY COUNCIL REFERENCE ONLY

a. Arrowhead Brass Products, Inc.
b. Cash Acme.
c. Conbraco Industries, Inc.
d. Legend Valve.
e. MIFAB, Inc.
f. Prier Products, Inc.
g. Watts Industries, Inc.; Water Products Div.
h. Woodford Manufacturing Company.
i. Zurn Plumbing Products Group; Light Commercial Operation.
j. Zurn Plumbing Products Group; Wilkins Div.

1. Standard: ASSE 1001.
2. Body: Bronze, nonremovable, with manual drain.
3. Outlet Connection: Garden-hose threaded complying with ASME B1.20.7.
4. Finish: Rough bronze.

2.02 HOSE BIBBS

A. Hose Bibbs:

1. Standard: ASME A112.18.1 for sediment faucets.
2. Body Material: Bronze.
3. Seat: Bronze, replaceable.
4. Supply Connections: NPS 1/2 or NPS 3/4 threaded or solder-joint inlet.
5. Outlet Connection: Garden-hose thread complying with ASME B1.20.7.
6. Pressure Rating: 125 psig.
7. Vacuum Breaker: Integral, nonremovable, drainable, hose-connection vacuum breaker complying with ASSE 1011.
8. Finish for Equipment Rooms: Rough bronze, or chrome or nickel plated.
9. Finish for Service Areas: Rough bronze.
10. Finish for Finished Rooms: Chrome or nickel plated.
11. Operation for Equipment Rooms: Operating key.
12. Operation for Service Areas: Operating key.
13. Operation for Finished Rooms: Operating key.

B. Include operating key with each operating-key hose bibb.
C. Include integral wall flange with each chrome- or nickel-plated hose bibb.

2.03 WATER HAMMER ARRESTERS

A. Water Hammer Arresters:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. AMTROL, Inc.
b. Josam Company.
c. MIFAB, Inc.
d. PPP Inc.
e. Sioux Chief Manufacturing Company, Inc.
f. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
g. Tyler Pipe; Wade Div.
h. Watts Drainage Products Inc.
i. Zurn Plumbing Products Group; Specification Drainage Operation.

2. Standard: ASSE 1010 or PDI-WH 201.

CITY COUNCIL REFERENCE ONLY

3. Type: Copper tube with piston.
4. Size: ASSE 1010, Sizes AA and A through F or PDI-WH 201, Sizes A through F.

2.04 TRAP-SEAL PRIMER VALVES

A. Supply-Type, Trap-Seal Primer Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. MIFAB, Inc.
b. PPP Inc.
c. Sioux Chief Manufacturing Company, Inc.
d. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
e. Watts Industries, Inc.; Water Products Div.

2. Standard: ASSE 1018.
3. Pressure Rating: 125 psig minimum.
4. Body: Bronze.
5. Inlet and Outlet Connections: NPS 1/2 threaded, union, or solder joint.
6. Gravity Drain Outlet Connection: NPS 1/2 threaded or solder joint.
7. Finish: Chrome plated, or rough bronze for units used with pipe or tube that is not chrome finished.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 INSTALLATION

A. Refer to Division 22 Section "Common Work Results for Plumbing" for piping joining materials, joint construction, and basic installation requirements.

B. Install backflow preventers in each water supply to mechanical equipment and systems and to other equipment and water systems that may be sources of contamination. Comply with authorities having jurisdiction.

C. Locate backflow preventers in same room as connected equipment or system.

D. Install drain for backflow preventers with atmospheric-vent drain connection with air-gap fitting, fixed air-gap fitting, or equivalent positive pipe separation of at least two pipe diameters in drain piping and pipe to floor drain. Locate air-gap device attached to or under backflow preventer. Simple air breaks are not acceptable for this application.

E. Do not install bypass piping around backflow preventers.

F. Install water hammer arresters in water piping according to PDI-WH 201.

G. Install supply-type, trap-seal primer valves with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust valve for proper flow.

H. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping and specialties.

I Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each of the following:

1. Double-check backflow-prevention assemblies.

2. Supply-type, trap-seal primer valves.

J. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit. Nameplates and signs are specified in Division 22 Section "Identification for Plumbing Piping and Equipment."

3.02 FIELD QUALITY CONTROL

A. Perform the following tests and prepare test reports:

1. Test each double-check backflow-prevention assembly according to authorities having jurisdiction and the device's reference standard.

2. Remove and replace malfunctioning domestic water piping specialties and retest as specified above.

3.03 ADJUSTING

A. Set field-adjustable temperature set points of temperature-actuated water mixing valves.

3.04 MEASUREMENT AND PAYMENT

A. Payment for "**Domestic Water Piping Specialties**" for 1" Domestic Water - PVC are considered as included in the unit cost paid for "**1" Domestic Water – PVC**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Domestic Water Piping Specialties**" for 2" Domestic Water – Copper are considered as included in the unit cost paid for "**2" Domestic Water – Copper**" and no additional payment or separate price will be paid therefor

C. Payment for "**Domestic Water Piping Specialties**" for 6" Fire Sprinkler Extension are considered as included in the unit cost paid for "**6" Fire Sprinkler**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 22 13 16 SANITARY WASTE AND VENT PIPING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Pipe, tube, and fittings.

2. Specialty pipe fittings.

1.02 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1.03 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Seismic Qualification Certificates: For waste and vent piping, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.

2. Detailed description of piping anchorage devices on which the certification is based and their installation requirements.

C. Field quality-control reports.

1.04 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

PART 2 PRODUCTS

2.01 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.02 HUB-AND-SPIGOT, CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 74, DWV and Sewer Service class.

B. Gaskets: ASTM C 564, rubber.

2.03 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 888 or CISPI 301.

CITY COUNCIL REFERENCE ONLY

B. CISPI, Hubless-Piping Couplings:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. ANACO-Husky.

   b. Dallas Specialty & Mfg. Co.

   c. Fernco Inc.

   d. Matco-Norca, Inc.

   e. MIFAB, Inc.

   f. Mission Rubber Company; a division of MCP Industries, Inc.

   g. Stant.

   h. Tyler Pipe.

2. Standards: ASTM C 1277 and CISPI 310.

3. Description: Stainless-steel corrugated shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

C. Heavy-Duty, Hubless-Piping Couplings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. ANACO-Husky.

   b. Clamp-All Corp.

   c. Dallas Specialty & Mfg. Co.

   d. MIFAB, Inc.

   e. Mission Rubber Company; a division of MCP Industries, Inc.

   f. Stant.

   g. Tyler Pipe.

2. Standards: ASTM C 1277 and ASTM C 1540.

3. Description: Stainless-steel shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

CITY COUNCIL REFERENCE ONLY

2.04 COPPER TUBE AND FITTINGS

A. Copper DWV Tube: ASTM B 306, drainage tube, drawn temper.

B. Copper Drainage Fittings: ASME B16.23, cast copper or ASME B16.29, wrought copper, solder-joint fittings.

C. Copper Flanges: ASME B16.24, Class 150, cast copper with solder-joint end.

1. Flange Gasket Materials: ASME B16.21, full-face, flat, nonmetallic, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.

2. Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

D. Solder: ASTM B 32, lead free with ASTM B 813, water-flushable flux.

2.05 SPECIALTY PIPE FITTINGS

A. Transition Couplings:

1. General Requirements: Fitting or device for joining piping with small differences in OD's or of different materials. Include end connections same size as and compatible with pipes to be joined.

2. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

3. Unshielded, Nonpressure Transition Couplings:

a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1). Dallas Specialty & Mfg. Co.

2). Fernco Inc.

3). Mission Rubber Company; a division of MCP Industries, Inc.

4). Plastic Oddities; a division of Diverse Corporate Technologies, Inc.

b. Standard: ASTM C 1173.

c. Description: Elastomeric, sleeve-type, reducing or transition pattern. Include shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.

d. Sleeve Materials:

1). For Cast-Iron Soil Pipes: ASTM C 564, rubber.

4. Shielded, Nonpressure Transition Couplings:

a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

b. Cascade Waterworks Mfg. Co.

c. Mission Rubber Company; a division of MCP Industries, Inc.

1). Standard: ASTM C 1460.

2). Description: Elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 EARTH MOVING

A. Comply with requirements for excavating, trenching, and backfilling specified in Division 31 Section "Earth Moving."

3.02 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping at indicated slopes.

F. Install piping free of sags and bends.

G. Install fittings for changes in direction and branch connections.

H. Install seismic restraints on piping. Comply with requirements for seismic-restraint devices specified in Division 22 Section "Vibration and Seismic Controls for Plumbing Piping and Equipment."

I. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

J. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.

K. Install soil and waste drainage and vent piping at the following minimum slopes unless otherwise indicated:

1. Building Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 and smaller; 2 percent downward in direction of flow for piping NPS 4 and larger.

2. Horizontal Sanitary Drainage Piping: 2 percent downward in direction of flow.

3. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.

L. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."

M. Install aboveground copper tubing according to CDA's "Copper Tube Handbook."

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N. Plumbing Specialties:

1. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary drainage gravity-flow piping. Comply with requirements for cleanouts specified in Division 22 Section "Sanitary Waste Piping Specialties."

2. Install drains in sanitary drainage gravity-flow piping. Comply with requirements for drains specified in Division 22 Section "Sanitary Waste Piping Specialties."

O. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

P. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Division 22 Section "Sleeves and Sleeve Seals for Plumbing Piping."

Q. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Division 22 Section "Sleeves and Sleeve Seals for Plumbing Piping."

R. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Division 22 Section "Escutcheons for Plumbing Piping."

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3.03 JOINT CONSTRUCTION

A. Join hub-and-spigot, cast-iron soil piping with gasket joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for compression joints.

B. Join hubless, cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-piping coupling joints.

C. Join copper tube and fittings with soldered joints according to ASTM B 828. Use ASTM B 813, water-flushable, lead-free flux and ASTM B 32, lead-free-alloy solder.

D. Flanged Joints: Align bolt holes. Select appropriate gasket material, size, type, and thickness. Install gasket concentrically positioned. Use suitable lubricants on bolt threads. Torque bolts in cross pattern.

3.04 SPECIALTY PIPE FITTING INSTALLATION

A. Transition Couplings:

1. Install transition couplings at joints of piping with small differences in OD's.

2. In Drainage Piping: Shielded, non-pressure transition couplings.

3.05 VALVE INSTALLATION

A. Backwater Valves: Install backwater valves in piping subject to backflow.

1. Floor Drains: Drain outlet backwater valves unless drain has integral backwater valve.

3.06 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for seismic-restraint devices specified in Division 22 Section "Vibration and Seismic Controls for Plumbing Piping and Equipment."

B. Comply with requirements for pipe hanger and support devices and installation specified in Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment."

1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.

2. Install carbon-steel pipe support clamps for vertical piping in noncorrosive environments.

3. Install stainless-steel pipe support clamps for vertical piping in corrosive environments.

4. Vertical Piping: MSS Type 8 or Type 42, clamps.

5. Install individual, straight, horizontal piping runs:

a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.

6. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Support horizontal piping and tubing within 12 inches of each fitting, valve, and coupling.

D. Support vertical piping and tubing at base and at each floor.

E. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch minimum rods.

F. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/2 and NPS 2: 60 inches with 3/8-inch rod.

2. NPS 3: 60 inches with 1/2-inch rod.

3. NPS 4 and NPS 5: 60 inches with 5/8-inch rod.

4. NPS 6 and NPS 8: 60 inches with 3/4-inch rod.

5. Spacing for 10-foot lengths may be increased to 10 feet. Spacing for fittings is limited to 60 inches.

G. Install supports for vertical cast-iron soil piping every 15 feet.

H. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/4: 72 inches with 3/8-inch rod.

2. NPS 1-1/2 and NPS 2: 96 inches with 3/8-inch) rod.

3. NPS 2-1/2: 108 inches with 1/2-inch rod.

4. NPS 3 and NPS 5 (DN 80 and DN 125): 10 feet (3 m) with 1/2-inch (13-mm) rod.

5. NPS 6: 10 feet with 5/8-inch rod.

6. NPS 8: 10 feet with 3/4-inch rod.

I. Install supports for vertical copper tubing every 10 feet.

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J. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.07 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

C. Connect drainage and vent piping to the following:

1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.

2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.

3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.

4. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.

5. Comply with requirements for cleanouts and drains specified in Division 22 Section "Sanitary Waste Piping Specialties."

6. Equipment: Connect drainage piping as indicated. Provide shutoff valve if indicated and union for each connection. Use flanges instead of unions for connections NPS 2-1/2 and larger.

D. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.

E. Make connections according to the following unless otherwise indicated:

1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.

2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.

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3.08 IDENTIFICATION

Identify exposed sanitary waste and vent piping. Comply with requirements for identification specified in Division 22 Section "Identification for Plumbing Piping and Equipment."

3.09 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.

1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.

2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.

2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.

3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping except outside leaders on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water. From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.

4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg. Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.

5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.

6. Prepare reports for tests and required corrective action.

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3.10 CLEANING AND PROTECTION

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

3.11 PIPING SCHEDULE

A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.

B. Above ground, soil and waste piping NPS 4 and smaller shall be the following:

1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.

2. Hubless, cast-iron soil pipe and fittings; CISPI hubless-piping couplings; and coupled joints.

3. Copper DWV tube, copper drainage fittings, and soldered joints.

4. Dissimilar Pipe-Material Couplings: Unshielded, nonpressure transition couplings.

C. Aboveground, vent piping NPS 4 and smaller shall be the following:

1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.

2. Hubless, cast-iron soil pipe and fittings; CISPI hubless-piping couplings; and coupled joints.

3. Copper DWV tube, copper drainage fittings, and soldered joints.

4. Dissimilar Pipe-Material Couplings: Unshielded, nonpressure transition couplings.

D. Underground, soil, waste, and vent piping NPS 4 and smaller shall be of the following:

1. Service class, cast-iron soil piping; gaskets; and gasketed joints.

2. Hubless, cast-iron soil pipe and fittings; heavy-duty cast-iron hubless-piping couplings; and coupled joints.

3. Dissimilar Pipe-Material Couplings: Shielded, nonpressure transition couplings.

E. Underground, soil and waste piping NPS 5 and larger shall be of the following:

1. Service class, cast-iron soil piping; gaskets; and gasketed joints.

2. Hubless, cast-iron soil pipe and fittings; CISPI cast-iron hubless-piping couplings; coupled joints.

3. Dissimilar Pipe-Material Couplings: Shielded, nonpressure transition couplings.

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3.12 MEASUREMENT AND PAYMENT

Payment for "**Sanitary Waste and Vent Piping**" is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" to 5 feet outside the building, and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 22 13 19 SANITARY WASTE PIPING SPECIALTIES

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the following sanitary drainage piping specialties:

1. Cleanouts.

2. Floor drains.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and accessories for grease interceptors.

1.03 QUALITY ASSURANCE

A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

PART 2 PRODUCTS

2.01 CLEANOUTS

A. Exposed Cast-Iron Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Josam Company; Josam Div.
b. MIFAB, Inc.
c. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
d. Tyler Pipe; Wade Div.
e. Watts Drainage Products Inc.
f. Zurn Plumbing Products Group; Specification Drainage Operation.

2. Standard: ASME A112.36.2M for cast iron for cleanout test tee

3. Size: Same as connected drainage piping

4. Body Material: Hub-and-spigot, cast-iron soil pipe T-branch as required to match connected piping.

5. Closure: Countersunk or raised-head, cast-iron plug.

6. Closure Plug Size: Same as or not more than one size smaller than cleanout size.

B. Cast-Iron Floor Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Josam Company; Josam Div.
b. Oatey.
c. Sioux Chief Manufacturing Company, Inc.

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d. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
e. Tyler Pipe; Wade Div.
f. Watts Drainage Products Inc.
g. Zurn Plumbing Products Group; Light Commercial Operation.
h. Zurn Plumbing Products Group; Specification Drainage Operation.

2. Standard: ASME A112.36.2M for heavy-duty, adjustable housing cleanout.

3. Size: Same as connected branch.

4. Type: Heavy-duty, adjustable housing.

5. Body or Ferrule: Cast iron.

6. Clamping Device: Not required.

7. Outlet Connection: Threaded.

8. Closure: Cast-iron plug.

9. Adjustable Housing Material: Cast iron with threads.

10. Frame and Cover Material and Finish: Nickel-bronze, copper alloy.

11. Frame and Cover Shape: Round.

12. Top Loading Classification: Heavy Duty.

13. Riser: ASTM A 74, Service class, cast-iron drainage pipe fitting and riser to clean out.

C. Cast-Iron Wall Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Josam Company; Josam Div.
b. MIFAB, Inc.
c. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
d. Tyler Pipe; Wade Div.
e. Watts Drainage Products Inc.
f. Zurn Plumbing Products Group; Specification Drainage Operation.

2. Standard: ASME A112.36.2M. Include wall access.

3. Size: Same as connected drainage piping.

4. Body: Hub-and-spigot, cast-iron soil pipe T-branch as required to match connected piping.

5. Closure: Countersunk or raised-headcast-iron plug.

6. Closure Plug Size: Same as or not more than one size smaller than cleanout size.

7. Wall Access: Round, chrome-plated brass or stainless-steel cover plate with screw.

8. Wall Access: Round nickel-bronze, copper-alloy, or stainless-steel wall-installation frame and cover.

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2.02 FLOOR DRAINS

A. Cast-Iron Floor Drains :

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Commercial Enameling Co.
   b. Josam Company; Josam Div.
   c. MIFAB, Inc.
   d. Prier Products, Inc.
   e. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
   f. Tyler Pipe; Wade Div.
   g. Watts Drainage Products Inc.
   h. Zurn Plumbing Products Group; Light Commercial Operation.
   i. Zurn Plumbing Products Group; Specification Drainage Operation.

2. Standard: ASME A112.6.3.

3. Pattern: Floor drain.

4. Body Material: Gray iron.

5. Seepage Flange: Not required.

6. Anchor Flange: Required.

7. Clamping Device: Not required.

8. Outlet: Side.

9. Backwater Valve: Not required.

10. Coating on Interior and Exposed Exterior Surfaces: Not required.

11. Sediment Bucket: Not required.

12. Top or Strainer Material: Nickel bronze.

13. Top of Body and Strainer Finish: Rough bronze.

14. Top Shape: Round.

15. Dimensions of Top or Strainer: 6”.

16. Top Loading Classification: Heavy Duty.

17. Trap Material: Cast iron.

18. Trap Pattern: Standard P-trap.

19. Trap Features: Trap-seal primer valve drain connection.

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PART 3 EXECUTION

3.01 INSTALLATION

A. Refer to Division 22 Section "Common Work Results for Plumbing" for piping joining materials, joint construction, and basic installation requirements.

B. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:

1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.
2. Locate at each change in direction of piping greater than 45 degrees.
3. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
4. Locate at base of each vertical soil and waste stack.

C. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.

D. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.

E. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.

1. Position floor drains for easy access and maintenance.
2. Set floor drains below elevation of surrounding finished floor to allow floor drainage. Set with grates depressed according to the following drainage area radii:
   a. Radius, 30 Inches or Less: Equivalent to 1 percent slope, but not less than 1/4-inch total depression.
   b. Radius, 30 to 60 Inches: Equivalent to 1 percent slope.
   c. Radius, 60 Inches or Larger: Equivalent to 1 percent slope, but not greater than 1-inch total depression.
3. Install floor-drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes where penetrated.
4. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.

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3.02 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

3.03 MEASUREMENT AND PAYMENT

Payment for "**Sanitary Waste Piping**" is considered as included in the linear foot unit cost paid for "**4" Sanitary Sewer**", to within 5 feet of the building, and no additional payment or separate price will be paid therefor.

END OF SECTION

Division 23 – Heating, Ventilating, and Air-Conditioning (HVAC)

SECTION 23 05 00 COMMON WORK RESULTS FOR HVAC

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:

1. Equipment installation requirements common to equipment sections.

2. Supports and anchorages.

1.03 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical. equipment rooms, furred spaces, pipe and duct chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and chases.

1.04 QUALITY ASSURANCE

A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."

B. Electrical Characteristics for HVAC Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.02 SLEEVES

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A. Galvanized-Steel Sheet: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.

PART 3 EXECUTION

3.01 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.

B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.

C. Install HVAC equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.

3.02 MEASUREMENT AND PAYMENT

Payment for "Common Work Results for HVAC", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

Payment for "Common Work Results for HVAC", as it appears in the meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 23 05 93 TESTING ADJUSTING BALANCING HVAC

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Balancing Air Systems:

a. Constant-volume air systems.

1.02 DEFINITIONS

A. AABC: Associated Air Balance Council.

B. NEBB: National Environmental Balancing Bureau.

C. TAB: Testing, adjusting, and balancing.

D. TABB: Testing, Adjusting, and Balancing Bureau.

E. TAB Specialist: An entity engaged to perform TAB Work.

1.03 SUBMITTALS

A. Strategies and Procedures Plan: Within 30 days of Contractor's Notice to Proceed, submit TAB strategies and step-by-step procedures as specified in "Preparation" Article.

B. Certified TAB reports.

1.04 QUALITY ASSURANCE

A. TAB Contractor Qualifications: Engage a TAB entity certified by AABC or NEBB

1. TAB Field Supervisor: Employee of the TAB contractor and certified by AABC or NEBB.

2. TAB Technician: Employee of the TAB contractor and who is certified by AABC] or NEBB as a TAB technician.

B. Certify TAB field data reports and perform the following:

1. Review field data reports to validate accuracy of data and to prepare certified TAB reports.

2. Certify that the TAB team complied with the approved TAB plan and the procedures specified and referenced in this Specification.

C. TAB Report Forms: Use standard TAB contractor's forms approved by Owner Instrumentation Type, Quantity, Accuracy, and Calibration: As described in ASHRAE 111, Section 5, "Instrumentation."

PART 2 PRODUCTS

Not Used.

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PART 3 EXECUTION

3.01 EXAMINATION

A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper TAB of systems and equipment.

B. Examine systems for installed balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are accessible.

C. Examine the approved submittals for HVAC systems and equipment.

D. Examine design data including HVAC system descriptions, statements of design assumptions for environmental conditions and systems' output, and statements of philosophies and assumptions about HVAC system and equipment controls.

E. Examine ceiling plenums used for supply, return, or relief air to verify that they meet the leakage class of connected ducts as specified in Division 23 Section "Metal Ducts"and are properly separated from adjacent areas. Verify that penetrations in plenum walls are sealed and fire-stopped if required.

F. Examine equipment performance data including fan and pump curves.

1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.

2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.

G. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.

H. Examine test reports specified in individual system and equipment Sections.

I. Examine HVAC equipment and filters and verify that bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.

J. Examine heat-transfer coils for correct piping connections and for clean and straight fins.

K. Examine operating safety interlocks and controls on HVAC equipment.

L. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.02 PREPARATION

A. Prepare a TAB plan that includes strategies and step-by-step procedures.

B. Complete system-readiness checks and prepare reports. Verify the following:

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1. Permanent electrical-power wiring is complete.
2. Hydronic systems are filled, clean, and free of air.
3. Automatic temperature-control systems are operational.
4. Equipment and duct access doors are securely closed.
5. Balance, smoke, and fire dampers are open.
6. Isolating and balancing valves are open and control valves are operational.
7. Ceilings are installed in critical areas where air-pattern adjustments are required and access to balancing devices is provided.
8. Windows and doors can be closed so indicated conditions for system operations can be met.

3.03 GENERAL PROCEDURES FOR TESTING AND BALANCING

A. Perform testing and balancing procedures on each system according to the procedures contained in SMACNA's "HVAC Systems - Testing, Adjusting, and Balancing and in this Section.

1. Comply with requirements in ASHRAE 62.1-2004, Section 7.2.2, "Air Balancing."

B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.

1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
2. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Division 23 Section "HVAC Insulation."

C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.

D. Take and report testing and balancing measurements in inch-pound (IP) units.

3.04 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.

B. Prepare schematic diagrams of systems' "as-built" duct layouts.

C. For variable-air-volume systems, develop a plan to simulate diversity.

D. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.

E. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.

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F. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.

G. Verify that motor starters are equipped with properly sized thermal protection.

H. Check dampers for proper position to achieve desired airflow path.

I. Check for airflow blockages.

J. Check condensate drains for proper connections and functioning.

K. Check for proper sealing of air-handling-unit components.

L. Verify that air duct system is sealed as specified in Division 23 Section "Metal Ducts."

3.05 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.

1. Measure total airflow.

1. Where sufficient space in ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow.

2. Measure fan static pressures as follows to determine actual static pressure:

1. Measure outlet static pressure as far downstream from the fan as practical and upstream from restrictions in ducts such as elbows and transitions.

2. Measure static pressure directly at the fan outlet or through the flexible connection.

3. Measure inlet static pressure of single-inlet fans in the inlet duct as near the fan as possible, upstream from the flexible connection, and downstream from duct restrictions.

4. Measure inlet static pressure of double-inlet fans through the wall of the plenum that houses the fan.

3. Measure static pressure across each component that makes up an air-handling unit, rooftop unit, and other air-handling and -treating equipment.

a. Report the cleanliness status of filters and the time static pressures are measured.

4. Measure static pressures entering and leaving other devices, such as sound traps, heat-recovery equipment, and air washers, under final balanced conditions.

5. Review Record Documents to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.

6. Obtain approval from Engineer for adjustment of fan speed higher or lower than indicated speed. Comply with requirements in Division 23 Sections for air-handling units for adjustment of fans, belts, and pulley sizes to achieve indicated air-handling-unit performance.

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7. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload will occur. Measure amperage in full-cooling, full-heating, economizer, and any other operating mode to determine the maximum required brake horsepower.

B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows within specified tolerances.

1. Measure airflow of sub-main and branch ducts.

a. Where sufficient space in sub-main and branch ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow for that zone.

2. Measure static pressure at a point downstream from the balancing damper, and adjust volume dampers until the proper static pressure is achieved.

3. Re-measure each sub-main and branch duct after all have been adjusted. Continue to adjust sub-main and branch ducts to indicated airflows within specified tolerances.

C. Measure air outlets and inlets without making adjustments.

1. Measure terminal outlets using a direct-reading hood or outlet manufacturer's written instructions and calculating factors.

D. Adjust air outlets and inlets for each space to indicated airflows within specified tolerances of indicated values. Make adjustments using branch volume dampers rather than extractors and the dampers at air terminals.

1. Adjust each outlet in same room or space to within specified tolerances of indicated quantities without generating noise levels above the limitations prescribed by the Contract Documents.

2. Adjust patterns of adjustable outlets for proper distribution without drafts.

3.06 PROCEDURES FOR MOTORS

A. Motors, 1/2 HP and Larger: Test at final balanced conditions and record the following data:

1. Manufacturer's name, model number, and serial number.

2. Motor horsepower rating.

3. Motor rpm.

4. Efficiency rating.

5. Nameplate and measured voltage, each phase.

6. Nameplate and measured amperage, each phase.

7. Starter thermal-protection-element rating.

B. Motors Driven by Variable-Frequency Controllers: Test for proper operation at speeds varying from minimum to maximum. Test the manual bypass of the controller to prove proper operation. Record observations including name of controller manufacturer, model number, serial number, and nameplate data.

CITY COUNCIL REFERENCE ONLY

3.07 TOLERANCES

A. Set HVAC system's air flow rates and water flow rates within the following tolerances:

1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus or minus 10 percent

2. Air Outlets and Inlets: Plus or minus 10 percent.

3.08 REPORTING

A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article, prepare a report on the adequacy of design for systems' balancing devices. Recommend changes and additions to systems' balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.

B. Status Reports: Prepare progress reports to describe completed procedures, procedures in progress, and scheduled procedures. Include a list of deficiencies and problems found in systems being tested and balanced. Prepare a separate report for each system and each building floor for systems serving multiple floors.

3.09 FINAL REPORT

A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.

1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.

2. Include a list of instruments used for procedures, along with proof of calibration.

B. Final Report Contents: In addition to certified field-report data, include the following:

1. Pump curves.

2. Fan curves.

3. Manufacturers' test data.

4. Field test reports prepared by system and equipment installers.

5. Other information relative to equipment performance; do not include Shop Drawings and product data.

C. General Report Data: In addition to form titles and entries, include the following data:

1. Title page.

2. Name and address of the TAB contractor.

3. Project name.

4. Project location.

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5. Architect's name and address.

6. Engineer's name and address.

7. Contractor's name and address.

8. Report date.

9. Signature of TAB supervisor who certifies the report.

10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.

11. Summary of contents including the following:

    a. Indicated versus final performance.

    b. Notable characteristics of systems.

    c. Description of system operation sequence if it varies from the Contract Documents.

12. Nomenclature sheets for each item of equipment.

13. Data for terminal units, including manufacturer's name, type, size, and fittings.

14. Notes to explain why certain final data in the body of reports vary from indicated values.

15. Test conditions for fans and pump performance forms including the following:

    a. Settings for outdoor-, return-, and exhaust-air dampers.

    b. Conditions of filters.

    c. Cooling coil, wet- and dry-bulb conditions.

    d. Face and bypass damper settings at coils.

    e. Fan drive settings including settings and percentage of maximum pitch diameter.

    f. Inlet vane settings for variable-air-volume systems.

    g. Settings for supply-air, static-pressure controller.

    h. Other system operating conditions that affect performance.

D. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:

1. Quantities of outdoor, supply, return, and exhaust airflows.

2. Water and steam flow rates.

3. Duct, outlet, and inlet sizes.

4. Pipe and valve sizes and locations.

5. Terminal units.

6. Balancing stations.

7. Position of balancing devices.

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3.10 ADDITIONAL TESTS

A. Within 90 days of completing TAB, perform additional TAB to verify that balanced conditions are being maintained throughout and to correct unusual conditions.

B. Seasonal Periods: If initial TAB procedures were not performed during near-peak summer and winter conditions, perform additional TAB during near-peak summer and winter conditions.

3.11 MEASUREMENT AND PAYMENT

A. Payment for "**Testing Adjusting Balancing HVAC**", as it appears for the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Testing Adjusting Balancing HVAC**", as it appears for the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 23 31 13 METAL DUCTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Rectangular ducts and fittings.

2. Single wall, round spiral-seam ducts and formed fittings..

B. Related Documents:

1. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 01 Specifications, apply to this Section.

1.02 PERFORMANCE REQUIREMENTS

A. Delegated Duct Design: Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" Article.

B. Structural Performance: Duct hangers and supports and seismic restraints shall withstand the effects of gravity and seismic loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and ASCE/SEI 7. SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems."

C. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

1.03 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings:

1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.

2. Factory- and shop-fabricated ducts and fittings.

3. Duct layout indicating sizes, configuration, and static-pressure classes.

4. Dimensions of main duct runs from building grid lines.

5. Fittings.

6. Reinforcement and spacing.

7. Seam and joint construction.

8. Locations for duct accessories, including dampers, turning vanes, and access doors and panels.

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9. Hangers and supports, including methods for duct and building attachmen, seismic restraints, and vibration isolation.

C. Coordination Drawings: Plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Duct installation in congested spaces, indicating coordination with general construction, building components, and other building services. Indicate proposed changes to duct layout.

2. Suspended ceiling components.

3. Structural members to which duct will be attached.

4. Size and location of initial access modules for acoustical tile.

5. Items penetrating finished ceiling including the following:

A. Lighting fixtures.

B. Air outlets and inlets.

D. Welding certificates.

1.04 QUALITY ASSURANCE

A. LEED Prerequisite EQ 1 requires compliance with requirements in ASHRAE 62.1-2004.

B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and System Start-Up."

C. LEED Prerequisite EA 2 requires compliance with requirements in ASHRAE/IESNA 90.1-2004.

D. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6.4.4 - "HVAC System Construction and Insulation."

PART 2 PRODUCTS

2.01 SHEET METAL MATERIALS

A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

1. Galvanized Coating Designation: G60

2. Finishes for Surfaces Exposed to View: Mill phosphatized.

C. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.02 SEALANT AND GASKETS

CITY COUNCIL REFERENCE ONLY

A. Joint and Seam Sealants, General: The term “sealant” is not limited to materials of adhesive or mastic nature but includes tapes and combinations of open-weave fabrics and mastics.

B. Flange Gaskets: Butyl rubber or EPDM polymer with polyisobutylene plasticizer

2.03 HANGERS AND SUPPORTS

A. Building Attachments: Concrete inserts, powder actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.

1). Exception: Do not use powder-actuated concrete fasteners for lightweight-aggregate concrete or for slabs less than 4 inches thick.

B. Hanger Materials: Galvanized sheet steel or threaded steel rod.

1). Hanger Installed in Corrosive Environments: Electro-galvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.

2). Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1 "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."

3). Galvanized steel straps attached to aluminum ducts shall have contact surfaces painted with zinc chromate primer.

C. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

D. Trapeze and Riser Supports:

1). Supports for Galvanized Steel Ducts: Galvanized steel shapes and plates.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 DUCT APPLICATIONS

A. Static Pressure Classes: Unless otherwise indicated, construct ducts according to the following:

1. Supply Ducts: 2-inch wg

2. Return Ducts: (Negative Pressure): 2-inch wg.

3. Exhaust Ducts (Negative Pressure): 2-inch wg.

3.02 INSTALLATION OF EXPOSED DUCTWORK

A. Protect ducts exposed in finished spaces from being dented, scratched, or damaged.

B. Trim duct sealants flush with metal. Create a smooth and uniform exposed bead. Do not use two-part tape sealing system.

C. Grind welds to provide smooth surface free of burrs, sharp edges, and weld splatter. When welding stainless steel with a No. 3 or 4 finish, grind the welds

flush, polish the exposed welds, and treat the welds to remove discoloration caused by welding.

D. Maintain consistency, symmetry, and uniformity in the arrangement and fabrication of fittings, hangers and supports, duct accessories, and air outlets.

E. Repair or replace damaged sections and finished work that does not comply with these requirements.

3.03 DUCT SEALING

A. Seal ducts before external insulation is applied.

3.04 HANGER AND SUPPORT INSTALLATION

A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."

B. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1 "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.

C. Hangers Exposed to View: Threaded rod and angle or channel supports.

D. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet.

E. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

3.05 SEISMIC-RESTRAINT-DEVICE INSTALLATION

A. Install ducts with hangers and braces designed to support the duct and to restrain against seismic forces required by applicable building codes. Comply with SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems.

1). Options for 40 and 80 feet (12 and 24 m) in first subparagraph below are recommended by SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems." If the contractor finds this note, the editor of this section will buy him or her lunch.

2). Space lateral supports a maximum of 40 feet o.c. and longitudinal supports a maximum of 80 feet o.c.

3). Brace a change of direction longer than 12 feet.

B. Attachment to Structure: If specific attachment is not indicated, anchor bracing and restraints to structure, to flanges of beams, to upper truss chords of bar joists, or to concrete members.

3.06 CONNECTIONS

A. Coordinate duct installations and specialty arrangements with Drawings.

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B. Make connections to equipment with flexible connectors complying with Division 23 Section "Air Duct Accessories."

C. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.07 DUCT CLEANING

A. Clean new duct system(s) before testing, adjusting, and balancing.

3.08 MEASUREMENT AND PAYMENT

A. Payment for “Metal Ducts”, as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for “**New Bathroom Structure**” and no additional payment or separate price will be paid therefor.

B. Payment for “Metal Ducts”, as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for “**New Meeting Room Structure**” and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 23 33 00 AIR DUCT ACCESSORIES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Manual volume dampers.

2. Duct accessory hardware.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For duct accessories. Include plans, elevations, sections, details and attachments to other work.

1. Detail duct accessories fabrication and installation in ducts and other construction. Include dimensions, weights, loads, and required clearances; and method of field assembly into duct systems and other construction. Include the following:

a. Special fittings.

b. Manual volume damper installations.

C. Operation and maintenance data.

1.03 QUALITY ASSURANCE

A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."

PART 2 PRODUCTS

2.01 MATERIALS

A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

1. Galvanized Coating Designation: G60.

2. Exposed-Surface Finish: Mill phosphatized.

C. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.

D. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.02 MANUAL VOLUME DAMPERS

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A. Standard, Steel, Manual Volume Dampers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Air Balance Inc.; a division of Mestek, Inc.

   b. American Warming and Ventilating; a division of Mestek, Inc.

   c. McGill AirFlow LLC.

   d. Nailor Industries Inc.

   e. Pottorff; a division of PCI Industries, Inc.

   f. Ruskin Company.

   g. Vent Products Company, Inc.

2. Standard leakage rating, with linkage outside airstream.

3. Suitable for horizontal or vertical applications.

4. Frames:

   a. Hat-shaped, galvanized -steel channels, 0.064-inch minimum thickness.

   b. Mitered and welded corners.

   c. Flanges for attaching to walls and flangeless frames for installing in ducts.

5. Blades:

   a. Multiple or single blade.

   b. Parallel- or opposed-blade design.

   c. Stiffen damper blades for stability.

   d. Galvanized steel, 0.064 inch thick.

6. Blade Axles: Galvanized steel.

7. Bearings:

   a. Oil-impregnated bronze

   b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.

8. Tie Bars and Brackets: Galvanized steel.

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PART 3 EXECUTION

3.01 INSTALLATION

A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.

B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel and fibrous-glass ducts, stainless-steel

accessories in stainless-steel ducts, and aluminum accessories in aluminum ducts.

C. LEED Prerequisite EA 2 requires compliance with ASHRAE/IESNA 90.1-2004, in which Section 6.4.3.3.3 - "Shutoff Damper Controls" restricts the use of backdraft dampers and requires control dampers for certain applications. If applying for LEED certification, retain option, in first paragraph below, required by ASHRAE/IESNA 90.1-2004.

D. Install volume dampers at points on supply, return, and exhaust systems where branches extend from larger ducts. Where dampers are installed in ducts having duct liner, install dampers with hat channels of same depth as liner, and terminate liner with nosing at hat channel.

1. Coordinate subparagraphs below with Division 23 Section "Metal Ducts.

2. Install steel volume dampers in steel ducts.

3. Install aluminum volume dampers in aluminum ducts.

E. Set dampers to fully open position before testing, adjusting, and balancing.

3.02 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Operate dampers to verify full range of movement.

3.03 MEASUREMENT AND PAYMENT

A. Payment for “Air Duct Accessories”, as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for “**New Bathroom Structure**” and no additional payment or separate price will be paid therefor.

B. Payment for “Air Duct Accessories”, as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for “**New Meeting Room Structure**” and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 23 37 13 DIFFUSERS, REGISTERS, AND GRILLES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes ceiling and wall mounted diffusers, registers and grilles.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated, include the following:

1. Data Sheet: Indicate materials of construction, finish, and mounting details; and performance data including throw and drop, static-pressure drop, and noise ratings.
2. Diffuser, Register, and Grille Schedule: Indicate drawing designation, room location, quantity, model number, size, and accessories furnished.

PART 2 PRODUCTS

2.01 REGISTERS AND GRILLES

A. Register - Type 1

1. Basis of Design: Titus 301RL.
2. Manufacturers:
   a. Titus.
   b. Carnes.
   c. Krueger.
   d. Tuttle & Bailey.
3. Material: Aluminum.
4. Finish: Baked enamel, color selected by Architect.
5. Face Arrangement: Louvered.
6. Frame: 1-1/4 inches wide.
7. Mounting: Countersunk screw, Lay in.
8. Damper Type: Adjustable opposed blade assembly.

2.02 SOURCE QUALITY CONTROL

A. Verification of Performance: Rate diffusers, registers, and grilles according to ASHRAE 70, "Method of Testing for Rating the Performance of Air Outlets and Inlets."

PART 3 EXECUTION

3.01 INSTALLATION

A. Install diffusers, registers, and grilles level and plumb.

B. Drawings indicate general arrangement of ducts, fittings, and accessories. Air outlet and inlet locations have been indicated to achieve design requirements for air volume, noise criteria, airflow pattern, throw, and pressure drop. Make final locations where indicated, as much as practical. Where architectural features or

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other items conflict with installation, notify Architect for a determination of final location.

C. Install diffusers, registers, and grilles with airtight connections to ducts.

3.02 ADJUSTING

A. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

3.03 MEASUREMENT AND PAYMENT

A. Payment for “Diffusers Registers and Grills”, as they appear in the new bathroom, is considered as included in the contract lump sum cost paid for “**New Bathroom Structure**” and no additional payment or separate price will be paid therefor.

B. Payment for “Diffusers Registers and Grills”, as they appear in the new meeting room, is considered as included in the contract lump sum cost paid for “**New Meeting Room Structure**” and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 23 81 26 SPLIT-SYSTEM AIR-CONDITIONERS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes split-system heat-pump units consisting of separate evaporator-fan and compressor-condenser components.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

C. Operation and maintenance data.

D. Warranty: Sample of special warranty.

1.03 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. ASHRAE Compliance:

1. Fabricate and label refrigeration system to comply with ASHRAE 15, "Safety Standard for Refrigeration Systems."

2. Applicable requirements in ASHRAE 62.1-2004, Section 4 - "Outdoor Air Quality," Section 5 - "Systems and Equipment," Section 6 - " Procedures," and Section 7 - "Construction and System Start-Up."

C. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2004.

1.04 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of split-system air-conditioning units that fail in materials or workmanship within specified warranty period.

1. Warranty Period:

a. For Compressor: Five years from date of Substantial Completion.

b. For Parts: Five years from date of Substantial Completion.

c. For Labor: One year from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

CITY COUNCIL REFERENCE ONLY

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Carrier Corporation.

2. Trane; a business of American Standard companies.

2.02 INDOOR UNITS (5 TONS OR LESS)

A. Floor-Mounted, Evaporator-Fan Components:

1. Chassis: Galvanized steel with flanged edges, removable panels for servicing, and insulation on back of panel.

2. Insulation: Faced, glass-fiber duct liner.

3. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and thermal-expansion valve. Comply with ARI 210/240.

4. Electric Coil: Helical, nickel-chrome, resistance-wire heating elements; with refractory ceramic support bushings, automatic-reset thermal cutout, built-in magnetic contactors, manual-reset thermal cutout, airflow proving device, and one-time fuses in terminal box for overcurrent protection.

5. Fan: Forward-curved, double-width wheel of galvanized steel; directly connected to motor.

6. Fan Motors:

a. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements specified in Division 23 Section "Common Motor Requirements for HVAC Equipment."

b. Multitapped, multispeed with internal thermal protection and permanent lubrication.

c. Wiring Terminations: Connect motor to chassis wiring with plug connection.

7. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2004.

8. Condensate Drain Pans:

a. Fabricated with two percent slope in at least two planes to collect condensate from cooling coils (including coil piping connections, coil headers, and return bends) and humidifiers, and to direct water toward drain connection.

1). Length: Extend drain pan downstream from leaving face to comply with ASHRAE 62.1-2004.

2). Depth: A minimum of 2 inches (50 mm) deep.

b. Single-wall, stainless-steel sheet.

c. Drain Connection: Located at lowest point of pan and sized to prevent overflow. Terminate with threaded nipple on both ends of pan.

1). Minimum Connection Size: NPS 1.

9. Pan-Top Surface Coating: Asphaltic waterproofing compound.

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a. Air Filtration Section:

a. General Requirements for Air Filtration Section:

i. Comply with NFPA 90A.

ii. Minimum Arrestance: According to ASHRAE 52.1 and MERV according to ASHRAE 52.2.

iii. Filter-Holding Frames: Arranged for flat or angular orientation, with access doors. Filters shall be removable from one side or lifted out from access plenum.

b. Disposable Panel Filters:

i. 1) Factory-fabricated, flat-panel type.

ii. Thickness: 1 inch (25 mm).

iii. Initial Resistance: 0.2 inches wg).

iv. Recommended Final Resistance: 1.0 inches wg (Pa).

v. MERV according to ASHRAE 52.2: 8 minimum.

2.03 OUTDOOR UNITS (5 TONS OR LESS)

A. Air-Cooled, Compressor-Condenser Components:

1. Casing: Steel, finished with baked enamel, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.

2. Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation device. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.

a. Compressor Type: Scroll.

b. Two-speed compressor motor with manual-reset high-pressure switch and automatic-reset low-pressure switch.

c. Refrigerant Charge: R-410A.

d. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and liquid sub-cooler. Comply with ARI 210/240.

3. Heat-Pump Components: Reversing valve and low-temperature-air cutoff thermostat.

4. Fan: Aluminum-propeller type, directly connected to motor.

5. Motor: Permanently lubricated, with integral thermal-overload protection.

6. Low Ambient Kit: Permits operation down to 45 deg F.

7. Mounting Base: Polyethylene.

2.04 ACCESSORIES

A. Thermostat: Low voltage with sub-base to control compressor and evaporator fan.

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B. Automatic-reset timer to prevent rapid cycling of compressor.

C. Refrigerant Line Kits: Soft-annealed copper suction and liquid lines factory cleaned, dried, pressurized, and sealed; factory-insulated suction line with flared fittings at both ends.

D. Drain Hose: For condensate.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install units level and plumb.

B. Install evaporator-fan components using manufacturer's standard mounting devices securely fastened to building structure.

C. Install roof-mounted, compressor-condenser components on equipment supports. Anchor units to supports with removable, cadmium-plated fasteners.

3.02 CONNECTIONS

Duct Connections: Duct installation requirements are specified in Division 23 Section "Metal Ducts" Drawings indicate the general arrangement of ducts. Connect supply and return ducts to split-system air-conditioning units with flexible duct connectors. Flexible duct connectors are specified in Division 23 Section "Air Duct Accessories."

3.03 FIELD QUALITY CONTROL

A. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

B. Tests and Inspections:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.

3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

C. Remove and replace malfunctioning units and retest as specified above.

D. Prepare test and inspection reports

3.04 DEMONSTRATION

Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain units.

CITY COUNCIL REFERENCE ONLY

3.05 MEASUREMENT AND PAYMENT

Payment for “Split System Air Conditioners” is considered as included in the contract lump sum cost paid for “**New Meeting Room Structure**” and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

Division 25 – Integrated Automation (Not Used)

CITY COUNCIL REFERENCE ONLY

Division 26 – Electrical

SECTION 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL

PART 1 PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Sleeves for raceways and cables.
2. Sleeve seals.
3. Grout.
4. Common electrical installation requirements.

1.02 SUBMITTALS

A. Product Data: For sleeve seals.

PART 2 PRODUCTS

2.01 SLEEVES FOR RACEWAYS AND CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

C. Sleeves for Rectangular Openings: Galvanized sheet steel.

1. Minimum Metal Thickness:

a. For sleeve cross-section rectangle perimeter less than 50 inches (1270 mm) and no side more than 16 inches (400 mm), thickness shall be 0.052 inch (1.3 mm).

b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches (1270 mm) and 1 or more sides equal to, or more than, 16 inches (400 mm), thickness shall be 0.138 inch (3.5 mm).

2.02 SLEEVE SEALS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.

1. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:

2. Basis-of-Design Product: Subject to compliance with requirements, provide comparable product by one of the following:

a. Advance Products & Systems, Inc.

b. Calpico, Inc.

c. Metraflex Co.

CITY COUNCIL REFERENCE ONLY

d. Pipeline Seal and Insulator, Inc.

3. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.

4. Pressure Plates: Plastic or Carbon steel. Include two for each sealing element.

5. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.03 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, non-staining, mixed with water to consistency suitable for application and a 30-minute working time.

PART 3 EXECUTION

3.01 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

A. Comply with NECA 1.

B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.

C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.

D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.

E. Right of Way: Give to piping systems installed at a required slope.

3.02 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both surfaces of walls.

F. Extend sleeves installed in floors 2 inches (50 mm) above finished floor level.

CITY COUNCIL REFERENCE ONLY

G. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and raceway or cable, unless indicated otherwise.

H. Seal space outside of sleeves with grout for penetrations of concrete and masonry

1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.

I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants.".

J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with requirements in Division 07 Section "Penetration Firestopping."

K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.

L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.

M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

CITY COUNCIL REFERENCE ONLY

3.03 SLEEVE-SEAL INSTALLATION

A. Install to seal exterior wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.04 FIRESTOPPING

Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

3.05 MEASUREMENT AND PAYMENT

A. Payment for "**Common Work Results for Electrical**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Common Work Results for Electrical**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for

"**New Meeting Room**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 26 05 19 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS & CABLES

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the following:

1. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.
3. Sleeves and sleeve seals for cables.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Field quality-control test reports.

1.03 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 PRODUCTS

2.01 CONDUCTORS AND CABLES

A. Copper Conductors: Comply with NEMA WC 70.

B. Conductor Insulation: Comply with NEMA WC 70 for Types THW, THHN-THWN, XHHW.

C. Multi-Conductor Cable: Comply with NEMA WC 70 for armored cable, Type AC, metal-clad cable, Type MC with ground wire.

2.02 CONNECTORS AND SPLICES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems, Inc.
2. Hubbell Power Systems, Inc.
3. O-Z/Gedney; EGS Electrical Group LLC.
4. 3M; Electrical Products Division.
5. Tyco Electronics Corp.

CITY COUNCIL REFERENCE ONLY

C. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.03 SLEEVES FOR CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

C. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping.

2.04 SLEEVE SEALS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

C. Basis-of-Design Product: Subject to compliance with requirements, provide a comparable product by one of the following:

1. Advance Products & Systems, Inc.

2. Calpico, Inc.

3. Metraflex Co.

4. Pipeline Seal and Insulator, Inc.

D. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.

1. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.

2. Pressure Plates: Plastic, Carbon steel.

3. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Copper for feeders smaller than No. 4 AWG; copper or aluminum for feeders No. 4 AWG and larger. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.02 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Service Entrance: Type THHN-THWN, single conductors in raceway, Type XHHW, single conductors in raceway, Type MI.

B. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN-THWN, single conductors in raceway, Armored cable, Type AC, Metal-clad cable, Type MC.

C. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway, Armored cable, Type AC, Metal-clad cable, Type MC.

D. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.

E. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.

F. Class 1 Control Circuits: Type THHN-THWN, in raceway.

G. Class 2 Control Circuits: Type THHN-THWN, in raceway, Power-limited cable, concealed in building finishes.

3.03 INSTALLATION OF CONDUCTORS AND CABLES

A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.

B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

E. Support cables according to Division 26 Sections "Hangers and Supports for Electrical Systems."

F. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."

G. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

H. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

1. Use oxide inhibitor in each splice and tap conductor for aluminum conductors.

I. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

CITY COUNCIL REFERENCE ONLY

3.04 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

D. Cut sleeves to length for mounting flush with both wall surfaces.

E. Extend sleeves installed in floors 2 inches (50 mm) above finished floor level.

F. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and cable unless sleeve seal is to be installed.

G. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.

H. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and cable, using joint sealant appropriate for size, depth, and location of joint according to Division 07 Section "Joint Sealants."

I. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at cable penetrations. Install sleeves and seal with firestop materials according to Division 07 Section "Penetration Firestopping."

J. Roof-Penetration Sleeves: Seal penetration of individual cables with flexible boot-type flashing units applied in coordination with roofing work.

K. Above Ground Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeves to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.

L. Underground Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between cable and sleeve for installing mechanical sleeve seals.

CITY COUNCIL REFERENCE ONLY

3.05 SLEEVE-SEAL INSTALLATION

A. Install to seal underground exterior-wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for cable material and size. Position cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.06 FIRESTOPPING

Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Division 07 Section "Penetration Firestopping."

3.07 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

B. Tests and Inspections:

1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors, and conductors feeding the following critical equipment and services for compliance with requirements.

2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

3. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each splice in cables and conductors No. 3 AWG and larger. Remove box and equipment covers so splices are accessible to portable scanner.

a. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each splice 11 months after date of Substantial Completion.

b. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

c. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

C. Test Reports: Prepare a written report to record the following:

1. Test procedures used.

2. Test results that comply with requirements.

3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

D. Remove and replace malfunctioning units and retest as specified above.

CITY COUNCIL REFERENCE ONLY

3.08 MEASUREMENT AND PAYMENT

Payment for “Low Voltage Conductors and Cables”, as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for “**New Bathroom Structure**” and no additional payment or separate price will be paid therefor.

Payment for “Low Voltage Conductors and Cables”, as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for “**New Meeting Room Structure**” and no additional payment or separate price will be paid therefor.

END OF SECTION

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CITY COUNCIL REFERENCE ONLY

SECTION 26 05 26 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Grounding systems and equipment.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Field quality-control reports.

1.03 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 PRODUCTS

2.01 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.

2. Stranded Conductors: ASTM B 8.

3. Tinned Conductors: ASTM B 33.

4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch (6 mm) in diameter.

5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.

6. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.

7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.

2.02 CONNECTORS

A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, pressure type with at least two bolts.

CITY COUNCIL REFERENCE ONLY

1. Pipe Connectors: Clamp type, sized for pipe.

C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.03 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad 5/8 by 96 inches in diameter.

PART 3 EXECUTION

3.01 APPLICATIONS

A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.

B. Underground Grounding Conductors: Install bare copper conductor, No. 2/0 AWG minimum. Bury at least 24 inches (600 mm) below grade.

C. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.

D. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.

2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.

3. Connections to Ground Rods at Test Wells: Bolted connectors.

4. Connections to Structural Steel: Welded connectors.

3.02 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:

1. Feeders and branch circuits.

2. Lighting circuits.

3. Receptacle circuits.

4. Single-phase motor and appliance branch circuits.

5. Three-phase motor and appliance branch circuits.

6. Flexible raceway runs.

7. Armored and metal-clad cable runs.

8. Busway Supply Circuits: Install insulated equipment grounding conductor from grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.

CITY COUNCIL REFERENCE ONLY

9. Computer and Rack-Mounted Electronic Equipment Circuits: Install insulated equipment grounding conductor in branch-circuit runs from equipment-area power panels and power-distribution units.

10. X-Ray Equipment Circuits: Install insulated equipment grounding conductor in circuits supplying x-ray equipment.

3.03 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Ground Rods: Drive rods until tops are 2 inches (50 mm) below finished floor or final grade unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.

2. For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.

C. Test Wells: Ground rod driven through drilled hole in bottom of handhole. Handholes are specified in Division 26 Section "Underground Ducts and Raceways for Electrical Systems," and shall be at least 12 inches (300 mm) deep, with cover.

1. Test Wells: Install at least one test well for each service unless otherwise indicated. Install at the ground rod electrically closest to service entrance. Set top of test well flush with finished grade or floor.

D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.

2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.

3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

E. Grounding and Bonding for Piping:

1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.

CITY COUNCIL REFERENCE ONLY

2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.

3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

F. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install bonding jumper to bond across flexible duct connections to achieve continuity.

3.04 LABELING

A. Comply with requirements in Division 26 Section "Identification for Electrical Systems" Article for instruction signs. The label or its text shall be green.

B. Install labels at the telecommunications bonding conductor and grounding equalizer and at the grounding electrode conductor where exposed.

1. Label Text: "If this connector or cable is loose or if it must be removed for any reason, notify the facility manager."

3.05 FIELD QUALITY CONTROL

A. Perform the following tests and inspections and prepare test reports:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.

2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.

3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at ground test wells. Make tests at ground rods before any conductors are connected.

3.06 MEASUREMENT AND PAYMENT

Payment for "**Grounding and Bonding**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

Payment for "**Grounding and Bonding**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 26 05 29 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:

1. Hangers and supports for electrical equipment and systems.

2. Construction requirements for concrete bases.

1.02 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.

C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

D. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.03 SUBMITTALS

A. Product Data: For steel slotted support systems.

B. Shop Drawings: Show fabrication and installation details and include calculations for the following:

1. Trapeze hangers. Include Product Data for components.

2. Steel slotted channel systems. Include Product Data for components.

3. Equipment supports.

C. Welding certificates.

1.04 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Comply with NFPA 70.

PART 2 PRODUCTS

2.01 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

CITY COUNCIL REFERENCE ONLY

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Allied Tube & Conduit.

   b. Cooper B-Line, Inc.; a division of Cooper Industries.

   c. ERICO International Corporation.

   d. GS Metals Corp.

   e. Thomas & Betts Corporation.

   f. Unistrut; Tyco International, Ltd.

   g. Wesanco, Inc.

3. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.

4. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.

5. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.

6. Channel Dimensions: Selected for applicable load criteria.

B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

C. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

CITY COUNCIL REFERENCE ONLY

2.02 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

B. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates.

PART 3 EXECUTION

3.01 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NECA 1, where its Table 1 lists maximum spacings less than stated in NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.

C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with two-bolt conduit clamps.

D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch (38-mm) and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

CITY COUNCIL REFERENCE ONLY

3.02 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.

2. To New Concrete: Bolt to concrete inserts.

3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.

4. To Existing Concrete: Expansion anchor fasteners.

5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.

6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts, Spring-tension clamps.

7. To Light Steel: Sheet metal screws.

8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.03 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).

B. Touchup: Comply with requirements in Division 09 for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

3.04 MEASUREMENT AND PAYMENT

A. Payment for "**Hangers and Supports**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Hangers and Supports**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 26 05 33 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1.02 SUBMITTALS

A. Product Data: For surface raceways, wireways and fittings, hinged-cover enclosures, and cabinets.

B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, details, and attachments to other work.

1.03 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 PRODUCTS

2.01 METAL CONDUIT AND TUBING

A. Rigid Steel Conduit: ANSI C80.1.

B. IMC: ANSI C80.6.

C. EMT: ANSI C80.3

D. FMC: Zinc-coated steel.

E. LFMC: Flexible steel conduit with PVC jacket.

F. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.
   1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.
   2. Fittings for EMT: Steel or die-cast, set-screw or compression type.

2.02 NONMETALLIC CONDUIT AND TUBING

A. ENT: NEMA TC 13.

B. RNC: NEMA TC 2, Type EPC-40-PVC, unless otherwise indicated.

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C. LFNC: UL 1660.

D. Fittings for ENT and RNC: NEMA TC 3; match to conduit or tubing type and material.

E. Fittings for LFNC: UL 514B.

2.03 METAL WIREWAYS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Cooper B-Line, Inc.
2. Hoffman.
3. Square D; Schneider Electric.

C. Description: Sheet metal sized and shaped as indicated, NEMA 250, Type 1, unless otherwise indicated.

D. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

E. Wireway Covers: Screw-cover type.

F. Finish: Manufacturer's standard enamel finish.

2.04 NONMETALLIC WIREWAYS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Hoffman.
2. Lamson & Sessions; Carlon Electrical Products.

C. Description: PVC plastic, extruded and fabricated to size and shape indicated, with snap-on cover and mechanically coupled connections with plastic fasteners.

D. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

BOXES, ENCLOSURES, AND CABINETS

A. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

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B. Cast-Metal Outlet and Device Boxes: NEMA FB 1, aluminum, Type FD, with gasketed cover.

C. Nonmetallic Outlet and Device Boxes: NEMA OS 2.

D. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

E. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, galvanized, cast iron with gasketed cover.

F. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.
   1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
   2. Nonmetallic Enclosures: Plastic.

G. Cabinets:
   1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
   2. Hinged door in front cover with flush latch and concealed hinge.
   3. Key latch to match panelboards.
   4. Metal barriers to separate wiring of different systems and voltage.
   5. Accessory feet where required for freestanding equipment.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:

   1. Exposed Conduit: Rigid steel conduit, IMC, RNC, Type EPC-40-PVC.

   2. Concealed Conduit, Aboveground: Rigid steel conduit, IMC, EMT, RNC, Type EPC-40-PVC.

   3. Underground Conduit: RNC, Type EPC-40-PVC, direct buried.

   4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFNC.

   5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.

B. Comply with the following indoor applications, unless otherwise indicated:

   1. Exposed, Not Subject to Physical Damage: EMT.

   2. Exposed, Not Subject to Severe Physical Damage: EMT.

   3. Exposed and Subject to Severe Physical Damage.

   4. Concealed in Ceilings and Interior Walls and Partitions: EMT.

   5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.

   6. Damp or Wet Locations: Rigid steel conduit, IMC.

7. Raceways for Optical Fiber or Communications Cable: EMT.

8. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 3R, nonmetallic in damp or wet locations.

C. Minimum Raceway Size: 3/4-inch (21-mm) trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.

3.02 INSTALLATION

A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.

B. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Complete raceway installation before starting conductor installation.

D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."

E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.

F. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.

G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.

H. Raceways Embedded in Slabs:

1. Run conduit larger than 1-inch (27-mm) trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.

2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.

3. Change from ENT to RNC, Type EPC-40-PVC, rigid steel conduit, or IMC before rising above the floor.

I. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.

J. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire.

K. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.

2. Where otherwise required by NFPA 70.

L. Expansion-Joint Fittings for RNC: Install in each run of aboveground conduit that is located where environmental temperature change may exceed 30 deg F (17 deg C), and that has straight-run length that exceeds 25 feet (7.6 m).

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1. Install expansion-joint fittings for each of the following locations, and provide type and quantity of fittings that accommodate temperature change listed for location:

   a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F (70 deg C) temperature change.

   b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F (86 deg C) temperature change.

   c. Indoor Spaces: Connected with the Outdoors without Physical Separation: 125 deg F (70 deg C) temperature change.

   d. Attics: 135 deg F (75 deg C) temperature change.

2. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F (0.06 mm per meter of length of straight run per deg C) of temperature change.

3. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at the time of installation.

M. Flexible Conduit Connections: Use maximum of 72 inches (1830 mm) of flexible conduit for recessed and semi-recessed lighting fixtures, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

1. Use LFMC in damp or wet locations subject to severe physical damage.

2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.

N. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall.

O. Set metal floor boxes level and flush with finished floor surface.

P. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.

CITY COUNCIL REFERENCE ONLY

3.03 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:

1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Division 31 Section "Earth Moving" for pipe less than 6 inches (150 mm) in nominal diameter.

2. Install backfill as specified in Division 31 Section "Earth Moving."

3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches (300 mm) of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Division 31 Section "Earth Moving."

4. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through the floor, unless otherwise indicated. Encase elbows for stub-up ducts throughout the length of the elbow.

5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.

   a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches (75 mm) of concrete.

   b. For stub-ups at equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches (1500 mm) from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.

   c. Warning Planks: Bury warning planks approximately 12 inches (300 mm) above direct-buried conduits, placing them 24 inches (600 mm) o.c. Align planks along the width and along the centerline of conduit.

3.04 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

3.05 MEASUREMENT AND PAYMENT

Payment for “Raceways and Boxes”, as they appear for the new bathroom, is considered as included in the contract lump sum cost paid for “**New Bathroom Structure**” and no additional payment or separate price will be paid therefor.

Payment for “Raceways and Boxes”, as they appear for the new meeting room, is considered as included in the contract lump sum cost paid for “**New Meeting Room Structure**” and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Identification for raceways.
2. Identification for conductors.
3. Underground-line warning tape.
4. Warning labels and signs.
5. Instruction signs.
6. Equipment identification labels.
7. Miscellaneous identification products.

1.02 SUBMITTALS

A. Product Data: For each electrical identification product indicated.

1.03 QUALITY ASSURANCE

A. Comply with ANSI A13.1.

B. Comply with NFPA 70.

C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.

D. Comply with ANSI Z535.4 for safety signs and labels.

E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

2.01 POWER RACEWAY IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.

B. Colors for Raceways Carrying Circuits at 600 V or Less:
1. Black letters on an orange field.
2. Legend: Indicate voltage and system or service type.

C. Self-Adhesive Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

D. Snap-Around Labels for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized

to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

E. Snap-Around, Color-Coding Bands for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches (50 mm) long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

F. Write-On Tags: Polyester tag, 0.010 inch (0.25 mm) thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
   1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
   2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.02 ARMORED AND METAL-CLAD CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Colors for Raceways Carrying Circuits at 600 V and Less:
   1. Black letters on an orange field.
   2. Legend: Indicate voltage and system or service type.

C. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

D. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; 2 inches (50 mm) wide; compounded for outdoor use.

2.03 CONDUCTOR IDENTIFICATION MATERIALS

A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils (0.08 mm) thick by 1 to 2 inches (25 to 50 mm) wide.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

C. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

D. Write-On Tags: Polyester tag, 0.010 inch (0.25 mm) thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
   1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
   2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.04 FLOOR MARKING TAPE

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A. 2-inch- (50-mm-) wide, 5-mil (0.125-mm) pressure-sensitive vinyl tape, with black and white stripes and clear vinyl overlay.

2.05 UNDERGROUND-LINE WARNING TAPE

A. Tape:
1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
2. Printing on tape shall be permanent and shall not be damaged by burial operations.
3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.

B. Color and Printing:
1. Comply with ANSI Z535.1 through ANSI Z535.5.
2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE.
3. Inscriptions for Orange-Colored Tapes: TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE.

C. Tag: Type I:
1. Pigmented polyolefin, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
2. Thickness: 4 mils (0.1 mm).
3. Weight: 18.5 lb/1000 sq. ft. (9.0 kg/100 sq. m).
4. 3-Inch (75-mm) Tensile According to ASTM D 882: 30 lbf (133.4 N), and 2500 psi (17.2 MPa).

D. Tag: Type ID:
1. Detectable three-layer laminate, consisting of a printed pigmented polyolefin film, a solid aluminum-foil core, and a clear protective film that allows inspection of the continuity of the conductive core, bright-colored, [continuous-printed on one side with the inscription of the utility,]compounded for direct-burial service.
2. Overall Thickness: 5 mils (0.125 mm).
3. Foil Core Thickness: 0.35 mil (0.00889 mm).
4. Weight: 28 lb/1000 sq. ft. (13.7 kg/100 sq. m).
5. 3-Inch (75-mm) Tensile According to ASTM D 882: 70 lbf (311.3 N), and 4600 psi (31.7 MPa).

CITY COUNCIL REFERENCE ONLY

2.06 WARNING LABELS AND SIGNS

A. Comply with NFPA 70 and 29 CFR 1910.145.

B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.

C. Baked-Enamel Warning Signs:
1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
2. 1/4-inch (6.4-mm) grommets in corners for mounting.
3. Nominal size, 7 by 10 inches (180 by 250 mm).

D. Metal-Backed, Butyrate Warning Signs:
   1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch (1-mm) galvanized-steel backing; and with colors, legend, and size required for application.
   2. 1/4-inch (6.4-mm) grommets in corners for mounting.
   3. Nominal size, 10 by 14 inches (250 by 360 mm).

E. Warning label and sign shall include, but are not limited to, the following legends:
   1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
   2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES (915 MM)."

2.07 INSTRUCTION SIGNS

A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch (1.6 mm) thick for signs up to 20 sq. inches (129 sq. cm) and 1/8 inch (3.2 mm) thick for larger sizes.
   1. Engraved legend with black letters on white face.
   2. Punched or drilled for mechanical fasteners.
   3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

B. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch (10 mm).

C. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch (10 mm). Overlay shall provide a weatherproof and UV-resistant seal for label.

2.08 EQUIPMENT IDENTIFICATION LABELS

A. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch (10 mm). Overlay shall provide a weatherproof and UV-resistant seal for label.

B. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch (10 mm).

C. Stenciled Legend: In non-fading, waterproof, black ink or paint. Minimum letter height shall be 1 inch (25 mm)

2.09 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in Division 09 painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).

B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 INSTALLATION

A. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

B. Apply identification devices to surfaces that require finish after completing finish work.

C. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.

D. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.

E. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot (15-m) maximum intervals in straight runs, and at 25-foot (7.6-m) maximum intervals in congested areas.

F. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trench exceeds 16 inches (400 mm) overall.

G. Painted Identification: Comply with requirements in Division 09 painting Sections for surface preparation and paint application.

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3.02 IDENTIFICATION SCHEDULE

A. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits More Than 30A, and 120V to ground: Install labels at 10-foot (3-m) maximum intervals.
   1. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage. System legends shall be as follows:
   2. Emergency Power.
   3. Power.
   4. UPS.

B. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.

   1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service, feeder and branch-circuit conductors.

      a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.

b. Colors for 240/120-V Circuits:
   i. Phase A: Black.
   ii. Phase B: Red.

c. Colors for 480/277-V Circuits:
   i. Phase A: Brown.
   ii. Phase B: Orange.
   iii. Phase C: Yellow.

d. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches (150 mm) from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

C. Install instructional sign including the color code for grounded and ungrounded conductors using adhesive film type labels.

D. Conductors to Be Extended in the Future: Attach marker tape to conductors and list source.

E. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.

F. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.

1. Limit use of underground-line warning tape to direct-buried cables.
2. Install underground-line warning tape for both direct-buried cables and cables in raceway.

G. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.

H. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive warning labels.

1. Comply with 29 CFR 1910.145.
2. Identify system voltage with black letters on an orange background.
3. Apply to exterior of door, cover, or other access.
4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:

   a. Power transfer switches.

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b. Controls with external control power connections.

I. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.

J. Emergency Operating Instruction Signs: Install instruction signs with white legend on a red background with minimum 3/8-inch- (10-mm-) high letters for emergency instructions at equipment used for power transfer.

K. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

1. Labeling Instructions:

a. Indoor Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high label; where two lines of text are required, use labels 2 inches (50 mm) high.

b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.

c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.

d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

CITY COUNCIL REFERENCE ONLY

3.03 MEASUREMENT AND PAYMENT

A. Payment for “Electrical Identification”, as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for “**New Bathroom Structure**” and no additional payment or separate price will be paid therefor.

B. Payment for “Electrical Identification”, as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for “**New Meeting Room Structure**” and no additional payment or separate price will be paid therefor.

END OF SECTION

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CITY COUNCIL REFERENCE ONLY

SECTION 26 22 13 LOW VOLTAGE TRANSFORMERS

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the following types of dry-type transformers rated 600 V and less, with capacities up to 1000 Kva.

1. Distribution transformers.

1.02 SUBMITTALS

A. Product Data: For each product indicated.

B. Shop Drawings: Indicate dimensions and weights.

1. Wiring Diagrams: Power, signal, and control wiring.

C. Field quality-control test reports.

D. Operation and maintenance data.

1.03 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with IEEE C57.12.91, "Test Code for Dry-Type Distribution and Power Transformers."

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ACME Electric Corporation; Power Distribution Products Division.

2. Eaton Electrical Inc.; Cutler-Hammer Products.

3. General Electric Company.

4. Siemens Energy & Automation, Inc.

5. Square D; Schneider Electric.

2.02 GENERAL TRANSFORMER REQUIREMENTS

A. Description: Factory-assembled and -tested, air-cooled units for 60-Hz service.

B. Cores: Grain-oriented, non-aging silicon steel.

C. Coils: Continuous windings without splices except for taps.

1. Internal Coil Connections: Brazed or pressure type.

2. Coil Material: Copper

2.03 DISTRIBUTION TRANSFORMERS

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A. Comply with NEMA ST 20, and list and label as complying with UL 1561.

B. Cores: One leg per phase.

C. Enclosure: Ventilated NEMA 250, Type 2.

1. Core and coil shall be encapsulated within resin compound, sealing out moisture and air.

D. Transformer Enclosure Finish: Comply with NEMA 250.

1. Finish Color: ANSI 61 gray.

E. Taps for Transformers 7.5 to 24 kVA: Two 5 percent taps below rated voltage

F. Insulation Class: 220 deg C, UL-component-recognized insulation system with a maximum of 115 deg C rise above 40 deg C ambient temperature.

G. Wall Brackets: Manufacturer's standard brackets.

2.04 IDENTIFICATION DEVICES

Nameplates: Engraved, laminated-plastic or metal nameplate. Nameplates are specified in Division 26 Section "Identification for Electrical Systems."

PART 3 EXECUTION

3.01 INSTALLATION

A. Install wall-mounting transformers level and plumb with wall brackets fabricated by transformer manufacturer.

1. Brace wall-mounting transformers as specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

B. Construct concrete bases and anchor floor-mounting transformers according to manufacturer's written instruction and requirements in Division 26 Section "Hangers and Supports for Electrical Systems."

3.02 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

3.03 ADJUSTING

A. Adjust transformer taps to provide optimum voltage conditions at secondary terminals. Optimum is defined as not exceeding nameplate voltage plus 10 percent and not being lower than nameplate voltage minus 3 percent at maximum load conditions. Submit recording and tap settings as test results.

B. Output Settings Report: Prepare a written report recording output voltages and tap settings.

3.04 MEASUREMENT AND PAYMENT

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A. Payment for “Low Voltage Transformer”, as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for “**New Bathroom Structure**” and no additional payment or separate price will be paid therefor.

B. Payment for “Low Voltage Transformer”, as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for “**New Meeting Room Structure**” and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 26 24 16 PANELBOARDS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes distribution panelboards and lighting and appliance branch-circuit panelboards.

1.02 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Panelboards shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

1.03 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For each panelboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.

2. Detail enclosure types and details for types other than NEMA 250, Type 1.

3. Detail bus configuration, current, and voltage ratings.

4. Short-circuit current rating of panelboards and overcurrent protective devices.

5. Include evidence of NRTL listing for series rating of installed devices.

6. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.

7. Include wiring diagrams for power, signal, and control wiring.

8. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards.

C. Seismic Qualification Certificates: Submit certification that panelboards, overcurrent protective devices, accessories, and components will withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

D. Field quality-control reports.

E. Panelboard schedules for installation in panelboards.

F. Operation and maintenance data.

1.04 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NEMA PB 1.

C. Comply with NFPA 70.

CITY COUNCIL REFERENCE ONLY

1.05 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS FOR PANELBOARDS

A. Fabricate and test panelboards according to IEEE 344 to withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

B. Enclosures: Flush- and surface-mounted cabinets.

1. Rated for environmental conditions at installed location.

a. Indoor Dry and Clean Locations: NEMA 250, Type 1.

b. Outdoor Locations: NEMA 250, Type 3R.

c. Wet location Areas: NEMA 250, Type 3R.

d. Other Wet or Damp Indoor Locations: NEMA 250, Type 3R.

2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.

3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.

4. Directory Card: Inside panelboard door, mounted in transparent card holder.

C. Incoming Mains Location: Top and bottom.

D. Phase, Neutral, and Ground Buses: Tin-plated aluminum.

E. Conductor Connectors: Suitable for use with conductor material and sizes.

1. Material: Tin-plated aluminum.

2. Main and Neutral Lugs: Mechanical type.

3. Ground Lugs and Bus Configured Terminators: Mechanical type.

4. Feed-Through Lugs: Mechanical type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.

5. Subfeed Lugs: Mechanical type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.

F. Service Equipment Label: NRTL labeled for use as service equipment for panelboards with one or more main service disconnecting and overcurrent protective devices.

G. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.

H. Panelboard Short-Circuit Current Rating: Rated for series-connected system with integral or remote upstream overcurrent protective devices and labeled by

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an NRTL. Include size and type of allowable upstream and branch devices, and listed and labeled for series-connected short-circuit rating by an NRTL.

I. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.02 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.

2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.

3. Siemens Energy & Automation, Inc.

4. Square D; a brand of Schneider Electric.

a. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.

b. Mains: Circuit breaker, lugs only.

c. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

d. Contactors in Main Bus: NEMA ICS 2, Class A, mechanically held, general-purpose controller, with same short-circuit interrupting rating as panelboard.

5. External Control-Power Source: 120-V branch circuit.

a. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

b. Column-Type Panelboards: Narrow gutter extension, with cover, to overhead junction box equipped with ground and neutral terminal buses.

2.03 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.

2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.

3. Siemens Energy & Automation, Inc.

4. Square D; a brand of Schneider Electric.

C. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with series-connected rating to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short

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circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

2. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).

3. Arc-Fault Circuit Interrupter (AFCI) Circuit Breakers: Comply with UL 1699; 120/240-V, single-pole configuration.

4. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:

a. Standard frame sizes, trip ratings, and number of poles.

b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.

c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.

d. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.

e. Communication Capability: Circuit-breaker-mounted communication module with functions and features compatible with power monitoring and control system specified in Division 26 Section "Electrical Power Monitoring and Control."

f. Shunt Trip: 24V trip coil energized from separate circuit, set to trip at 75 percent of rated voltage.

g. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in on or off position.

h. Handle Clamp: Loose attachment, for holding circuit-breaker handle in on position.

D. Fused Switch: NEMA KS 1, Type HD; clips to accommodate specified fuses; lockable handle.

1. Fuses, and Spare-Fuse Cabinet: Comply with requirements specified in Division 26 Section "Fuses."

2.04 ACCESSORY COMPONENTS AND FEATURES

A. Portable Test Set: For testing functions of solid-state trip devices without removing from panelboard. Include relay and meter test plugs suitable for testing panelboard meters and switchboard class relays.

PART 3 EXECUTION

3.01 INSTALLATION

A. Receive, inspect, handle, store and install panelboards and accessories according to NEMA PB 1.1.

B. Comply with mounting and anchoring requirements specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

C. Mount top of trim 90 inches (2286 mm) above finished floor unless otherwise indicated.

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D. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.

E. Install overcurrent protective devices and controllers not already factory installed.

1. Set field-adjustable, circuit-breaker trip ranges.

F. Install filler plates in unused spaces.

G. Arrange conductors in gutters into groups and bundle and wrap with wire ties.

H. Comply with NECA 1.

3.02 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Division 26 Section "Identification for Electrical Systems."

B. Create a directory to indicate installed circuit loads and incorporating Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.

C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.03 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.

2. Test continuity of each circuit.

a. Tests and Inspections:

3. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

4. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

C. Panelboards will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

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3.04 MEASUREMENT AND PAYMENT

A. Payment for "**Panel Boards**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Panel Boards**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 26 27 26 WIRING DEVICES

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the following:

1. Receptacles, receptacles with integral GFCI, and associated device plates.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.

C. Samples: One for each type of device and wall plate specified, in each color specified.

D. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing label warnings and instruction manuals that include labeling conditions.

1.03 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:

1. Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).
2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
3. Leviton Mfg. Company Inc. (Leviton).
4. Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).

2.02 STRAIGHT BLADE RECEPTACLES

A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.

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1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

2. Products: Subject to compliance with requirements, provide one of the following:

   a. Cooper; 5351 (single), 5352 (duplex).
   b. Hubbell; HBL5351 (single), CR5352 (duplex).
   c. Leviton; 5891 (single), 5352 (duplex).
   d. Pass & Seymour; 5381 (single), 5352 (duplex).

2.03 GFCI RECEPTACLES

A. General Description: Straight blade, feed-through type. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.

B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

2. Products: Subject to compliance with requirements, provide one of the following:

   a. Cooper; GF20.
   b. Pass & Seymour; 2084.

2.04 SNAP SWITCHES

A. Comply with NEMA WD 1 and UL 20.

B. Switches, 120/277 V, 20 A:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

2. Products: Subject to compliance with requirements, provide one of the following:

   a. Cooper; 2221 (single pole), 2222 (two pole), 2223 (three way), 2224 (four way).

   b. Hubbell; CS1221 (single pole), CS1222 (two pole), CS1223 (three way), CS1224 (four way).

   c. Leviton; 1221-2 (single pole), 1222-2 (two pole), 1223-2 (three way), 1224-2 (four way).

   d. Pass & Seymour; 20AC1 (single pole), 20AC2 (two pole), 20AC3 (three way), 20AC4 (four way).

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2.05 WALL PLATES

A. Single and combination types to match corresponding wiring devices.

1. Plate-Securing Screws: Metal with head color to match plate finish.

2. Material for Finished Spaces: Smooth, high-impact thermoplastic.

3. Material for Unfinished Spaces: Smooth, high-impact thermoplastic.

4. Material for Damp Locations: Thermoplastic with spring-loaded lift cover, and listed and labeled for use in "wet locations."

B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant, thermoplastic with lockable cover.

2.06 FINISHES

A. Color: Wiring device catalog numbers in Section Text do not designate device color.

1. Wiring Devices Connected to Normal Power System: Gray unless otherwise indicated or required by NFPA 70 or device listing.

2. Wiring Devices Connected to Emergency Power System: Red.

3. TVSS Devices: Blue.

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PART 3 EXECUTION

3.01 INSTALLATION

A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.

B. Coordination with Other Trades:

1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
4. Install wiring devices after all wall preparation, including painting, is complete.

C. Conductors:

1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
4. Existing Conductors:
   a. Cut back and pigtail, or replace all damaged conductors.

b. Straighten conductors that remain and remove corrosion and foreign matter.
c. Pigtailing existing conductors is permitted provided the outlet box is large enough.

D. Device Installation:

1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles down, and on horizontally mounted receptacles to the right.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

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3.02 IDENTIFICATION

A. Comply with Division 26 Section "Identification for Electrical Systems."

B. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with black lettering on face of plate, and durable wire markers or tags inside outlet boxes.

3.03 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

1. Test Instruments: Use instruments that comply with UL 1436.

2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.

B. Tests for Convenience Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.

2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.

3. Ground Impedance: Values of up to 2 ohms are acceptable.

4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.

5. Using the test plug, verify that the device and its outlet box are securely mounted.

6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new, and retest as specified above.

3.04 MEASUREMENT AND PAYMENT

A. Payment for "**Wiring Devices**", as it appears in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "**Wiring Devices**", as it appears in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

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SECTION 26 51 00 INTERIOR LIGHTING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Interior lighting fixtures, lamps, and ballasts.
2. Emergency lighting units.
3. Exit signs.
4. Lighting fixture supports.

B. Related Sections:

1. Division 26 Section "Lighting Control Devices" for occupancy sensors.

1.03 DEFINITIONS

A. BF: Ballast factor.

B. CRI: Color-rendering index.

C. CU: Coefficient of utilization.

D. HID: High-intensity discharge.

E. LER: Luminaire efficacy rating.

F. Luminaire: Complete lighting fixture, including ballast housing if provided.

G. RCR: Room cavity ratio.

1.04 SUBMITTALS

A. Index: Typed index listing Luminaire type designation, Luminaire manufacturer, complete catalog number, quantity of lamps and ballasts to be provided, type lens modifications, and accessories. Provide separate index for lamps that list manufacturer and complete catalog number for each lamp used.

B. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, finishes, and the following:

1. Physical description of lighting fixture including dimensions.
2. Ballast.
3. Energy-efficiency data.
4. Life, output, and energy-efficiency data for lamps.
5. Photometric data, in IESNA format, based on laboratory tests of each lighting fixture type, outfitted with lamps, ballasts, and accessories

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identical to those indicated for the lighting fixture as applied in this Project.

a. Photometric data shall be certified by a manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program (NVLAP) for Energy Efficient Lighting Products.

C. Shop Drawings: Show details of unstandard or custom lighting fixtures. Indicate dimensions, weights, method of field assembly, components, features and accessories.

1. Wiring Diagrams: Power and control wiring.

D. Samples for Verification: Interior lighting fixtures designated for sample submission in Interior Lighting Fixture Schedule. Each sample shall include the following:

1. Lamps: Specified units installed.

2. Accessories: Cords and plugs.

E. Qualification Data: For agencies providing photometric data for lighting fixtures.

F. Field quality-control test reports.

G. Operation and Maintenance Data: For lighting equipment and fixtures to include in emergency, operation, and maintenance manuals.

H. Warranties: Special warranties specified in this Section.

CITY COUNCIL REFERENCE ONLY

1.05 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NFPA 70.

1.06 COORDINATION

A. Coordinate layout and installation of lighting fixtures and suspension system with other construction that penetrates ceilings or is supported by them, including HVAC equipment, fire-suppression system, and partition assemblies.

1.07 WARRANTY

A. Special Warranty for Ballasts: Manufacturer's standard form in which ballast manufacturer agrees to repair or replace ballasts that fail in materials or workmanship within specified warranty period.

1. Warranty Period for Electronic Ballasts: Five years from date of Substantial Completion.

2. Warranty Period for Electromagnetic Ballasts: Three years from date of Substantial Completion.

1.08 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Lamps: 10 for every 100 of each type and rating installed. Furnish at least one of each type.

2. Plastic Diffusers and Lenses: 1 for every 100 of each type and rating installed. Furnish at least one of each type.

3. Ballasts: 1 for every 100 of each type and rating installed. Furnish at least one of each type.

4. Globes and Guards: 1 for every 20 of each type and rating installed. Furnish at least one of each type.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Lighting Fixture Schedule where titles below are column or row headings that introduce lists, the following requirements apply to product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.02 GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS

A. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.

B. Retain one or more of first three paragraphs below that require compliance with the listed LER. See Editing Instruction No. 5 in the Evaluations for guidance on specifying LER. The numeric value of LER is specified in the Interior Lighting Fixture Schedule on Drawings.

C. Incandescent Fixtures: Comply with UL 1598. Where LER is specified, test according to NEMA LE 5A.

D. Fluorescent Fixtures: Comply with UL 1598. Where LER is specified, test according to NEMA LE 5 and NEMA LE 5A as applicable.

E. Metal Parts: Free of burrs and sharp corners and edges.

F. Sheet Metal Components: Steel unless otherwise indicated. Form and support to prevent warping and sagging.

G. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other

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components from falling accidentally during relamping and when secured in operating position.

H. Reflecting surfaces shall have minimum reflectance as follows, unless otherwise noted.
   1. White surfaces: 85 percent.
   2. Specular Surfaces: 83 percent.
   3. Diffusing Specular Surfaces: 75 percent.

I. Plastic Diffusers, Globes and Covers:
   1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
      a. Lens Thickness: At least 0.125 inch (3.175 mm) minimum unless otherwise indicated.
      b. UV stabilized.
   2. Plastic diffusers, covers, and globes shall be classified as Class A, in accordance with ASTM E84, with a flame spread index of 0.25 and a smoke developed index of 0-450.
   3. Glass: Annealed crystal glass unless otherwise indicated.

2.03 BALLASTS FOR LINEAR FLUORESCENT LAMPS

A. Electronic Ballasts: Comply with ANSI C82.11; rapid start, unless otherwise indicated, and designed for type and quantity of lamps served. Ballasts shall be designed for full light output unless dimmer or bi-level control is indicated.
   1. Sound Rating: Class A.
   2. See Evaluations for discussion on harmonic considerations.
   3. Total Harmonic Distortion Rating: Less than 20 percent.
   4. Transient Voltage Protection: IEEE C62.41.1, Category A or better.
   5. Operating Frequency: 20 kHz or higher.
   6. Lamp Current Crest Factor: 1.5 or less.
   7. BF: 0.85 or higher.
   8. Power Factor: 0.98 or higher.

B. Electronic Programmed-Start Ballasts for T5HO lamps: Comply with ANSI C82.11and the following:
   1. Lamp end-of-life detection and shutdown circuit for T5 diameter lamps.
   2. Automatic lamp starting after lamp replacement.
   3. Sound Rating: A.
   4. Total Harmonic Distortion Rating: Less then 20 percent.
   5. Transient Voltage Protection: IEEE C62.41, Category A or better.

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6. Operating Frequency: 20kHz or higher.

7. Lamp current Crest Factor: 1.7 or less.

8. BF: 0.95 or higher, unless otherwise noted.

9. Power Factor: 0.98 or higher.

C. Ballasts for Low-Temperature Environments: Electronic type rated for 0 deg F (minus 17 deg C) starting and operating temperature with indicated lamp types.

2.04 BALLASTS FOR COMPACT FLUORESCENT LAMPS

A. Description: Electronic-programmed rapid-start type, complying with UL 935 and with ANSI C 82.11, designed for type and quantity of lamps indicated. Ballast shall be designed for full light output unless dimmer or bi-level control is indicated:

1. Lamp end-of-life detection and shutdown circuit.

2. Automatic lamp starting after lamp replacement.

3. Sound Rating: Class A.

4. Total Harmonic Distortion Rating: Less than 20 percent.

5. Transient Voltage Protection: IEEE C62.41.1 and IEEE C62.41.2, Category A or better.

6. Operating Frequency: 20 kHz or higher.

7. Lamp Current Crest Factor: 1.7 or less.

8. BF: 0.95 or higher unless otherwise indicated.

9. Retain last option in first subparagraph below for residential fixtures.

10. Power Factor: 0.98 or higher.

11. See "Ballasts" Article in the Evaluations for discussion on CFR compliance required in subparagraph below.

12. Interference: Comply with 47 CFR 18, Ch. 1, Subpart C, for limitations on electromagnetic and radio-frequency interference for nonconsumer equipment.

13. Ballast case temperature: 75 deg C, maximum.

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2.05 EXIT SIGNS

A. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction.

B. Internally Lighted Signs:

1. Retain one of two "Lamps for AC Operation" subparagraphs below. See "Energy Considerations" Article in the Evaluations for discussion.

2. Lamps for AC Operation: LEDs, 70,000 hours minimum rated lamp life.

a. Battery: Sealed, maintenance-free, nickel-cadmium type.

b. Charger: Fully automatic, solid-state type with sealed transfer relay.

c. Operation: Relay automatically energizes lamp from battery when circuit voltage drops to 80 percent of nominal voltage or below. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.

d. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.

e. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

f. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and flashing red LED.

CITY COUNCIL REFERENCE ONLY

2.06 FLUORESCENT LAMPS

A. Low-Mercury Lamps: Comply with EPS's toxicity characteristics leaching procedure test; shall yield less than 0.2 mg of mercury per liter when tested according to NEMA LL 1.

B. T8 rapid-start low-mercury lamps, rated 32 W maximum, nominal length of 48 inches (1220 mm), 2800 initial lumens (minimum), CRI 75 (minimum), color temperature 3500 K, and average rated life 20,000 hours unless otherwise indicated.

C. T8 rapid-start low-mercury lamps, rated 17 W maximum, nominal length of 24 inches (610 mm), 1300 initial lumens (minimum), CRI 75 (minimum), color temperature 3500 K, and average rated life of 20,000 hours unless otherwise indicated.

D. T5 rapid-start low-mercury lamps, rated 28 W maximum, nominal length of 45.2 inches, 2900 initial lumens (minimum), CRI 85 (minimum), color temperature 3500 K, and average rated life of 20,000 hours unless otherwise indicated.

E. Compact Fluorescent Lamps: 4-Pin, CRI 80 (minimum), color temperature 3500 K, average rated life of 10,000 hours at three hours operation per start unless otherwise indicated.

1. 13 W: T4, double or triple tube, rated 900 initial lumens (minimum).

2. 18 W: T4, double or triple tube, rated 1200 initial lumens (minimum).

3. 26 W: T4, double or triple tube, rated 1800 initial lumens (minimum).

4. 32 W: T4, triple tube, rated 2400 initial lumens (minimum).

2.07 LIGHTING FIXTURE SUPPORT COMPONENTS

A. Coordinate this article with Drawings. See Editing Instruction No. 2 in the Evaluations for discussion on seismic considerations.

B. Comply with Division 26 Section "Hangers and Supports for Electrical Systems" for channel- and angle-iron supports and nonmetallic channel and angle supports.

C. Single-Stem Hangers: 1/2-inch (13-mm) steel tubing with swivel ball fittings and ceiling canopy. Finish same as fixture.

D. Twin-Stem Hangers: Two, 1/2-inch (13-mm) steel tubes with single canopy designed to mount a single fixture. Finish same as fixture.

E. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gauge (2.68 mm).

F. Coordinate "Wires for Humid Spaces" Paragraph below with Drawings to identify humid spaces.

G. Wires for Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage (2.68 mm).

H. Rod Hangers: 3/16-inch (5-mm) minimum diameter, cadmium-plated, threaded steel rod.

I. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 INSTALLATION

A. Lighting fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.

B. Support for Lighting Fixtures in Grid-Type Suspended Ceilings: Use grid as a support element:

a. Install a minimum of four ceiling support system rods or wires for each fixture. Locate not more than 6 inches from lighting fixture corners.

b. Support Clips: Fasten to lighting fixtures and to ceiling grid members at or near each fixture corner with clips that are UL listed for the application.

c. Fixtures of Sizes Less Than Ceiling Grid: Install as indicated on reflected ceiling plans or center in acoustical panel, and support fixtures independently with at least two 3/4-inch metal channels spanning and secured to ceiling tees.

d. Install at least one independent support rod or wire from structure to a tab on lighting fixture. Wire or rod shall have breaking strength of the weight of fixture at a safety factor of 3.

e. For flush-to-ceiling installation of recessed fluorescent troffers (1x4, 2x2, 2x4, 4x4, etc.) above false ceilings, accessible or non-accessible, provide two inverted "Y" style steel chains per troffer, securely fastened to building structure, at opposite ends of troffer, and attached to troffer housing at the four opposite corners.

C. Adjust aimable lighting fixtures to provide required light intensities.

D. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.02 COORDINATION, CARE AND WIRING

A. Mechanical Coordination:

1. Coordinate location of all hangers with ductwork, plumbing piping, sprinkler piping, etc.

2. Make all necessary offsets and extensions so that stems and luminaires avoid beams, pipes, ducts, etc.

3. Where luminaires are located below heating, ventilating, and air conditioning units, and/or ductwork and piping, provide trapeze hangers around obstruction and suspend luminaires from trapeze hanger.

B. Architectural Coordination:

1. Refer to architectural reflected ceiling plan(s) for approximate location of all ceiling mounted lighting fixtures.

a. The Electrical Contract Documents shall have precedence over the Architectural Contract Documents for discrepancies between the two.

b. Discrepancies between the electrical drawings and architectural reflected ceiling plan(s) shall be brought to the attention of the Architect/Engineer, prior to roughing the lighting installation.

c. Verify ceiling construction indicated on the Architectural reflected ceiling plan(s), and report in writing, any discrepancies between the ceiling type indicated and the lighting fixture type called for, prior to submitting and/or releasing lighting fixtures for manufacture.

2. Only luminaries designed for the specific ceiling type shall be installed.

a. Do Not install lighting fixtures specified and designed for installation in grid type ceiling where no grid exists.

b. Do Not install lighting fixtures specified and designed for installation in grid type ceilings where a drywall or plaster ceiling exists or is planned.

c. Do Not install lighting fixtures specified and designed for installation in drywall or plaster ceilings in grid type ceilings.

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3. Use only factory supplied drywall/plaster flanges and frames for the installation of recessed lighting fixtures in drywall/plaster ceilings.

4. Recessed lighting fixtures shall be supported independently from the ceiling framing system.

   a. Do Not use the ceiling grid system as the sole means of support for any recessed lighting fixture
   b.
   c. Recessed lighting fixtures shall be clipped to ceiling grid members with clips specifically identified for that use.

   d. Above and beyond ceiling grid clips, Contractor shall provide independent chain hangers for the support of all recessed type lighting fixtures. Refer to sub-paragraph C for type and quantity.

   e. Chain hangers shall be provided and installed to carry the weight of the lighting fixture.
   f. In no case will ceiling suspension type wire be allowed for hanging or support of lighting fixtures.

5. Recessed lighting fixtures which do not match the ceiling grid in shape and size shall be roughed and installed such that the lighting fixture opening will be centered within the grid frame, unless otherwise specifically shown, noted, or dimensioned.

6. Surface mounted lighting fixtures specified and designed to be installed on the underside of suspended grid type ceilings shall be supported independently from the ceiling grid system.

   a. Lighting fixtures shall be clipped to the ceiling grid members with suitable ceiling clips (Caddy - "TWIST-ON" fixture supports).

   b. Above and beyond ceiling grid clips, Contractor shall provide an independent support for all surface mounted lighting fixtures.

   c. Support shall be either GRS conduit, chain, or threaded rod as previously specified, secured independently to building structure above.

   d. Lighting fixtures shall be roughed and installed on either the ceiling tee centerline or on the centerline of the tile. Verify exact location with Architect.

C. Care of Lighting Equipment:

1. Remove all broken glassware, plastic or luminaires damaged before final acceptance, and replace with new at no additional expense.

2. No allowance made for breakage or theft before final acceptance.

3. Use clean, white cotton gloves when handling anodized reflectors, glass lens, or other parts subject to finger marks.

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D. Wiring:

1. Do not use luminaire as a raceway except as allowed in N.E.C., Article 410-31.

2. Wiring to luminaire shall be 90° C wire minimum.

3.03 FIELD QUALITY CONTROL

A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.

B. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

3.04 MEASUREMENT AND PAYMENT

A. Payment for "Interior Lighting", as they appear in the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "Interior Lighting", as they appear in the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 26 56 00 EXTERIOR LIGHTING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Exterior luminaires with lamps and ballasts.

1.03 DEFINITIONS

A. CRI: Color-rendering index.

B. HID: High-intensity discharge.

C. Luminaire: Complete lighting fixture, including ballast housing if provided.

1.04 SUBMITTALS

A. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, and finishes.

1. Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.

2. Details of attaching luminaires and accessories.

3. Details of installation and construction.

4. Luminaire materials.

5. Photometric data based on laboratory tests of each himinaire type, complete with indicated lamps, ballasts, and accessories.

a. Photometric data shall be certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.

6. Photoelectric relays.

7. Ballasts, including energy-efficiency data.

8. Lamps, including life, output, and energy-efficiency data.

9. Materials, dimensions, and finishes of poles.

10. Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.

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11. Anchor bolts for poles.

B. Shop Drawings:

1. Wiring Diagrams: Power and control wiring.

C. Samples for Verification: For products designated for sample submission in Exterior Lighting Device Schedule. Each sample shall include lamps and ballasts.

D. Qualification Data: For agencies providing photometric data for lighting fixtures.

E. Field quality-control test reports.

F. Operation and Maintenance Data: For luminaires and poles to include in emergency, operation, and maintenance manuals.

G. Warranty: Special warranty specified in this Section.

1.05 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with IEEE C2, "National Electrical Safety Code."

D. Comply with NFPA 70.

1.06 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Lamps: 10 for every 100 of each type and rating installed. Furnish at least one of each type.

2. Glass and Plastic Lenses, Covers, and Other Optical Parts: 10 for every 100 of each type and rating installed. Furnish at least one of each type.

3. Ballasts: 10 for every 100 of each type and rating installed. Furnish at least one of each type.

4. Globes and Guards: 10 for every 20 of each type and rating installed. Furnish at least one of each type.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. In Luminaire Schedule where titles below are column or row headings that introduce lists, the following requirements apply to product selection:

CITY COUNCIL REFERENCE ONLY

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.02 GENERAL REQUIREMENTS FOR LUMINAIRES

A. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.

B. Metal Parts: Free of burrs and sharp corners and edges.

C. Sheet Metal Components: Corrosion-resistant aluminum unless otherwise indicated. Form and support to prevent warping and sagging.

D. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.

E. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect ballast when door opens.

F. Exposed Hardware Material: Stainless steel.

G. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.

H. Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.

I. Reflecting surfaces shall have minimum reflectance as follows unless otherwise indicated:

1. White Surfaces: 85 percent.
2. Specular Surfaces: 83 percent.
3. Diffusing Specular Surfaces: 75 percent.

J. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.

K. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.

L. Finish Color: Where indicated, provide customer color as selected by Architect from manufacturer’s full range.

2.03 FLUORESCENT BALLASTS AND LAMPS

A. Ballasts for Low-Temperature Environments: Reliable starting and operation by temperatures 0 Deg F (Minus 17 Deg C) and Higher:

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B. Ballast Characteristics:

1. Power Factor: 90 percent, minimum.

2. Sound Rating: Class A.

3. Total Harmonic Distortion Rating: Less than 20 percent.

4. Electromagnetic Ballasts: Comply with ANSI C82.1, energy-saving, high power factor, Class P, automatic-reset thermal protection.

5. Case Temperature for Compact Lamp Ballasts: 65 deg C, maximum.

6. Transient-Voltage Protection: Comply with IEEE C62.41.1 and IEEE C62.41.2, Category A or better.

C. Low-Temperature Lamp Capability: Rated for reliable starting and operation with ballast provided at temperatures [0 deg F (minus 18 deg C)] [minus 20 deg F (minus 29 deg C)] and higher.

D. Fluorescent Lamps: Low-mercury type. Comply with the EPA's toxicity characteristic leaching procedure test; shall yield less than 0.2 mg of mercury per liter when tested according to NEMA LL 1.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 LUMINAIRE INSTALLATION

A. Install lamps in each luminaire.

B. Fasten luminaire to indicated structural supports.

1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.

C. Adjust luminaires that require field adjustment or aiming.

3.02 CORROSION PREVENTION

A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.

B. Steel Conduits: Comply with Division 26 Section "Raceway and Boxes for Electrical Systems." In concrete foundations, wrap conduit with 0.010-inch-(0.254-mm-) thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.03 FIELD QUALITY CONTROL

A. Inspect each installed fixture for damage. Replaced damaged fixtures and components.

B. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.

1. Verify operation of photoelectric controls.

C. Prepare written report of tests, inspections and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

3.04 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate and maintain luminaire lowering devices. Refer to Division 01 Section "Demonstration and Training".

3.05 MEASUREMENT AND PAYMENT

A. Payment for "Exterior Lighting" as they appear on the new bathroom, is considered as included in the contract lump sum cost paid for "**New Bathroom Structure**" and no additional payment or separate price will be paid therefor.

B. Payment for "Exterior Lighting" as they appear on the new meeting room, is considered as included in the contract lump sum cost paid for "**New Meeting Room Structure**" and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

Division 27 – Communications (Not Used)

Division 28 – Electronic Safety and Security (Not Used)

CITY COUNCIL REFERENCE ONLY

DIVISION 31 - EARTHWORK

SECTION 31 10 00 CLEARING AND GRUBBING

PART 1 GENERAL

1.01 DESCRIPTION

A. Furnish labor, material and equipment required for the removal of surface debris, removal of turf, shrubs and other plant life, where indicated on the Drawings; remove temporary structures, miscellaneous debris in and around structures to be demolished; remove appurtenances and abandoned utilities; remove brush, trash, salvage and debris resulting from clearing; remove paved asphalt concrete as shown. Include stripping and stockpiling of topsoil, and dust control.

1.02 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies: Perform Work, including disposal of debris, in accordance with rules and regulations of State and local agencies having jurisdiction. Comply with Section 01 57 20 Environmental Protections/ Regulatory Requirements.

1.03 SUBMITTALS

A. Conform to the requirements of Section 01 30 00 for submittal procedures.

B. Product Data: Provide data for Products specified.

C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Project Record Documents: Record actual locations of pipe mains, valves, connections, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.04 SURROUNDING SITE CONDITION SURVEY

A. Prior to commencing the Work, Contractor and Engineer shall tour the Project site together to examine and record damage to existing campus streets, sidewalks, and all other improvements. This record shall serve as a basis for determination of subsequent damage due to Contractor's operations and shall be signed by all parties making the tour. Any cracks, sags, or damage to the adjacent buildings and improvements not noted in the original survey, but subsequently discovered, shall be reported to the Owner’s Representative immediately.

1.05 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

A. The Drawings do not show existing below grade structures, drainage lines, storm drains, sewers, water, gas, electrical and other utilities that are known to the University in their approximate location. Such information shall be provided by the University. The Contractor shall exercise care in avoiding damage to these

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facilities. The Contractor will be held responsible for the repair if damaged. The University or University's Representative does not guarantee that all utilities or obstructions are shown or that the locations indicated are accurate.

B. Locate and surface mark (various colors specified by USA) all known existing underground structures and utilities before proceeding with construction operations that may damage them. Stake and flag utility valve boxes and other surface structures. Prior to commencing excavation and trenching, coordinate with Underground Service Alert (USA North/1-800-227-2600 or 811) for field verification and marking of utilities within limits of Project site. Provide USA notification permit number to Owner's Representative prior to starting site Work. Existing underground structures and utilities shall be kept in service unless approval to interrupt or shutdown service is obtained from Owner's Representative. If damaged, the utility shall be repaired with no adjustment of Contract Sum or Contract Time.

C. Contractor shall uncover, prior to any earthwork for new construction, all existing piping where crossings, interferences, close proximity (5 feet or less) or connections are shown on the Drawings, from 1 foot below proposed construction limit to the existing ground surface. Any variation in the actual elevations and the indicated elevations shall be brought to the University's Representative's attention. If the Contractor does not expose all existing utilities, Contractor shall not be entitled to additional compensation for Work necessary to avoid interferences.

D. If interferences occur at locations other than the general locations shown on the Drawings, and such utilities are damaged before their locations have been established, or create an interference, the Contractor shall notify the University's Representative and a method for repairing the damage or correcting the interference shall be supplied by the University's Representative. Payment for additional Work due to interferences not shown on the Drawings shall be in accordance with the General Conditions.

E. Care shall be exercised to prevent damage to adjacent facilities including walks, streets, curbs, and gutters from settlement, lateral movement, undermining, and washout and other hazards; where equipment will pass over these obstructions suitable planking shall be placed. Damaged facilities, due to the Contractor operations, shall be removed and replaced at the Contractor's expense.

F. If any other structures or utilities are encountered, request Owner's Representative to provide direction on how to proceed with the Work.

G. If any structure or utility is damaged, take immediate action to ensure the safety of persons and property. Correct damage immediately. Contractor shall bear all costs of correction, replacement, repair, restoration, including related damages additional testing, inspection, and compensation for Owner’s Representatives services and expenses. Compensation to the University shall be made by deductive Change Order.

H. No Work is to be performed on energized electrical equipment unless scheduled with the Owner's Representative. The University reserves the right to specify specific conditions for all Work involving energized high-voltage electrical equipment.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

2.01 MATERIALS

A. Herbicide: Surflan, Chipco, Ronstar G, or equal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Existing Conditions: Verify existing conditions at the site and include all work evident by site inspection whether or not shown on the Drawings.

3.02 PREPARATION AND COORDINATION

A. Notify Owner's Representative before starting Work and comply with University requirements.

B. Do not close or obstruct roadways, sidewalks or hydrants without Owner's Representative's approval.

C. Tree Protection: Tree and plant protection shall be in accordance with Section 01 56 39 Tree Protection.

3.03 SITE CLEARING

A. Conduct clearing with minimum interference to public and private access. Maintain egress and access from adjacent areas at all times.

B. Clear the site within the limits shown and remove all pavement, shrubs, remaining brush, stumps and waste material that would interfere with construction operation, except as specifically indicated otherwise on the Drawings, or identified by the Owner's Representative.

C. Apply an approved herbicide to remaining roots over 1-1/2 inches in diameter.

D. In areas not to be further excavated, fill depressions resulting from site clearing. Place and compact satisfactory soil materials to 90 percent compaction in 6 inch lifts.

E. Clear undergrowth and deadwood without disturbing subsoil.

F. Pollution and Dust:

1. Comply with Section 01 57 20: Environmental Protections/ Regulatory Requirements.

2. Conduct operations so as to prevent windblown dust and dirt from interfering with adjacent property's normal operations.

3. Wet down dirt areas by spraying as required to prevent dust from becoming airborne.

G. Assume liability for all claims related to windblown dust and dirt.

H. No burning on University property.

3.04 CONSTRUCTION WASTE MANAGEMENT

A. Comply with the applicable provisions of Section 01 90 06 Hazardous Materials including, but not limited to:

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1. Separate packaging materials by type and place in locations designated by the Contractor.
2. Place unused scrap material in locations designated by the Contractor.

3.05 MEASUREMENT AND PAYMENT

The square foot unit price paid for "**Clearing and Grubbing**" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City's Engineer or their designee.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 31 20 00 ROUGH GRADING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Rough grading of site, excavating, backfilling and grading, as required to obtain contours and elevations indicated on the drawings.

2. Subgrade preparation for pavement areas.

B. Related Sections:

1. Section 01 57 23 Storm Water Pollution Prevention.

2. Section 31 10 00 Clearing and Grubbing.

3. Section 31 23 33 Trenching and Backfilling.

1.02 REFERENCES

A. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop; American Association of State Highway and Transportation Officials; 1997.

B. ASTM D 698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)); 2000a.

C. ASTM D 1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method; 2000.

D. ASTM D 1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN m/m3)); 2000.

E. ASTM D 2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 1994.

F. ASTM D 2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregates; 1995.

G. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth); 1996.

H. ASTM D 3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 1996.

1.03 DEFINITIONS

A. Excavation: Earth excavation includes excavation of pavement and other obstructions visible on the ground surface; underground structures, utilities and other items to be demolished and removed; together with earth and other materials encountered that are not classified as rock or unauthorized excavation, and other items indicated to be removed.

B. Subgrade: Previously undisturbed material prepared, and compacted to required density and elevation to support a structure, or pavement system.

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C. Sub-base: Compacted layer of approved material used between the subgrade and the pavement.

D. Unauthorized Excavation: Includes removal and disposal of material beyond subgrade elevations, and dimensions indicated without prior approval of the Owner.

E. Standard Specifications: Refers to the Standard Specifications of the State of California, Business and Transportation Agency, Department of Transportation (Caltrans), latest edition. In case of conflict between the Standard Specifications and these Specifications, the strictest Specifications shall govern.

F. Relative Compaction: Ratio, expressed as a percentage of field dry density as compacted to a maximum dry density of representative sample of the same material determined by ASTM D1557.

1.04 SUBMITTALS

A. Conform to the requirements of Section 01 30 00 for submittal procedures.

B. Product Data: Provide data on Products specified.

C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Project Record Documents: Record actual locations of pipe mains, valves, connections, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

F. Deliver samples of import backfill materials to Owner in quantities sufficient for testing. Deliver at least 15 days prior to use.

G. Submit a Confined Space Emergency Plan in accordance with Section 01 41 00 Regulatory Requirements prior to any personnel entering trenches or excavations greater than 5 feet in depth.

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1.05 QUALITY ASSURANCE

A. Testing and Inspection Service: Owner will engage soil testing and inspection service, for quality assurance testing during earthwork operations.

1.06 DELIVERY, STORAGE AND HANDLING

A. Stockpile satisfactory excavated materials in approved location, until required for backfill or fill. Place, grade, and shape stockpiles for proper drainage.

1. Do not store soil within drip line of trees indicated to remain.

1.07 PROJECT CONDITIONS

A. Subsurface Conditions: Contractor responsibility to determine the exact nature and extent of subgrade conditions.

1. Subgrade and geotechnical information provided by the Owner shall not relieve the Contractor of responsibility for being familiar with the

character and extent of subsurface conditions that may be encountered during performance of the Work.

B. Do not use explosives.

C. The Contractor shall assess and evaluate all site conditions and layout the work before any earthwork shall begin.

1.08 MAINTENANCE

A. Repair settlement at excavated areas for a period of one year following final acceptance at no additional cost to Owner. Remove surface (pavement, lawn or other finish), add backfill material, compact, and replace surface treatment; restore appearance, quality, and condition of surface and finish to match adjacent work, and eliminate evidence of restoration.

1.09 WARRANTY

A. The Contractor shall warrant the Work against settlement for a period of one year after the date of final acceptance, and shall repair damage caused by settlement within that time. For the purpose of this Specification, settlement will be deemed to have occurred if on paved surfaces, depressions greater than 3/8 inch occur relative to paved surfaces outside the excavation area.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

2.01 MATERIALS

A. Fill Materials: Use only suitable fill except where sand is required. Do not use water saturated soil material or contaminated material.

1. On-site soils are considered suitable for use in engineered fill material, provided that they are at a workable moisture content and free of significant concentrations of organic materials, rubble or debris. The on-site clay soils located at an approximate depth of ten feet below existing site grades are not considered suitable for use in fill construction beneath at-grade structures, exterior slab-on-grade concrete or pavements.

2. If imported material is required for fill and backfill, the imported material must be granular soil, free of organic matter, which does not exhibit excessive shrinkage or swelling behavior when subjected to changes in water content. Imported fill shall contain no environmental contaminants or construction debris. The material shall conform to the following:

a. Have 100 percent pass through a 3 inch sieve, 95 to 100 percent pass through a 1 inch sieve.

b. Be thoroughly compacted without excessive voids.

c. Have a maximum Plasticity Index of 15.

d. Have an Expansion Index less than 20.

PART 3 EXECUTION

3.01 PREPARATION

A. Excavate by hand within drip-line of trees to remain. Do not damage trees or roots, prevent dehydration of exposed roots. Refer to Section 01 56 39 Tree Protection for additional requirements.

B. Surfaces to receive fill and soils to be compacted shall be free of standing water, and shall not be saturated with water.

C. In asphalt concrete paved areas, neatly saw cut pavement 12 inches beyond the limits of excavations. If edge of pavement is located within 30 inches of limit of excavation, remove pavement to existing edge.

D. Remove existing utility lines that traverse the site as indicated on Drawings.

3.02 SITE CLEARING

A. Complete clearing and stripping as indicated on Drawings.

B. Scarify and compact the upper 12 inches of the exposed subgrade-to-receive fill to 90 percent relative compaction.

3.03 EXCAVATION

A. Additional Excavation: When excavation has reached required subgrade elevation shown on Drawings, notify Owner who will inspect conditions. When unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and place excavated material as directed by the Owner.

B. Stability of Excavations: Comply OSHA regulations for slope requirements. Provide shoring and bracing where required slope cannot be maintained.

C. Excavation for Pavements: Cut surface under pavements to comply with pavement section shown on Contract Documents.

D. Coordinate excavation, preparation and backfill with Work of related Sections for Project Site utilities, drainage and irrigation systems.

E. Replace the excavated material or any approved supplementary import material in lifts not to exceed 6 inches in compacted thickness and compact each lift to a minimum 90 percent relative compaction.

F. The upper 12-inches of fill within building pads and concrete flatwork areas shall be per the project geotechnical report.

G. Perform footing excavations after fill placement is complete.

3.04 COMPACTION

A. General: Control soil compaction during construction providing minimum percentage of density specified for each area classification as indicated below.

B. Percentage of Maximum Density Requirements: Compact soil to no less than the following percentages of maximum density in accordance with ASTM D 1557.

1. Building Slabs: Compact top 12 inches of subgrade and each layer of backfill or fill material at 90 percent relative compaction.

2. Lawn or Unpaved Areas: Compact top 12 inches of subgrade and each layer of backfill or fill material at 90 percent relative compaction.

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3. Vehicular pavements: Compact top 12 inches of subgrade and each layer of backfill or fill material at 90 percent relative compaction. The upper 6 inches of pavement subgrade soils shall be compacted to at least 95 percent relative compaction.

C. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations.

1. Remove and replace or scarify and air dry soil material that is too wet to permit compaction to specified density.

2. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory value.

3.05 BACKFILL AND FILL

A. Place approved soil material in layers to required subgrade elevations, for each area classification listed below. Do not use water saturated soil material or contaminated material.

1. In excavations, use approved excavated or borrow material.

2. Under planted areas, use topsoil from site stockpile.

3. Under walks and pavements, use subbase material, approved excavated or borrow material, or combination of both.

4. Under steps, use approved subbase material.

5. Under building slabs, use approved drainage fill material.

B. Backfill excavation as promptly as work permits, but not until completion of the following:

1. Acceptance of construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.

2. Inspection, testing, approval, and recording locations of underground utilities.

3. Removal of concrete formwork, shoring and bracing: Prevent settling due to removal of materials from below structures.

4. Backfilling of voids with satisfactory materials.

5. Removal of trash and debris from excavation.

6. Permanent or temporary horizontal bracing is in place on horizontally supported walls.

C. Place backfill and fill materials in uniform lifts not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 6 inches loose depth for material compacted by hand-operated tampers. Prevent wedging action of backfill against structures and displacement of piping and conduit.

3.06 GRADING

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A. Provide smooth finished surfaces within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated on Drawings, or between such points and existing grades.

B. Grade areas outside of building lines to drain away from structures and to prevent ponding. Finish surfaces free from irregular surface changes, within the following tolerances above or below required finish grade.

1. Lawn and Unpaved Areas to Receive Topsoil: 0.10 foot.

2. Pavements and Walks: Line, grade and cross-section, 0.10 foot.

3. Structures: 0.10 foot.

C. Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage of maximum or relative density for each area classification.

D. Grade fill under building slabs smooth and even, free of voids, to required elevation. Provide final grades with a tolerance of plus or minus 1/4 inch in 10 feet.

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3.07 FIELD QUALITY CONTROL

A. See Section 01 45 00 Construction Quality Control, for general requirements for field inspection and testing.

B. Perform compaction density testing on compacted fill in accordance with ASTM D6938.

C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D1557 ("modified proctor"), or AASHTO T 180.

D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no additional cost to the Owner.

3.08 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Stockpile enough topsoil to place 12 inches in planting areas (exclusive of decomposed granite areas), soil to be clean of debris including gravel.

B. Comply with the applicable provisions of Section 01 77 00.

C. Remove excess excavated material, trash, debris and waste materials and dispose of it off the Owner's property.

D. Except for material indicated to remain by the City, stripped, excavated and cleared materials shall become the Contractor’s property and shall be removed from the Project site.

3.09 PROTECTION

A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

B. Cold Weather Protection: Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F.

C. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

D. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

3.10 CONSTRUCTION WASTE MANAGEMENT

A. Comply with the applicable provisions of Section 01 77 00 including, but not limited to:

B. Separate packaging materials by type and place in locations designated by the Contractor.

C. Place unused scrap material in locations designated by the Contractor.

3.11 MEASUREMENT AND PAYMENT

The cubic yard final pay quantity for "**Rough Grading**" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved, including all excavation and fill placement, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City's Engineer or their designee. Quantities will not be measured. The quantity shown on the Engineer's Estimate for rough grading shall be the final pay quantity for which payment is made as specified in Section 8.8 "Final Payment" of the General Conditions.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

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CITY COUNCIL REFERENCE ONLY

SECTION 31 22 19 FINISH GRADING AND SITE PREPARATION

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Provide all labor, materials, services and equipment indicated on Drawings and/or herein specified to complete all Landscape Grading Work.

B. Finish grading shall consist of scarifying and establishing finish grade to conform to the contours, grades, line and shapes as indicated on the Drawings, and insuring that all landscape areas are uniformly graded to an outlet.

1.02 DEFINITIONS

A. Subgrade: Surfaces upon which additional specified materials are to be placed, prepared or constructed.

B. Rough grade: The establishment of grades to one-tenth (1/10) foot plus or minus tolerance of grades required to accomplish the Work described in other documents and drawings.

C. Finish grade: The establishment of grades to a plus or minus tolerance of final grades as indicated on Drawings. Tolerances are specified in applicable documents of the specifications (i.e. Planting, Decorative Concrete, Decomposed Granite, etc.)

D. Grading intent: Spot elevations (grades) and contours are indicated based on the best available data. Drawings are referenced to provide additional site grading data. The intent is to maintain constant slopes between spot elevations. If a spot elevation is determined to be in error, or the difference in elevation between points change, contact the Owner immediately for field adjustments of spot elevations.

1.03 EXISTING UTILITIES

A. Contractor is responsible to contact Underground Service Alert (USA North) at 811 and mark the location of all existing utilities before commencing Work.

B. Refer to the Drawings for information on proposed site utilities and their locations.

C. Retain and protect in operating condition all active utilities traversing the site designated to remain.

D. Where existing utilities not indicated on the Drawings are encountered, support, shore up, protect same and immediately contact the Owner for continuance and/or relocation of such services.

1.04 PROTECTION OF EXISTING CONDITIONS AND ADJACENT PROPERTIES

A. Use all means necessary to protect existing conditions designated to remain, newly constructed conditions and adjacent properties. Avoid any encroachment on adjacent properties.

CITY COUNCIL REFERENCE ONLY

B. Prevent damage to existing benchmarks, pavement and utility lines. In the event of damage or loss, immediately make all repairs and replacements required to the satisfaction of the Owner and at no additional cost to the Owner.

1.05 EXISTING TREES

A. The Contractor shall protect the tops, trunks and roots of all existing trees on/or near the project site that are designated to remain.

B. Do not permit the parking of vehicles, or storage of materials or equipment under the dripline of existing trees.

C. Refer to section 01 56 39 Tree rotection for requirements when working around existing trees designated to remain.

1.06 QUALITY ASSURANCE

A. Finish grades shall conform to contours, grades, lines and shapes, as indicated on Drawings, with uniform slopes between finish grades or between finish grades and existing grades.

B. Establish finish landscape grades in a continuous, uniform line, resulting in a uniform surface with positive drainage and without ridges or water pockets.

C. Finish landscape grade tolerance shall be .04 feet plus or minus of final grades indicated on Drawings.

1.07 SUBMITTALS

If specified under this contract, provide one (1) cubic foot sample of topsoil material for the Owner's approval prior to delivery to the site, but in any case, prior to placement.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 GENERAL

A. Rough grades shall be within plus or minus .10 foot of final finish grades as indicated on plans. If any discrepancies exist, notify the Owner immediately for direction.

B. Contractor shall be responsible for bringing rough grades into conformity with finish grades as indicated on the plans. Comply with tolerances specified in this document and as specified in applicable documents of the specifications (i.e. concrete, asphalt, planting, etc.).

C. Conduct work in an orderly manner. Dirt shall not be permitted to accumulate on streets or sidewalks or washed into storm drains.

D. Use all means required to prevent the erosion of freshly graded areas during construction and until such time as proposed hard surfaces and landscaping have been constructed.

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3.02 LAYOUT

A. Layout of all work under this Section shall be made by a licensed surveyor.

B. Maintain all bench marks, control monuments and stakes. Protect from damage and dislocation.

C. If any discrepancies are found by the surveyor between the Drawings and actual site conditions, the Owner reserves the right to make minor adjustment in Work Specified as necessary to accomplish the intent of the Contract Documents without increased cost to the Owner.

3.03 SUBGRADE PREPARATION

A. Cut out areas, to subgrade elevation, which are to receive paving and sidewalks.

B. Scarify subgrade to a depth of eight (8) inches and bring to uniform moisture content.

C. Bring subgrade to required levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.

D. Slope grade away from building minimum two-and-one-half (2-1/2) inches in ten (10) feet (2%) unless indicated otherwise on Drawings.

E. Compact subgrade to the following:

1. 6 inch depth at 95% relative compaction in accordance with ASTM D1557-78 for pavement areas.

2. 12 inch depth at 85% relative compaction in accordance with ASTM D1557-78 for landscape areas.

3.04 FINISH LANDSCAPE GRADING

A. Scarify or rototill to a 6” depth all planting areas prior to finish grade operations and work until uniform and free from large clods larger than one (1) inch in greatest dimension.

B. Finish grade shall conform, after compaction, to shapes, spot elevations and contours as indicated on Drawings, with uniform levels or slopes between finish elevations or between finish elevations and existing elevations.

C. Soil amendment and preparation shall comply with Section 32 90 00 Planting.

D. Spread excess soil material excavated from plant pits to establish subgrades in surrounding planting areas.

E. Top six (6) inches of all areas to be planted shall be free of stones, stumps or other deleterious matter one (1) inch in greatest dimension.

F. Compact soil in planting areas to 85% relative compaction in accordance with ASTM D1557-78.

G. Fine grade all planting areas to a smooth, loose and uniform surface. Eliminate uneven areas, ridges and depressions.

H. Shrub/ground cover planting areas shall be graded three and one-half (3-1/2) inches below adjacent paved areas, sidewalks, valve boxes, mow bands, drains,

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etc. in order to receive three (3) inch depth of mulch, establishing final grade one-half (1/2) inches below these surfaces.

I. Turf areas shall be graded 1/2 inch in hydroseed, and 1/2 inch in sod, below adjacent paved area, sidewalks, valve boxes, mow bands, drains, top of seat walls etc. in order to receive turf, establishing final grade flush with these surfaces.

3.05 OBSERVATION SCHEDULE

Normal progress observations shall be requested by the Contractor from the Owner as per observations listed in Sections: 32 84 00 Planting Irrigation, and 32 90 00 Planting.

3.06 CLEAN UP

A. Remove all trash, excess soil, or rubbish from the property. All scars, ruts or other marks in the ground caused by this work shall be repaired and the ground left in a neat and orderly condition throughout the site.

B. The Contractor shall leave the site area broom-clean and shall wash down all paved areas within the Contract area, leaving the premises in a clean condition acceptable to the Owner.

3.07 MEASUREMENT AND PAYMENT

The square foot unit price paid for "**Finish Grading and Site Preparation**" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City's Engineer or their designee.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 31 23 16 EXCAVATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Excavating for site structures.

B. Related Sections:

1. Section 31 23 33 – Trenching, Backfilling and Compacting.

1.02 REFERENCES

A. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).

2. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.

3. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

4. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

5. Local utility standards when working within 24 inches of utility lines.

1.03 SUBMITTALS

A. Section 01 30 00 - Submittals: Requirements for submittals.

B. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan.

C. Shop Drawings: Indicate soil densification grid for each size and configuration footing requiring soils densification.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 PREPARATION

A. Call Local Utility Line Information service not less than three working days before performing Work.

B. Request underground utilities to be located and marked within and surrounding construction areas.

C. Identify required lines, levels, contours, and datum.

D. Notify utility company to remove and relocate utilities.

E. Protect utilities indicated to remain from damage.

F. Protect plant life, lawns, trees, rock outcroppings and other features remaining as portion of final landscaping.

G. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.02 EXCAVATION

A. Excavate subsoil to accommodate site structures and construction operations.

B. Grade top perimeter of excavation to prevent surface water from draining into excavation.

C. Trim excavation. Remove loose matter.

D. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume.

E. Notify Engineer of unexpected subsurface conditions.

F. Correct areas over excavated with structural fill Type concrete as directed by Engineer.

G. Remove unsuitable and excess excavated material from site.

3.03 FIELD QUALITY CONTROL

A. Section 01 45 00 - Quality Requirements and 01 77 00 - Project Closeout.

3.04 PROTECTION

A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.

B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

3.05 MEASUREMENT AND PAYMENT

A. Full compensation for conforming to the provisions in this section "**Excavation**" not otherwise provided for shall be considered as included in prices paid for "**Rough Grading**" and no additional compensation will be allowed therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 31 23 33 TRENCHING AND BACKFILLING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes trenching, backfilling and compacting for utilities.

B. Related sections:

1. Section 01 45 00 Construction Quality Control.

2. Section 01 57 23 Storm Water Pollution Prevention.

3. Section 31 20 00 Rough Grading.

1.02 REFERENCES

A. ASTM D 1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3); 2000.

B. Manual of Warning Signs, Lights and Devices for Use in Performance of Work Upon Highways, issued by the California State Department of Transportation.

C. Office of Safety and Health Act (OSHA) Construction Safety Orders

D. California Code of Regulations Title 8: Construction Safety Orders.

1.03 DEFINITIONS

A. Finish Grade Elevations: Indicated on Drawings.

B. Relative Compaction: Ratio, expressed as a percentage of field dry density as compacted to a maximum dry density of representative sample of the same material determined by American Society for Testing and Materials (ASTM) Test Method D1557 (c).

1.04 SUBMITTALS

A. Conform to the requirements of Section 01 30 00 for submittal procedures.

B. Product Data: Provide data for Products specified.

C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Project Record Documents: Record actual locations of pipe mains, valves, connections, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

F. Submit name of imported materials source.

G. Deliver samples of backfill and fill materials to Owner in quantities sufficient for testing. Deliver at least 15 days prior to use.

1.05 WARRANTY

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A. The Contractor shall warrant against settlement for a period of one year after the date of final acceptance, and shall repair damage caused by settlement within that time. For the purpose of this Specification, settlement will be deemed to have occurred if on paved surfaces, the depression falls 3/8-inches below the average of the sides of the uncut portion.

PART 2 PRODUCTS

2.01 BEDDING AND BACKFILL MATERIALS

A. Bedding: bank sand; washed, free of silt, clay, loam, friable or soluble materials and organic matter; graded as follows: Sand bedding shall have a minimum sand equivalent of 45 and shall be uniformly graded from No. 4 to 200 mesh screen.

B. Backfill: Native backfill shall be selected material excavated from the trench. In all cases it shall be capable of compaction to at least the relative compaction required. In-place moisture content shall not be more than 5 percent over optimum when the material is silty or clayey and will not provide a stable subsurface.

2.02 SOURCE QUALITY CONTROL

A. See Section 01 45 00 Construction Quality Control for general requirements for testing and analysis of soil material.

B. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 PREPARATION

A. Preparation of Work:

B. Underpin adjacent structures, which may be damaged by excavation Work, including utilities.

C. Maintain trench crossings for vehicular and pedestrian traffic at street crossing, driveways and fire hydrants.

3.02 EXAMINATION

A. Identify required lines, levels, contours, and datum locations.

B. Locate, identify, and protect utilities that remain and protect from damage.

C. See Section 31 20 00 Rough Grading for additional requirements.

3.03 PIPE BEDDING

A. Bedding Excavation: Excavate trenches below grade of pipe bottom to the depth indicated on drawings.

B. Stabilization of Trench Bottom: When trench is unstable due to wet or spongy foundation, stabilize trench bottom with gravel or crushed rock. The Owner will determine suitability of trench bottom and amount of gravel or crushed rock

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needed to stabilize soft foundation. Remove and replace soft material with gravel or crushed rock when directed by Owner.

C. Placement of Bedding Material: Place sufficient bedding material in trench bottom up to grade of bottom of pipe. Relative compaction of tamped material shall be not less than 90 percent relative compaction. Place and compact additional bedding material to provide uniform bearing under the full length of the pipe to a minimum width of 60 percent of its external diameter.

3.04 TRENCHING

A. Perform operations necessary to excavate earth, regardless of character and subsurface conditions, from the trench or adjacent thereto, and to place trench stabilization, pipe bedding, pipe cover, trench water removal, trench backfill and base, as shown on the Drawings, as well as providing traffic control and regulation through construction areas.

B. The Contractor shall do excavation of whatever substance is encountered to the lines and grades shown on the Drawings. Materials suitable for use as backfill shall be piled in an orderly manner a sufficient distance from the edge of the trench to avoid overloading and to prevent sliding into the trench.

C. The Contractor shall do such grading or Work as is necessary to prevent surface water from entering the excavation.

D. Demolish and remove existing pavement, curb and gutter, and other Project Site facilities as shown on the Drawings allow Project operations. Existing asphalt concrete pavement to be removed shall be saw cut in longitudinal neat straight lines while maintaining the cuts vertical for the full depth of the asphalt concrete pavement. Portions of existing concrete curbs, gutters and sidewalks to be removed to permit new construction shall be cut using a concrete saw to provide neat straight lines with vertical cuts.

E. Maximum allowable open trench is 600 L.F. at any one time. Trenches outside the enclosure of the temporary construction fence are to be covered or otherwise protected at the end of each work day.

F. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.

G. Do not interfere with 45 degree bearing splay of building foundations.

H. Cut trenches wide enough to allow inspection of installed utilities.

I. Hand trim excavations. Remove loose matter.

J. Remove large stones and other hard matter which could damage piping or impede consistent backfilling or compaction.

K. Remove lumped subsoil, boulders and rock up to 1/3 cu. yd. in size.

L. Remove excavated material that is unsuitable for re-use from Project Site.

M. Stockpile excavated material to be re-used in area designated on Project Site in accordance with Section 31 20 00 Rough Grading.

N. Remove excess excavated material from Project Site in accordance with provisions in Section 31 20 00 Rough Grading.

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O. Width of Trench: Except where otherwise specifically permitted by Owner, sides of trenches shall be vertical, shored, as required, and shall be of uniform width from top to bottom. Trenches shall be of a width as shown on the Drawings.

P. Trench Backfill: Native backfill shall be compacted by machine in uniform layers not exceeding 0.67 foot. Backfill shall be compacted to a relative compaction of not less than 90 percent to within 1 foot of subgrade. The upper 1 foot of subgrade shall be compacted to 95 percent; 85 percent compaction will be acceptable in undeveloped areas.

3.05 PREPARATION FOR UTILITY PLACEMENT

A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.

B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

D. Buried pipe shall have at least 36 inches of cover and 12 inches of clearance from other utilities.

3.06 BACKFILLING

A. Backfill to contours and elevations indicated using unfrozen materials.

B. Fill up to subgrade elevations unless otherwise indicated.

C. Employ a placement method that does not disturb or damage other Work.

D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

E. Maintain optimum moisture content of fill materials to attain required compaction density.

F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.

G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.

H. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise on the Drawings. Make gradual grade changes. Blend slope into level areas.

I. Reshape and re-compact fills subjected to vehicular traffic.

3.07 TOLERANCES

A. Top Surface of General Backfilling: Plus or minus 0.10 foot from required elevations.

B. Top Surface of Backfilling Under Paved Areas: Plus or minus 0.10 foot from required elevations.

CITY COUNCIL REFERENCE ONLY

3.08 FIELD QUALITY CONTROL

A. See Section 01 45 00 Construction Quality Control for general requirements for field inspection and testing.

B. The Owner will make soils tests when advised by the Contractor that in the Contractor's opinion sufficient densities have been achieved. If the first tests in any areas fails, the Contractor shall pay for further testing in that area until specified densities are obtained. The Owner shall determine the number and location of tests required. Contractor shall provide a backhoe and operator upon request at no additional cost to the Owner.

C. Lights, flags, and other warning and safety devices for street and highway work shall conform to the requirements set forth in the current Manual of Warning Signs, Lights and Devices for Use in Performance of Work Upon Highways, issued by the California State Department of Transportation.

D. Preparation, excavation and trenching shall comply with California Code of Regulations Title 8: Construction Safety Orders.

3.09 CLEANING

A. Leave unused materials in a neat, compact stockpile during progress of work.

B. Remove unused stockpiled materials. Leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

3.10 DISPOSAL OF EXCESS EXCAVATED MATERIAL

A. The Contractor shall remove and dispose of all excess excavated material to a suitable site. The proper and legal disposal shall be the responsibility of the Contractor.

3.11 MEASUREMENT AND PAYMENT

A. Full compensation for conforming to the provisions in this section "**Trenching and Backfilling**" not otherwise provided for, shall be considered as included in prices paid for the various contract items of work requiring trenching and backfilling and no additional compensation will be allowed therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

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SECTION 31 31 16 TERMITE CONTROL

PART 1 GENERAL

1.01 DESCRIPTION

A. Division 1 applies to this Section. Apply toxicant to soil which is covered by or is immediately adjacent to building, to all sub-slab soil exposed by slab penetrations, and to additional areas as directed, to provide a lethal barrier to subterranean termites as indicated, specified, and required.

1.02 QUALITY ASSURANCE

A. Employ a toxicant applicator licensed by all governing public agencies who is experienced in specified treatment. Submit applicator's qualifications to Owner if requested. Use only products registered with and licensed and approved by the Environmental Protection Agency and approved by all other governing agencies having jurisdiction.

1.03 SUBMITTALS

A. Refer to Section 01 30 00 for procedures. Submit manufacturer's technical data and application instructions.

1.04 WARRANTY

A. Furnish a warranty stating (1) that toxicant applied has the required concentration and that rates and methods of application comply with requirements herein, and (2) that the Contractor and applicator jointly warrant the effectiveness of the toxicant treatment against termite infestation for a period of 5 years. During warranty period, evidence of re-infestation will require retreatment, at no cost to Owner, according to requirements herein.

PART 2 PRODUCTS

2.01 TOXICANT

A. Use an approved water-thinned toxicant emulsion, uniform in composition throughout, containing a dye which is discernible after application to the soil, subject to the requirements of all regulatory agencies. Deliver toxicants to the site in sealed labeled containers furnished by manufacturer or formulator, labels bearing manufacturer's warnings to be observed in handling and use of the toxicant and evidence of registration under Federal Insecticide, Fungicide, and Rodenticide Act.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 APPLICATION

A. At time of treatment, loosen soil to friable condition with low moisture content to ensure uniform distribution of toxicant throughout the soil. Do not apply treatment immediately after rains.

B. General Methods: Apply the treatment at least 12 hours prior to placing of concrete that contacts treated soil. Apply toxicant just before placing of vapor barrier. Take precautions to prevent disturbing the soil where treated soil is not to be covered with vapor barrier. Again treat soil disturbed after treatment and before placing the concrete slabs and other coverings. Coordinate soil treatment on exterior of foundation walls with final grading and planting operations to prevent disturbing toxicant barriers. Take care that the toxicant does not enter

any water supply system and does not endanger animals or persons.

C. Slabs On Grade: Treat all floor slab areas at manufacturer's recommended rate of application as an overall treatment. Apply an additional treatment in critical areas, such as openings for pipes, conduits, and ducts, applied in a 6" wide strip; and along the exterior perimeter of slabs and under all expansion joints, applied in a 12" wide shallow trench. Additionally, treat soil under all new penetrations through existing slabs.

D. Foundation Walls: Treat soils adjacent to exterior sides of walls in a 12" wide strip extending to 36" below finish grade or to top of footing or base of grade beam, whichever is the least depth. Apply toxicant at manufacturer's recommended rates by injection rod or by trenching with one-third of application near the level of the trench bottom or top of the footings, before backfill is placed; one-third when half of backfill is placed; and remainder when the trench is almost filled. After each trench application, mix the soil and toxicant to assure a uniform distribution of toxicant in the soil. Tamp backfill. Apply additional treatment for 6" around utility openings in walls.

3.02 CLEAN UP

A. Conform to Section 01 77 00. Promptly remove empty toxicant containers from the site to a legal disposal area and pay dumping fees.

3.03 MEASUREMENT AND PAYMENT

A. Payment for “Termite Control”, as it appear with the new bathroom, is considered as included in the contract lump sum cost paid for “**New Bathroom Structure**” and no additional payment or separate price will be paid therefor.

B. Payment for “Termite Control”, as it appear with the new meeting room, is considered as included in the contract lump sum cost paid for “**New Meeting Room Structure**” and no additional payment or separate price will be paid therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

Division 32 – Exterior Improvements

SECTION 32 11 23 AGGREGATE BASE COURSES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:

1. Aggregate base courses.

1.02 RELATED SECTIONS

A. Caltran Section 25 Aggregate Subbases and 26 Aggregate Bases

B. Section 32 13 13 Site Work Cast in Place Concrete.

1.03 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
2. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
3. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000 ft-lbf/ft3 (2,700 kN-m/m3)).
4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

C. Caltrans Standard Specifications:

1. Standard Specifications of the State of California, Business and Transportation Agency, Department of Transportation, CALTRANS, latest edition.

1.04 QUALITY ASSURANCE

A. Provide source and gradation from current testing (less than four months from date submitted) in accordance with Section 01 33 23 Shop Drawings, Product Data and Samples.

B. Furnish each aggregate material from single source throughout the Work.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

2.01 MATERIALS

A. Coarse Aggregate Fill Type Class II: per Caltrans Standard Specifications.

EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify substrate is dry and has been inspected and verify gradients and elevations are correct.

3.02 PREPARATION

A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.

B. Do not place aggregate on soft, muddy, or frozen surfaces.

3.03 AGGREGATE PLACEMENT

A. Spread aggregate over prepared substrate to the total compacted thickness as shown on the plans.

3.04 MEASUREMENT AND PAYMENT

Payment for the "Aggregate Base Course" shall be considered as included in the prices paid for "**4" Concrete Flatwork over 4"Aggregate Base**", "**New Meeting Room Structure**" and "**New Bathroom Structure**" and no additional compensation will be allowed therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 32 13 13 SITE WORK CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 DESCRIPTION

A. This Section includes site concrete, including but not limited to pavements, walls, footings and sub slabs, complete, as shown and as specified.

B. Products installed but not furnished under this section:

1. Section 32 84 00 Planting Irrigation

C. Furnish all labor, materials, equipment, and services to complete the work as indicated on the drawings, and in accordance with these specifications. Work includes but is not limited to the following:

1. Concrete formwork

2. Concrete reinforcement.

3. Cast-in-place concrete items:
   a. Concrete paving, sidewalks, ramps, pads, curbs, mow bands, etc.
   b. Miscellaneous concrete.
   c. All imbeds including anchor bolts, tie-downs, hold downs with bolts, straps, and sleeves.

1.02 REFERENCES

A. Standard Specifications - Standard Specifications of the State of California, Business and Transportation Agency, Department of Transportation, CALTRANS, latest edition.

B. ASTM - American Society for Testing and Materials

C. ACI - American Concrete Institute, Manual of Concrete Practice.

D. CBC – California Building Code

1.03 DEFINITIONS

A. Percent Compaction: ASTM D1557, percentage of the maximum in-place dry density of the same material as determined by the Geotechnical Report.

1.04 SUBMITTALS

A. Conform to the requirements of, Section 01 30 00.

B. Product Data: Manufacturers' current catalog cuts and specifications for the following:

1. Expansion joint filler, sealant, backer rod and bond breaker.
2. Damp proofing material.
3. Air-entrainment.
4. Curing Compound.
5. Fly Ash or Slag
6. MDO plywood made for forming

CITY COUNCIL REFERENCE ONLY

C. Samples:

1. Mock up: Provide 48” x 48” finished field sample prior to placement of walkway concrete.
2. Joint Sealant: Color chart.
3. Detectable warning truncated domes, 12”x12”.

D. Certificates:

1. Reinforcing Steel: Certificate of compliance
2. Concrete Mix Design: Ticket for each batch delivered showing the following:
   a. Mix identification.
   b. Weight of cement, aggregate, water, and admixtures, aggregate sizes/proportion, and air entrainment.

1.05 QUALITY ASSURANCE

A. Comply with American Society for Testing Materials (ASTM) A-615 "Standard Specifications for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement," and "Manual of Standard Practice for Detailing Reinforced Concrete Structures," publication American Concrete Institute (ACI) 315-65 of the American Concrete Institute.

B. Comply with all pertinent recommendations contained in ACI, "Recommended Practice of Concrete Formwork, ACI-347", and Section 2606, 1997 California Building Code (CBC).

C. Construct forms to sizes, shapes, lines and dimensions indicated on Drawings, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in Work. Use selected materials to obtain required finish. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.

D. Provide complete forms of such strength and construction as to prevent any spread, shifting, or settling when concrete is deposited, and tight enough to avoid any leakage or washing out of cement mortar.

E. Provide at least one person who shall be present at all times during execution of this portion of the Work and who shall be thoroughly trained and experienced in placing the types of concrete specified and who shall direct all Work performed under this Section. For finishing of exposed surfaces of the concrete, use only thoroughly trained and experienced journeymen concrete finishers.

F. Conform to Section 90 of the “Standard Specifications of the State of California”, Business and Transportation Agency, Department of Transportation (CSS), latest edition.

G. The contractor shall contact the Engineer of any discrepancies between field conditions and plans prior to proceeding with Work. The written dimension on Drawings shall supersede the graphic presentation. Dimensions are from back of curb, center line, base lines or as noted on the plans. All field adjustments must be approved by the Engineer prior to installation.

CITY COUNCIL REFERENCE ONLY

H. All walks and curbs shall be established in the field for review and approval prior to concrete pours. The contractor shall layout the area or form work for review by the Engineer. If approval is not obtained, the contractor is responsible for removal of any unauthorized field adjustments.

I. Transitions of curves to other curves, and curves to straight line tangents, shall be smooth and continuous.

J. Place expansion joint and score joints as shown on plan. Adjustments in the field shall be made only with the approval of the Engineer.

K. Where new concrete paving is placed adjacent to curbs or existing concrete paving, a continuous expansion joint shall be installed between the new concrete paving and curbs or existing concrete paving.

L. Sleeving shall be coordinated with concrete work. Refer to irrigation plan for sleeving location.

M. The Contractor shall be responsible for repairing, at no additional cost to the Owner, any disturbed existing landscape designated to remain which resulted from construction of this project.

N. All materials and finishes shall be as per the Drawings, details and Specifications. Some materials may require a several week order lead time. Contractor is responsible for determining any and all ordering lead times, and providing required materials at the project site in a timely manner. No unapproved substitutions will be allowed. Contact the Engineer immediately if a specified material is not available.

O. Lines and Levels: To be established by a licensed Surveyor or registered Design Professional.

P. Mix Standards: Conform to the ACI Manual and the Portland Cement Association's "Design and Control of Concrete Mixes".

Q. Design of Concrete Mix: Employ approved commercial testing laboratory to design concrete mixes as follows:

Item	Minimum Cement Content	28-Day Minimum Strength	Max. Slump	Aggregate Size	Water to Cement Ratio Max. Gal/Bag
Slabs on Grade, Curbs, Exterior Walkways	540 lb/cu. yd	3,500 PSI	3 in.	¾ in	SIX

All site work concrete shall have a minimum 5 day strength of 2,500 psi.

R. Fly Ash:

1. Source Control: The following sources of ash are not to be used:

   a. Ash from a peaking plant instead of a base loaded plant.
   b. Ash from plants burning different coals or blends of coal.

CITY COUNCIL REFERENCE ONLY

c. Ash from plants burning other fuels (wood chips, tires, trash) blended with coal.
d. Ash from plants using oil as a supplementary fuel.
e. Ash from plants using precipitator additives, such as ammonia.
f. Ash from start-up or shut-down phases of operation.
g. Ash from plants not operating at a "steady state."
h. Ash that is handled and stored using a wet system.

2. Fly ash used in concrete should be as consistent and uniform as possible. Fly ash to be used in concrete should be monitored by a quality assurance/quality control (QA/QC) program that complies with the recommended procedures in ASTM C311.(6) These procedures establish standards for methods of sampling and frequency of performing tests for fineness, loss on ignition (LOI), specific gravity, and pozzolanic activity such that the consistency of a fly ash source can be certified.

1.06 QUALIFICATION OF INSTALLER

A. Installer shall be thoroughly trained and experienced in the skills required, and shall be completely familiar with the products and their installation as specified on the Drawings and in this Section. Installer shall be present at all times during progress of Work of this Section and shall direct all Work performed.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Delivered Mixes: Coordinate delivery so that mixes may be immediately poured upon arrival at site.

B. Components and Accessories:

1. Fittings and Reinforcements: Protect from rust, soil and oil contamination at all times. Store on pallets above ground.

2. Templates: Protect from damage. Test accuracy prior to each use.

1.08 PROJECT/SITE CONDITIONS

A. Existing Conditions: For protection of existing plants to remain, see Division 1, Section 01 56 39 - Tree Protection.

B. Water and Dust Control: Maintain control of concrete dust and water at all times. Do not permit adjacent planting areas to be contaminated. Clean up all debris resulting from this work at the end of each day's work.

1.09 SEQUENCING AND SCHEDULING

A. Coordination: Coordinate all items of other trades to be furnished and set in place. Coordinate proper installation of all accessories embedded in the concrete and for the provision of holes, openings, etc., necessary to the execution of the work of the trades in ample time that progress of the work is not delayed.

B. Cutting/Patching: Perform as necessary to comply with above injunction.

1.10 JOB CONDITIONS

CITY COUNCIL REFERENCE ONLY

A. Cold-Weather Placement: comply with provisions of ACI 306 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

B. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.

1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

2. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators.

C. Hot-Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305 and as specified.

1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F (32 deg C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.

3. Fog spray form, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.

CITY COUNCIL REFERENCE ONLY

1.11 COORDINATION

A. Secure all pipe sleeves, anchors and bolts, including those for angle frames, inserts, ties and other materials in connection with concrete construction, in position before concrete is placed.

B. Obtain information and instructions from other Trades and suppliers in ample time to schedule and coordinate the installation of items furnished by them to be embedded in concrete so provisions for their work can be made without delaying the project.

C. Make cutting and/or patching made necessary by failure or delay in complying with these requirements at no additional cost to the Owner.

1.12 FORM CONSTRUCTION TOLERANCES

A. Set form to required grades and lines, rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of Work so that forms can remain in place for twenty-four hours after concrete placement.

B. Check completed formwork for grade and alignment to following tolerances:

C. Top of forms not more than one-eighth inch in ten feet vertical elevation.

D. Vertical face on longitudinal axis not more than one-fourth inch in ten feet horizontal width.

E. Circular or curved formwork shall be continuous, complete radii as indicated on Drawings. No straight segments in circular/curved formwork shall be accepted.

1.13 TESTS AND OBSERVATIONS

A. The following tests shall be made by the Owner's testing laboratory.

1. Cement: Mill analysis and test reports by supplier certifying cement conforms to Specifications is acceptable in lieu of tests at the discretion of the Engineer.

2. Concrete cylinders: Make and cure in accordance with ASTM C31.

   a. Record shall be made of the time cylinders were made and of locations of concrete from which the cylinders were taken.

   b. Three identical cylinders shall be taken from each pour of 25 cubic yards or part thereof, being placed each day. One cylinder shall be tested at five days, and one at 28 days.

3. Concrete consistency (slump) shall be checked during each pour by testing laboratory in accordance with ASTM C143.

4. Should tests show that concrete is below specified strength, the Contractor shall remove all such concrete. Full cost of removal of inferior concrete, its replacement with concrete of proper specified strength and testing shall be borne by the Contractor.

CITY COUNCIL REFERENCE ONLY

1.14 CODES AND STANDARDS

A. ACI 301 "Structural Concrete for Building."
B. ACE 305 "Recommended Practice for Hot Weather Concreting."
C. ACI 306 "Recommended Practice for Cold Weather Concreting."
D. ACI 308 "Curing Concrete."
E. ACI 309 "Recommended Practice for Consolidation of Concrete."
F. ACI 318 "Building Code Requirements for Reinforced Concrete."
G. ACI 347 "Recommended Practice for Concrete Formwork."
H. ACI 605 "Recommended Practice for Hot Weather Concreting."
I. ACI 614 "Recommended Practice for Measuring, Mixing, and Placing Concrete."
J. ASTM C31 "Practices for Making and Curing Concrete Test Specimens in the Field."
K. ASTM C33-86 "Specifications for Concrete Aggregate."
L. ASTM C94-89 "Specifications for Ready Mixed Concrete."
M. ASTM C143 "Test Method for Slump Portland Cement Concrete."
N. ASTM C150 "Portland Cement."
O. ASTM C309 "Specifications for Liquid Membrane-forming Compounds for Curing Concrete."
P. Western Concrete Reinforce Steel Institute (WCRSI) "Manual of Standard Practice."
Q. Where provisions of pertinent codes and standards conflict with this Specification, the more stringent provisions shall govern.
R. California Building Code (CBC), latest edition.
S. Section 90 of the "Standard Specifications of the State of California", Business and Transportation Agency, Department of Transportation (CSS), latest edition.

PART 2 PRODUCTS

2.01 CONCRETE REINFORCEMENT

A. Reinforcing Bars: Deformed Billet Steel Bars, ASTM A-615, Grade 40 or 60, containing a minimum of 70% total recycled content, clean and free from rust, scale, or coating that will reduce bond.

B. Smooth Dowels for Expansion Joints: ASTM A615, Grade 40 smooth, billet-steel bars, shop painted with iron-oxide zinc-chromate primer.

2.02 CONCRETE

A. Concrete Mix:

1. Ready-mixed concrete in accordance with ASTM C-94 and with aggregates comply with ASTM C-33 and Portland Cement ASTM C-150, Type II.

2. All mixes shall conform to applicable building code requirements listed herein or on the Drawings. All mix designs shall be submitted to the Engineer for approval before being used. Mix design shall show proportions of cement, fine and coarse aggregate, and water and graduation of combined aggregates. Calcium chloride shall not be added at any mix.

3. Cement: All cement shall be Portland cement Type II, and shall be the product of one manufacturer. The temperature of cement delivered to the plant shall not exceed 150 degrees Fahrenheit.

4. Aggregates:

5. Coarse aggregate shall have a minimum cleanliness value of 75.

6. Fine aggregate shall have a minimum of sand equivalent of 75.

7. Any suitable individual grading of coarse aggregates may be used.

8. Water: All water shall be clean and free from deleterious matter.

9. Admixture: No admixture of any type shall be used without prior approval of the Engineer.

10. Concrete shall be as specified: Class B

11. 28-Day Minimum Strength: 3500 pounds per square inch

12. Concrete slump: Three inches to four inches (five inch maximum for any single truckload.)

13. Air Content: No air entrainment.

B. Fly Ash: Pozzolanic admixtures, conforming to ASTM C618, Class C, with weight loss of ignition limited to not exceed 3 percent shall be used in mix designs to replace Portland Cement at a minimum rate of 20% up to 35% by weight, unless noted otherwise on drawings.

CITY COUNCIL REFERENCE ONLY

1. Reference: ACI 211.4R-93.

C. Aggregate Base for On-grade Slabs (standard non pervious and when not adjacent to pervious concrete systems):

1. Description: Class II aggregate base shall be free from organic matter and other deleterious substances, and shall be of such nature that it can be compacted readily under watering and rolling to form a firm, stable base.

2. Grading Requirements:

Percent Passing	Sieve Size
100	1 in.
90-100	3/4 in.
0-10	#4
0-3	#100

3. Quality Requirements:

a. Minimum "R" value : 40

b. Max. Expansion Pressure; Calif. Test Method No. 301 100 psf

c. Maximum Plasticity Index: 12

d. Sand Equivalent: 20 min.

D. Water: Clean, potable concrete mixing water free from injurious amounts of salts, oils, acids, alkalis, organic materials or other deleterious matter. Transport as required.

E. Air Entrainment: ASTM C260.

F. Admixtures: Admixtures containing chlorides are not permitted. All admixtures shall be mixed in accordance with manufacture's written recommendations.

2.03 DETECTABLE WARNING SURFACE

A. Detectable warning surfaces shall be ADA compliant

B. Detectable warning surface shall be Armorcast Wet Set Panel, or approved equal.

1. Color: Truncated domes shall be as indicated on the Civil drawings.

2. Size: All truncated dome panels shall be 36" wide. The length shall be according to the Civil drawings.

3. Warranty: The manufacturer guarantees a five-year manufacturer warranty.

2.01 ACCESSORIES

A. Tie Wires: Black annealed, ASTM A-82, minimum 16 gauge.

B. Chains, Bolsters, Bar supports, Spacers: Sized and shaped for strength and support of reinforcement during installation and placement of concrete.

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C. Stirrup Steel: ASTM A-82.

D. Snap Ties: Snap-off metal of fixed length capable of leaving no metal within 1 1/2 in. of surface nor causing fractures, spall or other defects larger than one [1] in. diameter.

E. Expansion Joint Materials:

1. Premolded Joint Filler: ASTM D1751, non-extruding and bituminous type resilient filler, compatible with sealant, and having a "guide strip" removable depth gauge.

2. Joint Sealant: ASTM C290, non-snag sealant "Dynatred" by Pecora Corporation, [214] 278-8158 or "Sonolastic Sealant Two-Part" by Sonneborn, [415] 889-9899 Bay Area or [612] 835-3434, or approved equal.

3. Color shall be selected on site by the Landscape Architect from the manufacturers full color selection.

4. Bond Breaker: Pressure-sensitive tape as recommended by sealant manufacturer to suit application.

5. Premolded Joint Filler: closed cell plastic joint filler, Sonoflex-F by Sonneborn, or equal.

F. Forms:

1. Steel or wood of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal.

2. Use forms that are straight and free of distortions and defects.

3. Use flexible spring forms or laminated boards to form radius bends as required.

G. Form Release Agent: Colorless non-staining, free from oils. Chemical agent shall not impair bonding of paint or other proposed coatings.

H. Form-Facing Materials:

1. All Surfaces: Of sufficient strength to hold concrete properly in place and prevent leakage of water from forms.

2. Exposed Surfaces: A-Matte, Two-step MDO plywood made for forming by Simpson Timber Co., [206] 292-5000 or accepted equal. No wood-textured finish will be permitted on exposed concrete unless specified as such, or approved equal.

I. Wood Headers:

1. Wood: Construction Heart grade rough Redwood header and stake or pressure-treated rough Douglas Fir stake.

2. Nails: Hot-dipped galvanized.

J. Dampproofing: ASTM C836-81, Fluid-V single component, bitumen-modified, moisture-curing polyurethane "Tremproof 60" by Tremco, [800] 321-7906, or approved equal.

K. Curing Compound: ASTM C309, Type I-D, Class A.

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L. Chamfer Strips: Rigid PVC, 1/2 inch x 1/2 inch in maximum possible lengths, by Burke Co., [415] 658-7942, or approved equal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Verify that subgrade preparation for concrete paving has been completed prior to commencement of work.

B. Surface Drainage:

1. Report in writing conflicts discovered on the site or prior work done by others, which would prevent positive drainage.

2. Do not permit finished paving surfaces to vary more than 1/4 in. measured with a 10 ft. metal straightedge, except at grade changes. No "birdbaths" or other surface irregularities will be permitted. Properly correct irregularities.

3.02 PREPARATION

A. Templates: Use templates for all anchor plates, bolts, inserts and other items embedded in concrete. Accurately secure so that they will not be displaced during placing of concrete.

B. Piping and Conduit: Do not embed piping, other than electrical conduit, in structural concrete. Locate conduit to maintain strength of structures at maximum. Verify size, length and location of electrical conduit.

C. Exposed Tree Roots: protect roots exposed during excavation with a non-permeable sacrificial material to prevent excessive drying during the placement and curing process.

D. Aggregate Base Course: Compact base course to thicknesses shown on Drawings to 95% relative compaction for areas under non pervious pavements as indication on drawings.

3.03 CONCRETE REINFORCEMENT PLACEMENT

A. Fabricate reinforcement in accordance with ACI-315, providing a minimum concrete cover of three inches or as specified in latest edition.

B. Place all reinforcement in the exact position shown on the Drawings and secure in position during the placing and compacting of concrete. Wire bars together with No.16 gauge wire with ties at all intersections except where spacing is less than twelve inches in each direction, in which case tie alternate intersections.

C. Place all sleeves, inserts, anchors and embedded items required for adjoining work or for its support prior to concreting. Fill voids in embedded items temporarily with readily removable material to prevent entry of concrete.

D. Give all contractors and subcontractors whose work is related to concrete or supported by it, ample notice and opportunity to introduce and/or furnish embedded items before concrete placement.

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E. Verify that concrete reinforcement may be installed in strict accordance with all pertinent codes and regulations, the Shop Drawings and the original design.

F. Verify score joints in sidewalk slabs are constructed at 10-foot maximum intervals.

G. Bending:

1. Fabricate all reinforcement in strict accordance with the reviewed Shop Drawings.

2. Do not use bars with kinks or bends not indicated on the Drawings or on the reviewed Shop Drawings.

3. Do not bend or straighten steel in a manner that will injure the material.

4. Bend all bars cold.

5. Make all bends for other bars, including hooks, around a pin having diameter not less than six times the minimum thickness of the bar for number 8 and smaller and eight times the thickness for number 9 and larger.

H. Before the start of concrete placement, accurately place all concrete reinforcement, positively securing and supporting by concrete blocks, metal chairs or spacer, or by metal hangers

I. Clearance:

1. Preserve clear space between bars of not less than one time the normal diameter of round bars.

2. In no case let the clear distance be less than 1 inch or less than 1-1/3 times the maximum size of aggregate.

3. Provide the following minimum concrete covering of reinforcement:

4. Concrete below ground deposited against forms: 3 inches.

5. Concrete deposited against earth: 3 inches.

6. Concrete elsewhere: as indicated on Drawings.

J. Splicing:

1. Horizontal bars:

2. Place bars in horizontal members with minimum laps at splices sufficient to develop the strength of the bars. Splice 40 bar diameters minimum

3. Bars may be wired together at laps.

4. Wherever possible, stagger the splices of adjacent bars.

5. Wire fabric: Make all splices in wire fabric at least 1-1/2 meshes wide.

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6. Other splices: Make only those other splices that are indicated on the approved Shop Drawings or specifically approved by the Engineer.

K. Dowels/Anchor Bolts: Place all required steel dowels/anchor bolts and securely anchor them into position before the concrete is placed. Bending the dowels after placement of concrete will not be permitted.

L. Obstruction: In the event conduits, piping, inserts, sleeves, or any other items interfere with placing reinforcement as indicated on the Drawings, or as otherwise required, immediately consult the Engineer and obtain review of new procedure before placing concrete.

3.04 CONCRETE FORMWORK CONSTRUCTION

A. Construct support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete.

B. Contractor assumes full responsibility in the removal of forms. The length of time forms must remain in place depends on the rate of time required for concrete to obtain a proper strength. Remove forms after the concrete is sufficiently hard to prevent damage to concrete.

C. Reuse of Forms:

1. Do not reuse forms if there is any evidence of surface wear or defect which would impair quality of surface.

2. Thoroughly clean and properly coat forms before reuse.

D. Circular or curved formwork shall be continuous, complete radii as indicated on Drawings. No straight segments in circular/curved formwork shall be accepted.

3.05 INSTALLATION

A. Notification: Notify the Engineer at least 48 hours before placing concrete.

B. Placing Concrete:

1. Unless otherwise indicated or required by the Drawings, concrete paving shall be placed on compacted subgrade to thicknesses indicated on the Drawings to 95 percent compaction.

2. Place concrete in accordance with ACI-304 and Section 2605 of the California Building Code. Immediately after depositing, compact concrete thoroughly by mechanical vibration. No vibrating of form is allowed. Mixing shall be continuous, with no interruptions from the time the truck is filled until the time it is emptied. Concrete shall be placed within one and a hours of the time water is first added.

3. Insure anchors, seats, plates, and other items to be cast into concrete are placed, held securely and will not cause hardship in placing concrete.

4. Insure reinforcement, inserts, embedded parts, etc. are not disturbed during concrete placement.

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5. Pour concrete continuously between predetermined construction and control joints. Do not break or interrupt successive pours such that cold joints occur, unless otherwise indicated on the Drawings.

6. Lines and Grades: Elevations requiring accurate placement shall be set by a competent instrument man, using a professional type instrument.

7. For all concrete placed on soil, the subgrade shall be wet and compacted prior to placing.

8. Before placing concrete mixing, conveying and finishing equipment, forms and reinforcing shall be well-cleaned. Wet form before placing concrete, unless oiled forms are used.

3.06 CURING AND PROTECTION

A. Beginning immediately after placement, protect concrete from premature drying, from excessively hot or cold temperatures, and from mechanical injury. Maintain concrete with minimal moisture loss at relatively constant temperature for a period necessary for hydration of cement and hardening of concrete. In hot, dry and windy weather protect concrete from rapid moisture loss before and during finishing operations with an evaporation – control material. Apply according to manufacturer's instruction.

B. As soon as building flat work has hardened sufficiently to prevent injury to finish, apply an approved concrete curing agent in accordance with the manufacturer's recommendation.

C. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than seven (7) days.

D. Excessive cracking as determined by the Design Professional which is aesthetically unacceptable or which will result in premature disintegration of paving shall result in replacement of concrete.

E. Removal of Forms: Remove no sooner than at seven [7] days after each pour.

F. Conform to all applicable requirements for curing and protection of concrete, Sections 90-7 and 90-8 of the Standard Specifications.

G. Spraying: Spray concrete during the curing period as frequently as drying conditions may require.

H. Curing: Cure concrete in accordance with the ACI Manual of Concrete Practice. During curing period, maintain concrete above 70 degrees F. for at least 3 days or above 50 degrees F. for at least 5 days.

I. Damage and Defacement: Protect all concrete work against damage and defacement during subsequent construction operations until final acceptance.

3.07 CLEANING AND PATCHING

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A. Removal: Remove all projecting fins, bolts, wire, nails, etc., not necessary for the work, or cut them back 1 in. from the surface and patch in an inconspicuous manner.

B. Snap Ties: Immediately after removal of forms, cut off snap ties extending from the face of concrete to at least 1 in. deep in the concrete. Fill or plug as detailed in Drawings.

C. Voids: Fill holes with a 1:3 cement/sand mortar with the same color as the adjoining concrete. Mix and place the mortar as dry as possible and finish flush with the adjacent surface.

D. Corrective Patching: Correct all defects in concrete work. Chip all voids to a depth of at least 1 in. with the edges perpendicular to the surface and parallel to form markings. Fill all voids, surface irregularities, or honeycombing by patching or rubbing. Ensure that all concrete surfaces so repaired duplicate the appearance of the unpatched work.

E. Finishing: Work finish surface texture as specified below.

3.08 FINISHES

A. Color:

1. Gray.

B. Finish: Medium Broom Finish:

1. Floating: Float surface once it has sufficiently stiffened. Check planeness of surface with a 10 ft. straightedge in all directions. Cut down high spots and fill lows. immediately refloat to a uniform non-directional sandy texture.

2. Obtain by drawing a stiff bristled broom across a floated finish.

3. Direction of brooming to be perpendicular to direction of paving.

4. Concrete color shall match existing sidewalk.

C. Detectable Warning System:

1. Armor-Tile Cast In Place system, or equal.

2. Color: Federal Color No. 36118 - Dark Gray.

3. Install per manufacturer's instructions.

3.09 JOINTS

A. Construction Joints:

1. Locate and install joints as indicated on the Drawings so they do not impair strength or appearance of slab.

2. Score joints shall be formed in the fresh concrete using a jointer to cut the groove so that a smooth uniform impression is obtained. All joints shall be struck before and after sandblast.

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3. All joints and other edges shall be formed in the fresh concrete using an edging tool to provide a smooth uniform impression.

B. Score Joints:

1. Locate and install joints as indicated on the Drawings so they do not impair strength or appearance of slab.

2. Locate and form joints with ¼" radius edges and 1" to 1-1/4" deep score at the location as shown on the Drawings.

3. All joints and other edges shall be formed in the fresh concrete using an edging tool to provide a smooth uniform impression.

C. Expansion Joints:

1. Locate and install joints as indicated on the Drawings so they do not impair strength or appearance of slab.

2. Expansion joints shall be provided at the location and 40-foot maximum intervals as shown on the plans, and at all locations where concrete paving abuts buildings, curbs or other proposed or existing structures. Install as per detail on the Drawings.

3. All joints and other edges shall be formed in the fresh concrete using an edging tool to provide a smooth uniform impression.

4. Install backer-rod and joint sealant as indicated on the Drawings.

5. Sealing of Expansion Joints: After the curing period, strip out all depth gauge strips and carefully clean expansion joints. Fill with joint compound as shown on Drawings. Avoid spilling compound on paved surfaces or overflowing from joint.

6. Protect expansion joints from damage until placement of filler or caulk.

D. Design Finish Delineating Joints:

1. Separation between the smooth surface finishes and the exposed aggregate surface finishes of the concrete slab shall be incorporated using a shallow rake joint with ¼" radius edges as per detail on the Drawings.

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3.10 DAMPPROOFING

NOT USED

3.11 FIELD QUALITY CONTROL

A. Samples: Contractor shall coordinate with the Engineer to select a qualified testing laboratory to take samples for testing during the course of the work as considered necessary.

B. Cost of Testing: As specified in Division 01

C. Rejected Materials: Remove off the site all concrete below specified strength.

D. Cost of Removal and Retesting: As specified in Division 01

E. Defective Work: Remove in its entirety and replace all defective concrete work which after corrective patching, rubbing, etc., fails to duplicate the appearance of unpatched work and/or conform to the standards set forth in these Specifications.

F. Observe formwork continuously while concrete is being placed to see that there are no deviations from desired elevation, alignment, plumbness or camber.

G. If during construction any weakness develops and falsework shows undue settlement or discoloration, stop work, remove affected construction if permanently damaged, and strengthen falsework.

3.12 CONSTRUCTION WASTE MANAGEMENT

A. Comply with the applicable provisions of Division 01, Section 01 77 00 including, but not limited to:

1. Separate packaging materials by type and place in location designated by the Contractor.

2. Place unused scrap materials in location designated by the Contractor.

3.13 MEASUREMENT AND PAYMENT

A. The contract square foot price for "**4" Concrete Flatwork over 4" Aggregate Base**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals including joint sealant, reinforcement, formwork, aggregate subbase, aggregate base and for doing all work covered in this section, complete in place as shown in plans, as required in the Special Provisions, and as required by the City's Engineer, and no separate payment will be made therefor

B. The contract linear foot unit price for "**Concrete Mow Band**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals including joint sealant, reinforcement, formwork, aggregate subbase, aggregate base and for doing all work covered in this section, complete in place as shown in plans, as required in the Special Provisions, and as required by the City's Engineer, and no separate payment will be made therefor

END OF SECTION

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SECTION 32 84 00 IRRIGATION

PART 1 GENERAL

1.01 SUMMARY DESCRIPTION

A. Scope of Work:

1. Provide irrigation systems as shown on the Drawings and described herein.

B. Related Sections:

1. Division 26 - Electrical: Power connection for controller.

1.02 SUBMITTALS

A. Material List:

1. Complete manufacturer's technical data and installation instructions shall be submitted prior to performing any work. Material list shall include the manufacturer, model number and description of all materials and equipment to be used.

B. Record Drawings:

1. The original record drawings shall be submitted to the Owner for approval prior to making the controller chart. Refer to Section 01 77 00.

2. Drawings shall include dimensions from two permanent points of reference such as building corners, sidewalks, or road intersections for the location of the following items:

a. Connection to existing water lines.

Connection to existing electrical power and splice locations.

b. Relocated existing equipment.

c. Gate valves.

d. Routing of sprinkler pressure lines.

e. Sprinkler control valves.

f. Routing of control wiring.

g. Quick coupling valves.

h. Other related equipment as directed by the Owner.

C. Controller Charts:

1. Controller charts shall be prepared by Contractor.

2. Provide one controller chart for each controller supplied.

3. The chart shall show the area controlled by the automatic controller and shall be the maximum size which the controller door will allow when rolled up.

4. The chart shall be a reduced drawing of the actual as-built system and shall be readable when reduced.

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5. The chart shall be a black line print and different colors shall be used to indicate the area of coverage for each station.

6. When completed and approved, the chart shall be hermetically sealed between two pieces of plastic, each piece being a minimum 10 mils if required by Owner.

7. As-built record drawings and controller charts shall be completed and approved prior to final inspection of the irrigation system.

D. Operation and Maintenance Manuals:

1. Contractor shall prepare Operation and Maintenance Manuals in accordance with Section 01 77 00.

a. Index sheet stating Contractor's address and telephone number, list of equipment with name and addresses of local manufacturer's representative.

b. Catalog and parts sheets on all material and equipment installed under this contract (not necessary for campus standard irrigation equipment).

c. Guarantee statement.

d. Complete operating and maintenance instructions on all major equipment.

E. Equipment to be Furnished:

1. Furnish the following tools:

a. Two sets of special tools required for removing, disassembling and adjusting each type of sprinkler and valve provided on this project.

b. Two keys for each automatic controller.

c. Two quick coupler keys and matching hose swivels per project.

2. This equipment shall be furnished to Owner before final inspection can occur. Evidence that the Owner has received material must be provided to Owner.

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1.03 QUALITY ASSURANCE

A. Manufacturer's directions and detailed drawings shall be followed in all cases where points are not shown in the Drawings and Specifications.

B. Drawings are generally diagrammatic and indicative of the work to be installed and do not show all offsets, fittings, sleeves, and other parts which may be required. Contractor shall carefully investigate the structural and finished conditions affecting all work and plan accordingly, furnishing such fittings, and other appurtenances as may be required to meet such conditions. The Work shall be installed in such a manner as to avoid conflicts between irrigation systems, planting, and architectural features.

C. Before commencing irrigation system installation, Contractor shall resolve obstructions, grade differences or discrepancies in area dimensions that might not have been considered in engineering and shown on the Drawings.

1.04 COORDINATION AND SCHEDULING

A. Contractor shall notify Owner in advance for the following observation meetings, according to the time indicated, and shall provide documentation to Owner that the following meetings occurred and their outcome.

1. Pre-job conference - 7 days.
2. Sleeve inspection – 48 hours.
3. Pressure supply line installation and testing - 48 hours.
4. Automatic controller installation - 48 hours.
5. Control wire installation - 48 hours.
6. Lateral line and sprinkler installation - 48 hours.
7. Coverage test (prior to any planting installation) - 48 hours.
8. Final inspection - 7 days.

PART 2 PRODUCTS

2.01 PIPING MATERIALS

A. PVC Pressure Main Line Pipe and Fittings:

1. Pressure main line piping for sizes 3 inches and larger shall be Class 315 SDR 13.5 with mechanical joints.
2. Pressure main line piping for sizes 3 and smaller shall be PVC Schedule 40 with solvent welded joints and with Schedule 80 fittings.
3. Pipe shall be made from NSF approved Type I, Grade I PVC compound conforming to ASTM resin specification D1785. All pipe shall meet requirements as set forth in Federal Specification PS-21-70.
4. PVC solvent-weld fittings shall be Schedule 40, 1-2, II-I NSF approved conforming to ASTM test procedure D2466.
5. Solvent cement and primer for PVC solvent-weld pipe and fittings shall be of type and installation methods prescribed by the manufacturer.
6. All PVC pipe must bear the following markings:
   a. Manufacturer's name.
   b. Nominal pipe size.
   c. Schedule or class.
   d. Pressure rating in PSI.
   e. NSF (National Sanitation Foundation) approval.
   f. Date of extrusion.
7. All fittings shall bear the manufacturer's name or trademark, material designation, size, applicable Iron Pipe Size (IPS) schedule and NSF seal of approval.

B. PVC Non-Pressure Lateral Line Piping:

1. Non-pressure buried lateral line piping shall be PVC schedule 40 with solvent-welded joints.

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2. Pipe shall be made from NSF approved, Type I, Grade II PVC compound conforming to ASTM resin specification D1784. All pipe shall meet requirements set forth in Federal Specification PS-22-70 with an appropriate standard dimension ratio.

3. Except as noted above, all requirements for non-pressure lateral line pipe and fittings shall be the same as for solvent-weld pressure main line pipe and fittings as set forth in these specifications.

4. For all sprinkler head installations use schedule 80 thread nipples and risers, and schedule 40 fittings.

C. PVC Sleeves:

1. PVC sleeves shall be Schedule 40 with solvent weld joints. Install sleeves at 24 inches depth to top of pipe. Backfill sleeve trench with sand. Depth exception may be considered at concrete walks with prior approval by Owner.

D. Brass Pipe and Fittings:

1. Where indicated on the Drawings, use red brass threaded pipe.

2. Fittings shall be red brass conforming to Federal Specification #WW-P-460.

E. Galvanized Pipe Fittings:

1. Where indicated on the Drawings, use galvanized steel pipe American National Standards Institute (ASA) Schedule 40 milled steel threaded pipe.

2. Fittings shall be medium galvanized screwed beaded malleable iron. Galvanized couplings may be merchant coupling.

3. All galvanized pipe and fittings installed below grade shall be wrapped with 2 layers of 10 mil pipe wrap.

4. Pipe lubricant: Permatex 51, or equal.

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2.02 VALVES

A. Gate Valves:

1. Gate valves 3 inches and larger shall be 125 lb. Static Water Pressure (SWP) bronze gate valve with screw-in bonnet, non-rising stem, solid wedge disc, threaded ends and a bronze or malleable iron handwheel, with a 2” operating nut.

2. Gate valves 2-1/2 inches and smaller shall be manufactured by Nibco, Aqua, Matco, or equal, 200 psi Water Oil Gas (WOG), 125 SWP, Screw-in bonnet, solid wedge.

B. Quick Coupling Valves:

1. Quick coupling valves shall have a brass two-piece body designed for working pressure of 125 PSI operable with quick coupler.

2. Key size and type shall be as shown on Drawings.

3. Quick coupling valves shall be manufactured by Rain Bird (RC33, RC44) Buckner (B33, B44) or equal.

4. All quick coupling valves without integral stabilizers shall be equipped with cast ductile iron anti-rotation devices or anchors that attached to the base of the valve and can be secured by a single bolt, and shall be manufactured by Leemco (LS-120, LS-150), Harco (82201, 82202) or equal.

C. Electrical Remote Control Valves:

1. Electric control valves shall have a manual flow adjustment.

2. Provide one control valve box for each electric control valve.

3. Electric Remote Control Valves shall be manufactured by Griswold 2000H, or equal.

4. Pressure regulating modules as required for pressure reduction on new or existing valves manufactured by Hunter (Accu-Sync), Irritrol (Omni Reg), or equal, as noted on Drawings.

5. For pipe connections to valve bodies use Teflon tape material. Pipe dope shall not be used.

D. Associated Valves:

1. Y-Strainer brass 80 mesh with brass ball valve to blow-out screen.

2. Above ground Y-strainers shall be metal.

3. Y-strainer shall be same size as water supply.

4. Ball valves 3 inches and smaller shall be brass.

E. Flow Sensor and Master Valve:

1. Flow sensor and master valve assemblies shall be by Rain Master or equal and must operate with controller. Install both units after brass gate valve at point of water connection. The master valve shall be main line-sized for project and have the capacity to have additional systems added on in the future. The flow sensor may be main line-sized or smaller, as shown on Drawings. This maximizes flow management capabilities to reduce water window times and improve efficiency.

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2.03 BACKFLOW PREVENTION UNITS

A. Per Plans.

2.04 CONTROL WIRING

A. Copper direct burial sprinkler wire, sized according to length of the run, minimum 14 gauge (white common, red primary lead, blue for spares). All communication wire for controllers and sensors shall be installed in electrical conduit not less than 1 inch.

2.05 AUTOMATIC CONTROLLERS

A. Existing automatic controller:

1. Upgrades to existing controller shall be as shown on the plans, no known equal.

B. Connections to existing Calsense CS3000 controllers

2.06 MAIN LINE SHUT OFF BOX

A. Install main line shut off valve at point of connection in a Christy concrete G5 traffic box for main line shut off valves with “water” labeled lid, or equal.

2.07 CONTROL VALVE BOXES

A. Use 10 by 10-1/4 inch round box for all gate valves, Carson Industries #910-12B with green bolt down cover, or equal. Extension sleeve shall be PVC- 6 inch minimum size.

B. Use 9 1/2 by 16 by 11 inch rectangular box for all electrical control valves, Carson Industries 1419-13B with green bolt down cover, or equal.

2.08 SPRINKLER HEADS

A. All sprinkler heads on any one system (zone) shall be of the same size, type, and deliver the same rate of precipitation with the diameter (or radius) of throw, pressure, and discharge as shown on the Drawings and specified.

B. Small rotors shall be pop-ups with stainless steel risers and check valves, have a screw adjustment and shall be manufactured by Hunter (I-20-04NCV,Toro 640-02), or equal.

C. Spray heads shall be manufactured by Toro)-T-5702-12p, or equal. Variable arc nozzles are to be used only when specifically approved by the Owner.

D. Double Swing Joint Assembly: These shall be fabricated in accordance with the detail. Use Schedule 80 threaded nipples and risers and Schedule 40 fittings.

E. Riser nipples for all sprinkler heads shall be the same size as the riser opening in the sprinkler body.

F. Low precipitation rate, multi-stream nozzles shall be Hunter MP Rotator series, or equal, and shall be used with 40 psi pressure regulating heads (MP 1000 Pros-12-cv) or equal.

2.09 BUBBLERS

A. Bubblers shall have an operating range of .05, 1, 2 or 4 gallons per hour (GPH) up to .25 gallons per minute (GPM)

B. Bubblers shall have an operating pressure range from 5 psi to 65 psi with positive internal check springs or be pressure compensating.

C. Bubblers may have a zone filtration mesh of 100-200 Mesh.

D. The bubbler body shall be manufactured with UV Stabilizers and have ½” FIPT threads for connection to ½” MNPT barbed fittings and

E. Bubblers shall be Pro-Spec PST-CV Emitter at .05 to 4 GPH, by Salco; Rainbird Xeri-Bug Emitters XBT-10PC or 20PC at 1.0 GPH to 2.0 GPH; Toro Bubbler Nozzles FB-25-PC at .25 GPM; Rainbird 1401 Series at 0.25 GPM; or approved equal.

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F. Each shrub bubbler assembly shall have a check valve installed. Approved product is King Bro. SCV-MF Series check valves (TxT) and PVC to poly pipe adapter, or approved equal.

G. Distribution tubing, swing pipe or funny pipe shall have an inside diameter of .49” and an operating pressure up to 120 psi, and withstand temperature of 110°F

H. All heads of a particular type of function in the system shall be of the same manufacturer and shall be marked with the manufacturer's name and identification in such a position that they can be identified without being removed from the system.

2.10 IN-LINE PRESSURE REDUCERS

A. In-line pressure regulators shall have pressure rating of 200 PSI minimum. Adjustment range shall allow for 30-75 PSI. Install one pressure reducer per irrigation control valve as shown on drawings.

B. Contractor shall set pressure regulator as required by irrigation rotos, spray heads and bubblers being operated. Contractor shall adjust necessary and as directed by City Representative.

C. Approved products are as follows, or approved equal.

1. Watts, 2300 – 3”, 4”, 5” & 6” (size per plans)

2. Wilkins 500

D. All valve boxes shall be Pentek Superflexon 13x18, Carson 1324, or approved equal.

2.11 REMOTE CONTROL VALVE IDENTIFICATION TAGS

A. 2-1/4 by 2-3/4 inch yellow polyurethane with valve number embossed on tag, as manufactured by Christy's Irrigation I.D. Tags, (714) 771-4142, or equal.

PART 3 EXECUTION

3.01 INSPECTION

A. Exercise extreme care in excavating and working near existing utilities. Contractor shall be responsible for damages to utilities which are caused by Contractor's operations or neglect. Check existing Utilities Drawings for existing utility locations.

B. Refer to 1.04 Coordination and Scheduling for additional inspection requirements.

3.02 PREPARATION

A. Physical Layout:

1. Prior to installation, Contractor shall stake out all pressure supply lines, routing and location of sprinkler heads and layout of drip tubing.

2. All piping and tubing layout shall be approved by Owner prior to installation.

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B. Water Supply:

1. Point of Connection (POC): Install flow sensor and master valve assemblies after brass gate valve. The sizes of master valve and flow sensors to be main line-sized or larger for project and have the capacity to have additional systems added on in the future.

2. Electrical Supply:

a. Electrical connections for automatic controller shall be made to electrical points of connection as indicated on the Drawings.

3.03 INSTALLATION

A. Trenching:

1. Provide a minimum cover of 18 inches for all pressure supply lines.

2. Provide a minimum cover of 12 inches for all non-pressure PVC lines.

3. Provide a minimum cover of 4 inches for all drip tubing

4. Provide a minimum cover of 18 inches for all control wiring.

B. Backfilling:

1. A fine granular material backfill shall be initially placed on all lines. No foreign matter larger than 1/4 inch in size will be permitted in the initial backfill. The trenches shall not be backfilled until all required tests are performed. Trenches shall be carefully backfilled with the excavated materials approved for backfilling, consisting of earth, loam, sandy clay, sand, or other approved materials, free from 4 inch or greater clods of earth or 1/4 inch or greater stones, gravel or other debris. Backfill shall be mechanically compacted in landscaped areas to a dry density equal to adjacent undisturbed soil in planting areas. Backfill shall conform to adjacent grades without dips, sunken areas, humps or other surface irregularities.

2. Flooding of trenches will be permitted only with approval of the Owner.

3. If settlement occurs and subsequent adjustments in pipe, valves, sprinkler heads, lawn or planting, or other construction are necessary, the Contractor shall make all required adjustments at no additional cost to the Owner.

C. Trenching and Backfill Under Paving:

1. Trenches located under areas where paving (asphaltic concrete or concrete), will be installed shall be backfilled with sand (a layer 6 inches below the pipe and 3 inches above the pipe) and compacted in layers to 95 percent compaction, using manual or mechanical tamping devices. Trenches for piping shall be compacted to equal the compaction of the existing adjacent undisturbed soil and shall be left in a firm unyielding condition. All trenches shall be left flush with the adjoining grade. The Contractor shall set in place, as part of the sprinkler Work, cap and pressure test all piping under paving prior to the paving Work.

2. Piping under existing walks shall be done by jacking, boring or hydraulic driving where possible. Where any cutting or breaking of sidewalks or concrete is necessary permission shall be obtained from the Owner. No

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hydraulic driving will be permitted under concrete paving. Concrete paving shall be replaced back to nearest control joint.

3. Provide for a minimum cover of 18 inches between the top of the pipe and the bottom of the aggregate base for all pressure and non-pressure piping installed under asphaltic concrete paving.

D. Pipe Assemblies:

1. PVC pipe and fittings shall be thoroughly cleaned of dirt, dust and moisture before installation. Installation and solvent welding methods shall be as recommended by the pipe and fitting manufacturer.

2. On PVC to metal connections, Contractor shall work the metal connections first. Pipe tape shall be used on all threaded PVC to PVC, and on all threaded PVC to metal joints. Light wrench pressure is all that is required. Where threaded PVC connections are required, use threaded PVC adapters or machined PVC schedule 80 pipe nipples into which the pipe may be welded.

3. Do not install multiple assemblies in plastic sleeves.

4. Use fittings to change pipe directions. Do not deflect pipe beyond manufacturer's recommendations.

5. Do not install joints in sleeves or under pavement if length is less than 20 feet. Where pipe length exceeds 20 feet, use minimum number of joints.

6. Install PVC piping and fittings without tension on the fittings. Pipes should be inserted squrely and fully into socket of fittings.

E. Pipe Clearance: All pipes shall have a minimum clearance of 6 inches from each other and from lines of other Work. Parallel pipes shall not be installed directly over one another. No more than two pipes may be installed in a single trench.

F. High Voltage Wiring for Automatic Controller:

1. Provide 120 volt power connection to the automatic controller.

G. Remote Control Valves:

1. Install where shown on Drawings and details. When grouped together, allow at least 12 inches between valve box edges. Install each remote control valve in a separate valve box.

2. Each controller and station number shall be labeled at the valve with a 2-1/4 by 2- 3/4 inch yellow polyurethane I.D. tag attached to the control wire of the valve.

3. Set valve boxes perpendicular to adjacent walls and parallel to one another.

4. Thoroughly flush mainline before installing valves.

5. Install valve and box to maintain a minimum of 1 inch clear space between the top of the valve and the lid of the box.

6. Install valve box at the same level as soil grade, not above.

H. Control Wiring:

1. Wiring shall occupy the same trench and shall be installed along the same route as pressure supply or lateral lines wherever possible.

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2. Where more than 1 wire is placed in a trench, the wiring shall be taped together at intervals of 10 feet.

3. An expansion curl shall be provided within 3 feet of each wire connection. Expansion curl at electric control valves shall be of sufficient length so that in case of repair, the valve bonnet may be brought to the surface without disconnecting the control wires. Control wires shall be laid loosely in trench without stress or stretching of control wire conductors.

4. All splices shall be made with electric dry connections. Use one splice per connector.

5. Field splices between the automatic controller and electrical control valves will not be allowed without prior approval of Owner.

I. Flushing of System:

1. After all new sprinkler pipe lines and risers are in place and connected, all necessary diversion work has been completed, and prior to installation of sprinkler heads, the control valves shall be opened and a full head of water used to flush out the system.

2. Sprinkler heads shall be installed only after flushing of the system has been accomplished to the complete satisfaction of the Owner.

3.04 EXISTING TREES

A. Where it is necessary to excavate adjacent to existing trees, the Contractor shall first discuss with the Owner and get written permission for proposed trench route. Contractor shall use all possible care to avoid injury to trees and tree roots. Refer to Section 01 56 39 Tree Protection.

3.05 FIELD QUALITY CONTROL

A. Testing of Irrigation System:

1. Contractor shall request the presence of the Owner in writing at least 48 hours in advance of testing. Testing of pressure mainlines shall occur prior to installation of electric control valves.

2. Test all pressure lines under hydrostatic pressure of 150 pounds per square inch, and prove watertight.

3. All piping under paved areas shall be tested under hydrostatic pressure of 150 pounds per square inch, and proved watertight, prior to paving.

4. Sustain pressure in lines for not less than 2 hours. If leaks develop, replace joints and repeat test until entire system is proven watertight.

5. All hydrostatic tests shall be made in the presence of Owner. No pipe shall be backfilled until it has been inspected, tested and approved in writing.

6. Furnish necessary force pump and all other test equipment.

7. When the sprinkler irrigation system is completed, perform a coverage test in the presence of the Owner, to determine if the water coverage for planting areas is complete and adequate. This test shall be accomplished before any plants are planted.

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B. Adjustment of the System:

1. Contractor shall flush and adjust all sprinkler heads for optimum performance and to prevent overspray onto walks, roadways, and buildings as much as possible.

2. If it is determined that adjustments in the irrigation equipment will provide proper and more adequate coverage Contractor shall make such adjustments prior to planting. Adjustments may also include changes in nozzle sizes and degrees of arc as required.

3. All sprinkler heads shall be set perpendicular to finished grades unless otherwise shown on the Drawings.

C. The entire sprinkler irrigation system shall be under full automatic operation for a period of 2 days prior to any planting. The Owner reserves the right to waive or shorten the operation period.

3.06 CLEAN-UP

A. Refuse and excess dirt shall be removed from the site, all walks and paving shall be broomed or washed down.

3.07 FINAL OBSERVATION PRIOR TO ACCEPTANCE

A. Contractor shall operate each system in its entirety for the Owner at time of final observation. Any items deemed not acceptable by the Owner shall be reworked to the complete satisfaction of the Owner.

B. The controller must be set up and under full automatic operation before final inspection can occur and maintenance period can begin.

C. Controller charts and final as-built record drawings shall be submitted in both electronic form and as 1 full-size hard copy. Both must be provided to the Owner and approved before final inspection can occur and maintenance period can begin. Refer to 1.2.B. and C.

D. Contractor shall show evidence to the Owner that the Owner has received all accessories, charts, record drawings, and equipment as required before final inspection can occur.

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3.08 MEASUREMENT AND PAYMENT

A. The square foot unit cost for '**Irrigation Modification**" shall include all changes made to existing irrigation including but not limited to modifications to heads, laterals, sleeving, points of connections, irrigation conduits, and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, for doing all the work covered in this section, including trenching and backfill, all connections for a functioning system and concrete footings, except for Irrigation Control Modification, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City's Landscape Architect.

B. The lump sum contract price paid for "**Irrigation Control Modification**" shall include full compensation for all changes made to existing irrigation controller system furnishing all labor, materials, tools, equipment and incidentials for doing all the work covered in this section complete in place as shown on the plans, as

required by these Special Provisions and as directed by the City's Landscape Architect.

END OF SECTION

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SECTION 32 90 00 PLANTING

PART 1 GENERAL

1.01 DESCRIPTION OF WORK AND RELATED DOCUMENTS

A. These special provisions are part of the plans and shall include all labor, materials, equipment necessary, reasonable incidental, and services necessary for completion of landscape planting as shown on the drawings and specified herein.

B. Refer to all other sections, determine the extent and character of related work, and coordinate all work to produce a complete, properly constructed product.

C. This section is complete in its entirety and is not supplemental to the standard specifications for Caltrans except where specifically noted.

1.02 RELATED SECTIONS

A. Section 01 56 30 – Tree Pruning and Root Pruning

B. Section 01 56 39 - Tree Protection

C. Section 31 20 00 – Rough Grading

D. Section 31 22 19 – Finish grading

E. Section 32 84 00 – Irrigation

F. Section 32 91 15 – Import Topsoil

G. Section 32 91 13 – Soil Preparation and Soil Amendment

H. Section 32 92 23 – Sod

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1.03 ENVIRONMENTAL REQUIREMENTS AND SOILS

A. No planting area earthwork, planting, sodding, or seeding shall occur during weather conditions that will adversely affect materials or when soil is in a muddy condition. Contractor shall not plant at the end of the day, on Fridays, or before holidays unless a special crew has been assigned to care for plants on next Day and on weekends and holidays. Soil used within landscaped areas shall be in a friable condition at time of displacement including during transportation, placement, cultivation, and planting.

B. Friable refers to the structure and moisture content of soil. Friable soil shall be understood to mean soil that crumbles easily in the hand, does not stick to the hand, and does not form a ball when squeezed. Friable soil is not wet or muddy but is moist and damp. Obtain The Project Inspector or Project Landscape Architect's determination of soil condition acceptability prior to installation and working of soils.

C. Soils in landscape areas that are worked when not friable shall be removed at the Contractor's expense and replaced with friable imported topsoil complying with the specifications for topsoil herein.

1.04 REFERENCES AND REQUIREMENTS

A. City of Fremont Standard Details (Amended April 11, 2006), Park Standard Details (Approved December 2011)(PSD) and the latest edition of the City of

Fremont Landscape Development Requirements and Policies (LDRP) for work within City right of way (see Exhibits – City of Fremont).

B. Planting and irrigation installed within the City of Fremont Right-of-Way shall comply with the nine Bay-Friendly required practices, plants and materials, the State Water Efficient Landscape Ordinance (AB1881) and the City of Fremont Landscape Development Requirements and Policies (LDRP).

C. TPI (SPEC) Guideline Specifications to Turfgrass Sodding: Turfgrass Producers International; 2006

1.05 DEFINITIONS

A. Backfill: The earth used to replace earth in an excavation.

B. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.

C. Finish Grade: Elevation of finished surface of planting soil.

D. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

E. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

F. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

G. Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, turf and grasses, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.

H. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.

I. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

J. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

1.06 SUBMITTALS

A. General: Refer to Section 01 30 00, “Submittals”, for submittal requirements and procedures.

B. Planting Plans stamped and signed by a California licensed Landscape Architect.

C. Topsoils and Organic Composts Analysis Reports: Submit topsoil analysis reports for the proposed imported topsoils and organic compost amendments

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from a California-licensed soil-testing laboratory. The Soils and Organic Composts Analysis Reports shall include the requirements specified herein. Topsoils and organic compost amendments shall not be incorporated in the landscape planting work until the Project Inspector or Project Landscape Architect has approved the Soil Analysis Report.

D. Materials data: Submit complete materials list of plants, and non-proprietary items to be provided under this Section, including source, size, and quantity.

E. Product data: Submit manufacturer's specifications, installation instructions, data sheets, and catalog cuts for all materials different from those specified. Submit (3) three manufacturer's catalog cuts for all specified materials listed herein. Requests for substitutions shall comply with Section 01 63 00.

F. Submit the following items, and other items as may be required by the Project Landscape Architect, and obtain written approval prior to delivery of materials to the site. Finished work shall match approved samples.

1. Plant ordering certificates: Show quantities, sizes (caliper and head, and container), and source.

2. Bark Mulch: Specification sheet and 1/2 pound sample of mulch.

G. Certification

1. Furnish the Project Landscape Architect with:

a. Duplicate, legible copies of certificates and/or invoices for all plants, and other materials, stating the grade, weight or quantity, source, and date of delivery.

b. Submit certification of grass species and location of sod source.

H. Plant Sources:

Submit name and address of proposed suppliers of plant materials to City within 28 days of notice to proceed. List plants to be obtained from each source. For any plant found to be unattainable, show suggested substitute species or size, with source. Obtain City's acceptance of sources and/or substitutions.

1. Ordering of Plants: Submit documentation, within 20 days following acceptance of nursery sources, that plant material has been ordered. Indicate size of plant, container size and quantity of each on order form. Instruct nursery to label each plant with botanical name.2. Plant Substitutions: Comply with the Contract Document planting plans and plant sizes and selections. All of the Contract planting locations shall be evaluated for evidence of browsing animals. If there are browsing animals such as deer, provide a list of proposed substitute plants resistant to browsing to the Project Inspector or Project Landscape Architect for review and approval. Except for changes due to browsing animals, plant substitutions will not be permitted unless the Contractor furnishes the Project Inspector or Project Landscape Architect with written evidence from no less than three nurseries that the plants specified are not obtainable. Such evidence shall be submitted within 30 Days after the effective date of the Notice to Proceed.

2. A minimum of 1 month prior to the delivery of plants, e-mail to The Project Inspector or Project Landscape Architect for review photographs of trees and shrubs. Photos shall be labeled with the botanical name, including species and cultivar of the plants. Photos of trees shall be representative of trees to be delivered and clearly showing the overall

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branching structure. Include a person in the photos for scale. The Project Inspector or Project Landscape Architect reserves the right to reject plant materials prior to delivery on the basis of the photos. Plants, which are rejected, shall be replaced with acceptable plants. Review of photos does not constitute pre-acceptance of plants delivered to the Jobsite.

I. Plant Substitutions: Comply with the Contract Document planting plans and plant sizes and selections. All of the Contract planting locations shall be evaluated for evidence of browsing animals. If there are browsing animals such as deer, provide a list of proposed substitute plants resistant to browsing to the Project Inspector or Project Landscape Architect for review and approval. Except for changes due to browsing animals, plant substitutions will not be permitted unless the Contractor furnishes the Project Inspector or Project Landscape Architect with written evidence from no less than three nurseries that the plants specified are not obtainable. Such evidence shall be submitted within 30 Days after the effective date of the Notice to Proceed.

J. A minimum of 1 month prior to the delivery of plants, e-mail to The Project Inspector or Project Landscape Architect for review photographs of trees and shrubs. Photos shall be labeled with the botanical name, including species and cultivar of the plants. Photos of trees shall be representative of trees to be delivered and clearly showing the overall branching structure. Include a person in the photos for scale. The Project Inspector or Project Landscape Architect reserves the right to reject plant materials prior to delivery on the basis of the photos. Plants, which are rejected, shall be replaced with acceptable plants. Review of photos does not constitute pre-acceptance of plants delivered to the Jobsite.

K. Pesticide and Herbicide Chemical Use Program and Toxicity Data: Submit a California-licensed Pest Control Advisor's (CAPCA) pesticide and herbicide use program which shall be an Integrated Pest Management Program (IPM) with Pesticide Hazard and Exposure Reduction Zones in the Landscape (PHAER) and include the following information:

1. Company name, address, phone number, emergency 24/7 phone number, licensed Pest Control Advisor’s name and license number.

2. Proposed chemicals and control measures for anticipated maintenance requirements.

   a. Cultural controls

   b. Physical controls (barriers, traps, removal, etc.)

   c. Biological controls

   d. Chemical controls

3. Manufacturer's literature, toxicity levels and Material Safety Data Sheets (MSDS) for all proposed chemical controls and compatibility with plant materials.

4. Proposed application methods of the controls, application time periods and chemical drift controls.

5. Protective measures including warning signs, etc.

6. Proposed PHAER zoning for the entire Jobsite. Each of the PHAER zones shall include a list of proposed controls to be used including specific chemicals.

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7. Monitoring and follow up procedures.

8. An IPM monitoring program which shall include the following:

   a. Threshold Levels for Chemical Use

   b. IPM Report Log

   c. Management Action and Follow Up Log

   d. Chemical Use Log

   e. Chemical Treatment Area Notification

1.07 QUALITY ASSURANCE

A. Perform all work to the highest standard of quality. All work is subject to the acceptance of the Project Inspector or Project Landscape Architect. Work that is deemed unacceptable or defective by the Project Inspector or Project Landscape Architect shall be removed by the Contractor immediately and replaced with work that is acceptable to the Project Inspector or Project Landscape Architect.

B. All plant materials shall meet American Association of Nurserymen standards, and shall be first grade quality, and in prime condition when installed and accepted. Plant materials will be inspected and approved for planting at the Jobsite by the Project Inspector or Project Landscape Architect (for all plants) through notification by the Contractor 72 hours prior to planting. Plants will also be re-inspected after planting prior to and after the pre-maintenance inspection for acceptance.

C. Deliver commercially processed or packaged materials to the Jobsite in the original unopened containers bearing the manufacturer's guaranteed analysis.

D. Installer's Qualifications: Installer shall be a specialist in installing and planting landscape products, with a minimum of 10 years documented experience in successfully completing public works landscape projects of comparable size, scope, and quality. Submit references and project documents of a minimum of five large scale public works projects of similar size and scope for review and approval by the Project Landscape Architect. Contractor's documentation with references of prior work shall require approval by the Project Landscape Architect.

E. Installer's Field Supervision: Provide the services of at least one English-speaking, full time, qualified supervisor who shall be present at all times during execution of the work of these project plans and specifications. The supervisor shall direct the work, shall be thoroughly familiar with the types of materials being installed and the proper methods for their installation. This person shall be identified during the Pre-construction Conference, with appropriate contact information provided, as necessary. The same supervisor shall be utilized throughout the Project, unless a substitution is submitted to and approved in writing by the Owner.

F. Inspection Observation:

   1. 1It is required that the work specified herein be observed by the Project Inspector. The Contractor shall request observance at least 24 hours in advance of the time such observance is required. Observance is required on the following portions of the work:

      a. During rough grading and soil preparation

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b. When finish grading has been completed, and before installation of plants;

c. When plants and other materials are delivered and are inspected for conformance with Construction Specifications. Refer herein to "Inspections".

d. When shrub and tree locations are staked for planting and before planting holes are excavated;

e. During plant installation;

f. When planting and other work has been completed.

2. The Contractor shall require the supervisor of the landscape planting work to be on the site at the time of each such observance.

G. Requests for plant substitutions due to availability problems shall be submitted in writing within 30 Days after Contract approval and the effective Notice to Proceed date, along with written evidence from no less than three nurseries that the plants specified are not obtainable. Plant change requests submitted after that period will not be accepted.

H. Testing laboratory: Recognized laboratory for soil and plant disease analysis for ornamental horticulture, approved by Architect. Acceptable laboratory: Soil and Plant Laboratory, Santa Clara, CA (408) 727-0330.

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1.08 APPLICABLE PUBLICATIONS

A. The publications listed below, form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.

B. American National Standards Institute (ANSI):

Z60.1-04 Nursery Stock

C. Association of Official Seed Analysts (AOSA): Rules for Testing Seed.

D. American Society For Testing And Materials (ASTM):

B221-08..... Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes

C33/C33M-11..... Concrete Aggregates

C136-06 ..... Sieve Analysis of Fine and Coarse Aggregates

C516-08 ..... Vermiculite Loose Fill Thermal Insulation

C549-06 ..... Perlite Loose Fill Insulation

C602-07 ..... Agricultural Liming Materials

D977-05 ..... Emulsified Asphalt (AASTHO M140)

D5268-07 ..... Topsoil Used for Landscaping Purposes

E. Hortus Third: A Concise Dictionary of Plants Cultivated in the United States and Canada

F. Turfgrass Producers International (TPI): Guideline Specifications to Turfgrass Sodding.

G. United States Department of Agriculture (USDA): Handbook No. 60 Diagnosis and Improvement of Saline and Alkali Soils; Federal Seed Act Regulations.

H. Nomenclature: "Western Garden Book," 1988 edition or later; Sunset Publishing Co., Menlo Park, CA.

I. Plant material standards: "American Standard for Nursery Stock," 1990 edition; American Association of Nurserymen.

J. Staking and guying procedures: "Staking Landscape Trees," University of California Extension, Publication #2576.

K. Pruning procedures: "Tree Pruning Guidelines," 1995 edition; International Society of Arboriculture, Savoy, IL.

L. California Department of Transportation (CalTrans), Standard Specifications, 2006 Edition.

1.09 PRESERVATION OF PROPERTY

A. Existing Conditions: Exercise caution against injury to, or defacement of, existing conditions. At Contractor's expense, repair or replace items damaged from installation operations.

B. Protect existing on- and off-site improvements, utilities, and plants from damage. No vehicles shall be allowed to pass over curbs, sidewalk, and planting areas unless proper protection is provided. Damage resulting from Contractor's operations shall be repaired or replaced at the Contractor's expense and to the Project Inspectors satisfaction.

C. Refer to Section 02 41 16 "Building Demolition" and 02 41 19 "Flatwork Demolition" and 01 56 39 "Tree Protection" for temporary tree protection for existingtrees to remain.

D. Upon written acceptance by the Project Inspector or Project Landscape Architect, remove and adjust tree protection fencing as required in order to install Contract planting and irrigation, at no additional cost to the City. Do not rototill or mechanically trench or excavate within drip line of existing trees to remain within or adjacent to the Jobsite. Do not cut or damage tree roots. Do not disturb existing soils and grades around trees to remain. Do not backfill soil over tree roots within the trees' driplines. Use hand tools and extreme care for all work required within driplines of existing trees. In addition to protection, the Contractor is responsible for ensuring trees receive proper watering and maintenance in accordance with horticultural standards.

E. Existing trees and shrubs to remain, which are damaged or killed as a result of the Contractor's work, shall have value assessed for replacement at the Contractor's expense and to the satisfaction of the Project Inspector or Project Landscape Architect. The value of damaged trees and shrubs will be determined by the Senior Landscape Architect and Contract Arborist based on the "Guide for Plant Appraisal", current edition, published by the International Society of Arboriculture.

F. Sizes of replacement plants will be determined by the Senior Landscape Architect based on the plant appraisal. Replacement of ornamental plantings shall conform to the requirements of this section and Section 01 56 39 "Tree Protection".

G. Submit a replacement plant list with proposed sizes and planting plan to the Project Inspector or Project Landscape Architect for review. Replacement plants species and proposed locations shall be reviewed by a horticulturalist to insure suitability. Typically replacement plants shall match the existing plants being

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replaced. However, the Project Inspector or Project Landscape Architect will make the final determination on plant species, sizes and locations. Replacement ornamental planting shall conform to the requirements herein. Replacement plants within City of Fremont property and private properties shall comply with City standards and requirements. Disturbance of environmentally sensitive areas (ESA) shall be evaluated by the Contractor's biologist who specializes in restoration of ESA's. The biologist shall determine the species disturbed, prepare a plan for restoration of disturbed areas and irrigation of same.

H. During planting and irrigation work, and by written direction of the Project Inspector or Project Landscape Architect, temporary tree protection fencing shall be removed and disposed of by the Contractor.

1.10 INSPECTIONS

A. Right of inspection for approval or rejection by the Project Inspector or Project Landscape Architect, is reserved at the place of growth and/or on the Project site at any time upon delivery or during the work. Plants shall be inspected for size, variety, condition, defects or injury.

B. All plant materials requiring inspection by the City shall be assembled and available for inspection on the site.

C. If the Project Landscape Architect is required to make additional inspections at the place of growth due to failure of the Contractor to assemble the required plant materials or rejection of plant materials, the Project Landscape Architect's time and expense shall be reimbursed by the Contractor.

D. Contractor shall notify the Project Inspector or Project Landscape Architect in writing a minimum of 5 Working Days in advance of inspections.

1.11 PRODUCT DELIVERY, STORAGE AND HANDLING

A. General: Refer to Contract Specifications Section 01600 "Product Requirements" for requirements.

B. Notify the Project Inspector of the delivery schedule in advance so the plant material may be inspected upon arrival at the job site. Remove unacceptable plant and landscape materials from the job site immediately.

C. Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws, as applicable. Keep seed and other packaged materials in dry storage away from contaminants.

D. Deliver plant materials to the Jobsite no earlier than 3 Days prior to planting.

E. Labels: Plants shall be labeled prior to delivery to site, with correct botanical names, using durable, legible labels. Plants not labeled by nursery of origin shall not be accepted. Keep plants of different species and varieties separated at site.

F. Protection: Protect plant material during delivery to prevent damage to root ball or desiccation of leaves. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Plants shall be handled and stored so that they are protected from drying out, wind burn, or other injury. Any plant damaged by improper handling or neglect may be rejected whether in the ground or not. All plants shall be

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handled solely by their containers. The Contractor's on-site plant storage area shall be subject to approval by the Project Landscape Architect.

G. Do not prune trees and shrubs before delivery. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Do not drop plants during delivery and handling.

H. Transport plants in enclosed trucks. If trees are too large for enclosed trucks and are transported in open trucks, trees shall be wrapped to prevent damage and windburn. Adequate protection shall be placed between trees so that trunks are not scarred in transport and branches are not broken. Tree trunks shall be wrapped with protective covering prior to handling and loading. Covering shall be removed at the time of plant materials inspection at the Jobsite.

I. Quantities: Plant materials shall be delivered in quantities required to complete work as indicated on the Drawings and shall be of species, kinds, sizes, etc., specified.

J. Notify the Project Inspector in advance of delivery of plant materials, and submit an itemized list of the plants in each delivery.

K. Inspection: Refer to “Inspection” found herein.

L. Handling: Exercise care in handling, loading, unloading, and storing of plant materials. Handle planting stock by root ball. Take all necessary precautions to ensure that the plants will arrive at the Jobsite of work in proper condition for successful growth. Do not deliver plants to the Jobsite earlier than 3 Working Days prior to installation. Damaged plant materials shall be discarded and replaced with undamaged materials. The Project Inspector or Project Landscape Architect’s decision regarding rejection of damaged plants shall be final.

M. Storage: Protect plant materials from wind, excessive sun, and drying out. The Contractor shall provide the horticulturally correct amount of water to plants at all times prior to and after planting. Plants, which have been improperly watered or maintained, have become desiccated, or have rootballs that have dried out shall be rejected and replaced with new acceptable plant materials at the Contractor’s expense and to the satisfaction of the Project Inspector or Project Landscape Architect, no exceptions.

N. Herbicides and pesticides shall not be stored with any other landscape material.

O. Materials for Planting Operations: Manufactured materials shall be delivered in original containers with brand and maker's name marked thereon. Materials in broken containers or showing evidence of damage will be rejected and must be immediately removed from the site. Odorous materials shall not be brought to the site until they are to be used.

P. The use of equipment such as "tree spades" is permitted provided the plant balls are sized in accordance with ANSI Z60.1 and tops are protected from damage.

Q. All pesticides and herbicides shall be properly labeled and registered with the U.S. Department of Agriculture. Deliver materials in original, unopened containers showing, certified analysis, name and address of manufacturer, product label, manufacturer’s application instructions specific to the project and indication of conformance with state and federal laws, as applicable.

PART 2 PRODUCTS

2.01 GENERAL

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All products shall be in conformance with the specifications listed below. Any changes to products to be used shall be approved, in writing, by the Project Landscape Architect prior to job site delivery.

2.02 PLANT MATERIALS

A. Nomenclature: Plant names specified on the drawings shall conform with those in The Sunset Western Garden Book, latest edition, published by Lane Publishing Company.

B. Plants shall conform with American Association of Nurserymen Standards, ANSI Z60, in all ways.

C. Plant stock and materials are indicated in the Planting List or Schedule on the Contract Drawings. Provide trees and plants of the varieties, sizes, and quantities indicated. Provide nursery-grown stock only, which is free from plant disease and insect pests or their eggs.

D. Plants shall comply with Federal and State laws requiring inspection for plant diseases and infestations. Inspection certificates required by law shall accompany each shipment of plants, and the certificates shall be delivered to the Project Inspector or Project Landscape Architect. Plants shall be true to species, varieties, and the sizes indicated, and shall be labeled in accordance with the recommended practice of the American Association of Nurserymen.

E. Label trees and bundles, containers or flats of the same shrub, ground cover and vine with durable waterproof labels and weather resistant ink. Labels shall state the correct plant name and size as specified in the Plant List on the Contract Drawings, and shall be legible for 60 Days after delivery to the planting site. Plant material that is not labeled will be rejected. Shipping invoices are not an acceptable substitute for individual plant labels.

F. Plants shall be healthy, shapely, and well-rooted. Roots shall show no evidence of having been root bound, restricted, or deformed. Roots shall be evenly and completely spread throughout the container to bottom and sides. Young white roots shall be evident at edges of container, without overgrowing and forming a solid mat of roots at bottom or edges.

G. Container stock shall be grown for 9 months minimum in containers in which delivered. Plant material that has just been upgraded in container size will be rejected.

H. Container plants with cracked or broken balls of earth when taken from containers may be planted only with specific approval of the Project Landscape Architect.

I. Root condition of plants in containers will be inspected by the Project Inspector or Project Landscape Architect by removal of earth from the roots of not less than two plants of each species or variety from each source. Plant materials requiring inspection by the Project Inspector or Project Landscape Architect shall be assembled and available for such inspections. If the sample plants inspected are found to be defective, the Project Inspector or Project Landscape Architect reserves the right to reject the entire lot or lots of plants represented by the defective samples.

J. Plants shall not be pruned prior to delivery, except as authorized by the Landscape Architect.

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K. Trees shall have straight trunks with the leader intact, undamaged, and uncut. Old abrasions and cuts shall be completely calloused over. Trees shall be measured when their branches are in their normal position. The height of a tree shall be measured from root crown to top of plant. The width of a tree shall be measured at branching at the widest point. Sizes shown on the Contract Drawings are before pruning. Trees shall not be pruned prior to delivery except upon approval of the Project Inspector or Project Landscape Architect.

L. Trees shall be well tapered in the trunk so that when the nursery stake is removed, the tree supports itself upright without further staking. Trees shall have a single distinct main leader, exception is for multi-stem trees. Trees which have not been properly maintained for proper development will be rejected. The main branches shall be spaced vertically and alternately along the trunk. Branching shall not be concentrated in one location and there shall be no severe crossing of branches. Branches shall be smaller in diameter than the trunk. Branch attachments shall be free of embedded bark. Branching along the lower two-thirds of the trunk shall have at least one half of the foliage of the tree.

M. All plants shall be inspected at the Jobsite prior to planting. Rejected plant materials shall be removed from the Jobsite and replaced with materials that conform to specified requirements at the Contractor's expense and to the satisfaction of the Project Inspector or Project Landscape Architect.

N. Plant material shall be grown under similar climatic conditions to those found at the Jobsite.

O. Plants grown in flats shall be well rooted.

P. Furnish all certificates of inspection that are required by county or state authorities.

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2.03 ORGANIC COMPOST, SOIL AMENDMENT, SOIL CONDITIONERS, MULCHES AND FERTILIZERS

A. Refer to Section 32 91 13 for compost, amendment, conditioner and fertilizers to be used on the project.

2.04 IMPORT TOPSOIL

A. Refer to Section 32 91 15.

2.05 BACKFILL MIX

A. To be installed in planting pits.

B. Soil mix shall be 2 parts native soil, 1 part leaf litter, or peat moss, or ¼' fir bark, or organic compost, plus 48 gro-paks of 12-5-8 fertilizer, or nine pounds of 15-8-10 osmocote per cubic yard of backfill mix.

C. For organic compost and fertilizer packets, refer to Section 02920 "Soil Preparation and Amendment", PART 2.03 "Organic Compost, Soil Amendment, Soil Conditioners, Mulches and Fertilizers" and the Soils and Plant lab report to be supplied by the Contractor.

2.06 BARK MULCH

A. Fir or Cedar Walk-on bark – A combination of interlocking small bark and wood fibers, with organic matter content at 95% of weight. Walk-on Fir Bark by Sun Gro Horticulture, 3301 Business Drive, Sacramento, CA 916-737-0665, or approved equal.

B. Particle sizes shall meet the following minimum requirements:

Screen Size	% Weight retained
1”	7
½”	39
9.5 mm (3/8 inch)	24
6.4 mm (¼” inch)	11
4.75 mm	6
2.36 mm	6
1.00 mm	5

C. One hundred percent fibrous mulch such as “Angel Hair” or “Gorilla Hair” is not acceptable.

2.07 TURF SOD

A. Refer to Section 32 92 23 “Sod”

2.08 FERTILIZER PAKS

A. Controlled Released Fertilizer Packets: 20-10-5 (N-P-K) in a biodegradable packet, and shall contain POLYON® coated fertilizers; contains an expanded minor and secondary element package; contains a significant amount of kelp based organic matter to promote soil biology. Best PAKS 20-10-5, by Simplot Professional Products, P.O. Box 198, Lathrop, CA 95330, 800-992-6066, or approved equal:

TOTAL NITROGEN 20.00%
4.10% Ammoniacal Nitrogen
1.90% Nitrate Nitrogen
14.00% Urea Nitrogen
AVAILABLE PHOSPHATE 10.00%
SOLUBLE POTASH..... 5.00%
Calcium 2.00%
Magnesium..... 2.00%
Sulfur..... 3.00%
Copper 0.25%
Iron 0.90%
Manganese 0.25%
Molybdenum..... 0.002%
Zinc 0.150%

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PART 3 EXECUTION

3.01 INSPECTIONS

A. Prior to the work of this section, verify grades and inspect the work of other trades. Verify that all such work is complete to the point where the installation may properly commence.

B. In the event of discrepancy, immediately notify the Engineer in writing. Do not proceed with this installation until all discrepancies have been resolved or take responsibility of condition of site at no additional expense to the City.

C. Inspect trees, shrubs and ground cover plants upon delivery for injury, insect infestations, and proper pruning.

3.02 FINE GRADING

A. When weeding, soil preparation, and soil conditioning have been completed, and soil has been thoroughly rolled or water settled, all planting areas shall be smooth-graded, ready for placement of plant materials. Rocks larger than 2 inches in diameter shall be removed.

B. Grading shall be done when soil is at optimum moisture content for working.

C. Grades

1. Finish grades shall ensure positive drainage of the site. Flow lines shall be not less than 2%.

2. Finish grades in medians shall crown from the center of the median to the back of curb.

3. Finish grading shall be consistent and free from undulations, irregularities or depressions. Areas filled by floating loose soil into depressions shall be thoroughly water settled.

4. Lawn Areas: Finish grade shall be 1/2 inch below top of adjacent pavement, curbs, or headers.

5. Shrub Areas: Finish grades shall be 1-1/2 inches below top of adjacent pavement, headers, curbs, or walls, unless otherwise indicated on the drawings.

6. Tops and toes of all slopes shall be rounded to produce a gradual and natural-appearing transition between relatively level areas and slopes.

7. Contractor shall eliminate all erosion scars.

8. The Contractor shall request an inspection by the Project Landscape Architect at (510) 494-4700 for approval of the final grades before planting operations begin.

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3.03 WATER SETTLEMENT

A. Water settlement intent is 2 fold – 2 settle areas that have been soil conditioned and amended, and, to germinate any weeds, and eradicate those weed prior to shrub and tree planting and sod placement.

B. Weed control shall follow the requirements noted elsewhere in Part 3 under Plant Establishment Period.

C. At completion of soil conditioning and amendment, smooth the soil surface, and water the soil in all areas, including areas requiring sodding, for a full 30 days. Soil shall be moist without being saturated to a minimum depth of 24 inches and shall not be allowed to dry out at any time within the 30 day watering period. Finished grade of soil shall be checked after 15 days. Imported topsoil soil shall be added in the areas that settle below finished grades as required by the plans and specifications. Irrigation system shall be complete prior to the 30-day

watering period and shall be used to water soils. In areas where irrigation is by bubbler, the contractor may, at their expense and option, install a temporary irrigation system to keep the soils moist. The contractor shall be responsible for ensuring that the temporary irrigation system does not create a safety hazard. In lieu of the temporary system in bubbler zone areas, the contractor may roll amended soil to not less than 80% and not more than 85% relative compaction.

D. After water settling, finish grade to a smooth, even surface conforming to established grades after settlement. Rake immediately prior to planting.

E. The placement of sod, shrubs or trees shall not begin until the water settlement period is complete and accepted by the City.

3.04 SHRUB PLANTING

A. General

1. Do not install plant materials until all construction work has been completed and sprinkler systems have been installed and tested. Planting areas shall have been graded and prepared as herein specified and shall have been approved by the Project Landscape Architect or Park Superintendent.

2. Do not plant during unfavorable weather, or with excessively wet or dry soil conditions.

3. Stake location for trees and outline of shrub masses on ground and obtain the approval of Project Landscape Architect before digging. Protect all utilities, vegetation, and structures during work. Bring any conflict to the attention of the Project Landscape Architect immediately.

B. Excavation

1. All plant pits shall be dug with vertical walls. If excavated with an auger, pit wall shall be thoroughly loosened by hand digging.

2. Plant holes shall be to the width and depth shown on the details.

3. Excavated soil may be spread evenly over groundcover and shrub beds, provided required finish grades are maintained, previously completed soil conditioning is not covered, and rocks larger than 2 inches in diameter and debris are removed and disposed of off-site.

C. Soil Mix for Backfill

The following ingredients shall be tumbled to achieve a homogeneous mix in the top 12 inches of tree plant pits and top 6 inches of shrub and container grown ground cover plant pits:

Compost	30 percent
Native Soil	70 percent

D. Fertilizer packets (Best Paks)

1. Place fertilizer in the backfilled planting holes per the manufacturer's printed recommendations at the following rates:

1 gallon containers	2 Paks
24" boxes	25 Paks (5 in the bottom, 5 per side.)

2. 5 Paks shall be spread out evenly on the bottom.

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3. As backfill is placed, install the paks in various lifts of soil, spaced evenly.

4. Place 2 Paks in backfill to within 6-8 inches of the finished soil surface around the root ball, approximately 1 inch from the root ball.

E. Planting: Backfill plants using specified mix and thoroughly water settle each pit so that no backfill rests atop the rootball and the top of rootball is 1 inch above surrounding finished grade. Any plant that settles below that point prior to final acceptance shall be replanted in proper position.

3.05 PLANT SUPPORTS

A. Tree Staking

1. Scope

a. Double-stake 24" box trees except where noted.

2. Installation

a. Double stakes shall be at right angles to the prevailing wind, except where otherwise indicated. For median trees, double stakes shall be parallel to face of curb, unless otherwise noted on the plan.

b. Set stakes plumb.

c. Secure tree ties to stakes per manufacturer's instructions. Allow 3 inches movement of tree in all directions.

d. Stakes must not protrude through root ball.

3.06 FIELD QUALITY CONTROL

A. Supervision: Qualified foreman must be continuously on site during work operations.

B. Plant materials: Subject to review upon delivery at project site. For distant material, submit color photographs, with indication of scale, for preliminary review.

C. Observation of the Work: Give the Project Landscape Architect at least 24 hours notice and arrange for inspection by contacting the City Construction Inspector. Request observation at the following stages:

1. After planting areas are delineated or plant locations spotted, but before growing containers are removed or holes dug.

2. During planting of trees.

3. Preliminary Inspection: When installation is completed, but before start of maintenance.

4. Final Inspection: Shall take place at the completion of plant maintenance period. Give written notice of request in advance.

3.07 CLEAN-UP

A. Upon completion of planting, all cans, boxes, plant labels, nursery stakes and ties, and other debris that is a part of the planting operation shall be removed from the site.

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B. All pavement shall be washed off, and site shall be left in clean condition. All planting areas shall be cultivated and weed free before final inspection. Clean up operations shall take place throughout the course of work so that walks and drives are clean at all times.

C. Perform cleanup during the installation of work and upon completion of the work. Maintain the site free of soil and sediment, free of trash and debris. Remove from site all excess soil materials, debris, and equipment. Repair any damage to adjacent materials and surfaces resulting from installation of this work.

D. Overspray: Installing contractor is responsible for washing or otherwise cleaning excess material off all area not intended to receive treatment.

3.08 PLANT ESTABLISHMENT PERIOD

A. Plant Establishment Period: The maintenance and plant establishment period for all landscaped areas shall be 90 days.

B. Plant Establishment Period shall conform to the Planting maintenance period, and shall begin after the completion of construction and vegetated swale grass from sod and planting, correction of all punch list items and to the satisfaction of the Project Inspector or Project Landscape Architect. The start of the grass from sod maintenance period shall coincide with the plant maintenance period. A longer period may be required if necessary to establish acceptable stands of thriving grass.

C. Upon completion of all planting and clean-up operations, notify the Project Inspector or Project Landscape Architect, in writing, a minimum of 3 Days in advance, to request a final inspection.

D. A planting review and preliminary inspection and punch list for the plantings will be held by the Project Inspector, Project Landscape Architect, and the Park Superintendent upon written request of the Contractor. The Plant Establishment Period may begin only after the Project Inspector, Project Landscape Architect and Parks Superintendent have given written acceptance of the landscape and irrigation system installation.

E. Plant Establishment Period shall include, but is not limited to all watering, weeding, fertilizing, cultivation, grass mowing and trimming, rodent control, other wildlife and animal control, spraying, re-sodding and replacement of damaged, dead and dying grass areas, and mowing and trimming as directed by the Project Inspector or Project Landscape Architect and as necessary to keep the sod in a healthy growing condition and to keep the planted areas neat and attractive in appearance throughout the maintenance period. Sod shall be kept at optimum moisture condition for thriving growth without over watering. During the maintenance period, should the appearance of any sod areas indicate weakness and the probability of dying, in the opinion of the Project Inspector or Project Landscape Architect, the area showing such weakness shall be removed and re-sodded immediately by the Contractor. Replacement of grass from sod shall be made in the same manner as specified for the original grass from sod. At the end of the maintenance period, all grass from sod areas shall be in a healthy growing condition and free of physical injury of any kind.

F. Start of Plant Establishment Period: Upon written approval of the work by the Project Inspector of Senior Construction Coordinator, the maintenance period shall begin. The first day of that period shall be specified in the Engineer's report, but not before all planting and irrigation punch list items are complete.

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G. Days during which no work will be required, as determined by the Project Inspector or Project Landscape Architect, will be credited as Plant Establishment Days, regardless of whether or not the plant establishment work has been performed.

H. Days when the plant establishment work has not been adequately performed, including watering plants, replacing unsuitable plants, repairing erosion damage, and performing weed, rodent, and other pest control as determined necessary by the Project Inspector or Project Landscape Architect, will not be credited as Plant Establishment Days.

I. Upon completion of the Plant Establishment Period, submit a written request for inspections by the Project Inspector or Project Landscape Architect as specified herein.

J. Plant Establishment Period Scope: The Contractor shall provide complete landscape maintenance of all planting areas. The work shall include, but not be limited to, watering, litter control, insect, disease and pest control, mowing, fertilizing, pruning, weed control, rolling, cultivating, repair of irrigation systems, and erosion control.

K. Watering

1. The moisture content in all planted areas shall be sufficient to insure healthy plants and vigorous growth. This shall be accomplished by means of visual observation of plant material and the surrounding surface soil conditions within any given area.

2. Observed deficiencies or excesses in watering program will be corrected immediately by the adjustment of controllers, as required. Controllers shall be programmed to water deeply without runoff by use of short repeat cycles.

3. Irrigation shall be controlled and individual heads adjusted to prevent overspray and runoff onto paved areas.

4. Trees planted within Tree Well Planters are not on an irrigation system and shall be watered by hand.

L. Insect, Disease and Pest Control: Pesticides and herbicides are not allowed unless approved by the City.

M. Mowing

1. Winter: Mow grass to 2-1/2 inches when it reaches a height of 3-1/2 inches.

2. Other Seasons: Mow grass to 3 inches when it reaches a height of 4 inches.

3. Bruising or rough cutting of grass will not be permitted. Mowers will also be adjusted and operated so that the grass is cut at a uniform height. Scalping of high places or crowns of mounds will not be permitted. Remove papers and debris prior to mowing.

N. <u>Fertilization</u>: At the end of the maintenance period, furnish and apply fertilizers as follows:

	Analysis	Rate	Frequency
Groundcover/Shrub Areas	16-7-12 (NPK)	5 LBS/1,000sf	45 days

O. <u>Pruning</u>

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1. Pruning shall be done only at the direction of the Park Superintendent, the Urban Forestry Supervisor, or a Certified Arborist hired by the contractor to guide pruning activities, in accordance with NAA "Pruning Standards and Practices" to balance loss of root system. Thinning shall not exceed 30 percent of existing branching structure.

2. If the contractor hires a Certified Arborist, the arborist must be registered by the International Society of Arborists (ISA), and in conjunction with the Engineer, ascertain the limbs and roots which are to be trimmed from new trees, and clearly mark them to designate the approved point of cutting.

3. Pruning shall be done by thinning and shaping to achieve a natural appearance. Excessive pruning or stubbing back will not be permitted.

4. Pruning cuts shall be allowed to heal naturally and not painted over with wound dressing or asphaltic emulsion.

5. All pruning cuts shall be made flush to the bark curl and shall be cleanly cut with no tearing of the bark.

6. All cuttings shall be removed from the site.

7. Do not remove lower branches from low-branching or multi-trunk trees, unless directed to do so by the Park Superintendent, Urban Forestry Supervisor, or a Certified Arborist.

P. Weed Control

1. Weeds shall be kept under control by hand or by the application of herbicides designed for use on any type of weeds invading the planting areas, at not less than 10-day intervals.

2. All equipment used for applying herbicides shall be properly cleaned before it is used on this project. Herbicides shall be applied per manufacturer's printed instructions. Herbicides shall not be used during windy or gusty days. All possible precautions shall be taken to protect desirable vegetation from damage. Any repair, or replacement with new plants of existing trees to be preserved shall be at the Contractor's expense.

3. The application of herbicides in lieu of hand weeding may only occur after submittal of an herbicide application schedule, the affect of proposed herbicide on surrounding vegetation, and approval of the schedule by the Park Superintendent and Project Manager, in writing.

Q. Replacements: Immediately replace any plant materials that die or are damaged within 5 working days. Replacements shall be made to the specifications required for original plantings.

R. Condition of Plantings at the End of the Maintenance Period

1. All plant materials shall be live, healthy, undamaged, and free from infestations.

2. Planting areas shall be free of all broadleaf and grass weeds.

3. Plantings that do not conform to these specifications shall be replaced and brought to a satisfactory condition before final acceptance of the work.

3.09 GUARANTEE

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A. All plants installed under the contract shall be guaranteed to live and grow for a period of one year from the date of final acceptance of contract work.

B. Any material found to be dead, missing, or in poor condition during the guarantee period, shall be replaced by the Contractor within fifteen (15) days of written notification by the City. Replacement shall be made to the same specifications required for original plantings, and shall be at no cost to the City.

C. Guarantee that trees, shrubs, groundcovers, and other plant materials will take root and grow vigorously within 1 year after final acceptance of plantings, when such plants have received normal care and maintenance.

D. The guaranty shall include replacement of trees and other plant materials that die back and lose the form and size as originally specified, even though they may have taken root and are growing after the die-back.

E. Corrective work shall include removal and replacement of all guarantied plant materials which, for any reason, fail to meet the requirements of the guaranty. Replacements shall meet the same requirements as specified for the original materials. Replacements shall carry the same guaranty period that shall start from the time the replacements are planted and accepted.

3.10 FINAL INSPECTION AND ACCEPTANCE

A. Final inspection will be conducted at the end of the Maintenance Period. Notice requesting final inspection shall be submitted by the Contractor to the Project Inspector or Project Landscape Architect at least 7 Days prior to the anticipated date.

B. Acceptance of the work by the Project Inspector or Project Landscape Architect will be contingent upon proper maintenance and the establishment of a vigorous, uniform stand of grass over all areas with grass from sod. Any portion thereof, which does not show a vigorous, uniform stand of grass, shall make all grass from sod areas subject to continued maintenance at the Contractor's expense.

C. The irrigation system shall also be tested at this time. See Section 02810 “Irrigation”, for additional information.

D. Just prior to final inspection, 16-6-8 granular form commercial fertilizer shall be applied as follows:

1.	Plant Size	Qty. Fertilizer
2.	Grass from sod	6 lbs./1,000 sq. ft.

E. At the final inspection, the Project Inspector or Project Landscape Architect will determine the condition of improvements, and grass from sod. Grass from sod, which is missing, spotty, vandalized, dead, or unhealthy, shall be replaced by the Contractor with the same species and methods originally specified. The Contractor shall make replacements within 2 weeks after final inspection, and maintain grass from sod areas for an additional 30 Days.

F. If Contract improvements, corrective work, and maintenance have not been performed as specified, maintenance shall continue at the Contractor's expense until such time as the work has been successfully completed. Should work have been performed as specified, the City will assume maintenance responsibilities following the final inspection. City Representative will send written Notice of Acceptance of the work to the Contractor.

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3.11 MEASUREMENT AND PAYMENT

A. The contract unit price paid for "**Trees-15 gallon**" of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, including but not limited to installation, soil amendment and preparation, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City's Landscape Architect.

B. The contract unit price paid for **"Shrubs – 5 Gallon"** of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, including but not limited to plant installation, soil amendment and preparation, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City's Landscape Architect.

C. The contract unit price paid for "**Shrubs – 1 Gallon**" of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, including but not limited to plant installation, soil amendment and preparation, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City's Landscape Architect.

D. The cubic yard price paid for **"3" Bark Mulch"** of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, including but not limited to plant installation, soil amendment and preparation, mulch, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City's Landscape Architect.

E. The lump sum contract price paid for "**Plant Establishment Period**" of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City's Engineer or Landscape Architect.

END OF SECTION

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SECTION 32 91 13 SOIL PREPARATION AND AMENDMENT

PART 1 GENERAL

1.01 RELATED DOCUMENTS AND DESCRIPTION OF WORK

A. These special provisions are part of the plans and shall include providing all labor, materials, and equipment necessary, reasonably incidental, and services necessary, for the completion of soil preparation and amendment.

B. Refer to all other sections, determine the extent and character of related work, and coordinate all work to produce a complete, properly constructed product.

C. This section is complete in its entirety and is not supplemental to the standard specifications for Caltrans except where specifically noted.

1.02 RELATED SECTIONS

A. Section 01 56 39 – Tree Protection

B. Section 31 20 00 – Rough Grading

C. Section 32 84 00 – Irrigation

D. Section 32 90 00 – Planting

E. Section 32 91 15 – Import Topsoil

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1.03 ENVIRONMENTAL REQUIREMENTS AND SOILS

A. No planting area earthwork, planting, sodding, or seeding shall occur during weather conditions that will adversely affect materials or when soil is in a muddy condition. Soil used within landscaped areas shall be in a friable condition at time of displacement including during transportation, placement, cultivation, and planting.

B. Friable refers to the structure and moisture content of soil. Friable soil shall be understood to mean soil that crumbles easily in the hand, does not stick to the hand, and does not form a ball when squeezed. Friable soil is not wet or muddy but is moist and damp. Obtain Project Inspector or Project Landscape Architect's determination of soil condition acceptability prior to installation and working of soils.

C. Soils in landscape areas that are worked when not friable shall be removed at the Contractor's expense and replaced with friable imported topsoil complying with the specifications for topsoil herein.

1.04 SUBMITTALS

A. Procedures: In accordance with Section 01 30 00.

B. Materials data: Submit complete materials amendments, fertilizers and non-proprietary items to be provided under this Section, including source, size, and quantity.

C. Product data: Submit manufacturer's specifications, installation instructions, data sheets, and catalog cuts for all materials different from those specified. Submit (3) three manufacturer's catalog cuts for all specified materials listed herein. Requests for substitutions shall comply with Section 01 30 00.

D. Submit the following items, and other items as may be required by the Project Landscape Architect, and obtain written approval prior to delivery of materials to the site. Finished work shall match approved samples.

1. Fertilizers and Soil Conditioners: Including one-half pound (½) each of sawdust, bark, sand, peat moss, controlled release fertilizer, bone meal, Dolomite Lime and two (2) each of controlled release fertilizer paks.

2. Organic leaf compost amendments, including source of compost.

E. Certification

1. Furnish the Project Landscape Architect with:

a. Duplicate, legible copies of certificates and/or invoices for all fertilizer, soil conditioners, compost, and other materials, stating the grade, weight or quantity, source, and date of delivery.

1.05 PRESERVATION OF PROPERTY

A. Protect existing on- and off-site improvements, utilities, and plants from damage. No vehicles shall be allowed to pass over curbs, sidewalk, and planting areas unless proper protection is provided. Damage resulting from Contractor's operations shall be repaired or replaced at the Contractor's expense and to the Project Inspector or Project Landscape Architect's satisfaction.

B. Refer to Section 01 56 39, "Tree protection" for temporary tree protection for existing trees to remain.

1.06 INSPECTIONS

A. Right of inspection by the Project Inspector or Project Landscape Architect for acceptance or rejection is reserved at the nurseries or on the Jobsite at any time upon delivery or during the work.

1.07 PROJECT QUALITY

A. Perform all work to the highest standard of quality. All work is subject to the acceptance of the Project Inspector or Project Landscape Architect. Work that is deemed unacceptable or defective by the Project Inspector or Project Landscape Architect shall be removed by the Contractor immediately and replaced with work that is acceptable to the Project Inspector or Project Landscape Architect.

B. Deliver commercially processed or packaged materials to the Jobsite in the original unopened containers bearing the manufacturer's guaranteed analysis.

1.08 PRODUCT DELIVERY, STORAGE AND HANDLING

A. General: Refer to Section 01600 "Product Requirements", for requirements.

B. Weather: Do not mix, deliver, or place soils and amendments in frozen, wet or muddy conditions.

C. Delivery:

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1. Deliver fertilizer and soil conditioner to the Jobsite bearing manufacturer's guarantied chemical analysis, weight, manufacturer's name, trademark, and conformance with state law.

D. Storage:

1. Fertilizer and lime shall not be stored with any other landscape material. Herbicides and pesticides shall not be stored with any other landscape material.

1.09 PROJECT CONDITIONS

A. Existing Conditions:

B. General: Exercise caution against injury to, or defacement of, existing conditions. At Contractor's expense, repair or replace items damaged from installation operations.

C. SCHEDULING

D. General: Prior to starting work, coordinate work with other trades to insure proper sequencing of construction.

1.10 QUALITY ASSURANCE

A. Testing laboratory: Recognized laboratory for soil and plant disease analysis for ornamental horticulture, approved by Architect. Acceptable laboratory: Soil and Plant Laboratory, Santa Clara, CA (408) 727-0330.

PART 2 PRODUCTS

2.01 GENERAL

A. All products shall be in conformance with the specifications listed below. Any changes to products to be used shall be approved, in writing, by the Project Landscape Architect prior to job site delivery.

2.02 ORGANIC COMPOST, SOIL AMENDMENT, SOIL CONDITIONERS, MULCHES, AND FERTILIZERS

A. General: The following soil additives may be required in various quantities by the Soils Testing Laboratory and the Landscape Architect to bring soil to an acceptable condition to promote vigorous and healthy plant growth. The addition of these and other industry standard amendments shall be at the expense of the contractor.

B. Compost shall be a well decomposed, stable, weed free organic matter source. The product shall be certified through the US Composting Council's (USCC) Seal of Testing Assurance Program (STA) Program. It shall be derived from agricultural or food waste or yard trimmings. The product shall contain no substances toxic to plants, will possess no objectionable odors and shall not resemble the feedstock (the original materials) from which it was derived.

C. Before delivery of the compost, the supplier will submit a copy of lab analysis performed by a laboratory that is enrolled in the US Composting Council's CAP

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and using the approved Test Methods for the Evaluation of Composting and Compost (TMECC). The lab report shall verify:

1. Feedstock Materials shall be specified and include one or more of the following: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues.

2. Organic Matter Content: 50% - 60% by dry wt. preferred, 35-70% acceptable

3. Carbon and Nitrogen Ratio: C:N < 25:1 plus at least one measure of stability and at least one measure of toxicity.

4. Maturity/Stability: shall have a dark brown color and a soil-like odor. Compost exhibiting a sour or putrid smell, containing recognizable grass or leaves, or is hot (120F) upon delivery or rewetting is not acceptable. In addition any one of the following is required to indicate stability.

5. Toxicity: any one of the following measures is sufficient to indicate non-toxicity.

NH4- : NO3-N	< 3
Ammonium	< 500 ppm, dry basis
Seed Germination	> 80 % of control
Plant Trials	> 80% of control
Solvita®	> 5 Index value

6. Nutrient Content: provide analysis detailing nutrient content including N-P-K, Ca, Na, Mg, S, and B.

   a. Total Nitrogen content 0.9% or above preferred.

   b. Boron: Total shall be <80 ppm; Soluble shall be <2.5 ppm

7. Salinity: Must be reported; may vary but < 4.0 mmhos/cm preferred. Soil should also be tested: <2.5 mmhos/cm is preferred for soil/compost blend but may vary with plant species.

8. pH: pH shall be between 6.5 and 8. May vary with plant species.

9. Particle size: 95% passing a 1/2” screen.

10. Bulk density: shall be between 500 and 1100 dry lbs/cubic yard

11. Moisture Content shall be between 35% - 55% of dry solids.

12. Inerts: compost shall be relatively free of inert ingredients, including glass, plastic and paper, < 0.1 % by weight or volume.

13. Weed seed/pathogen destruction: provide proof of process to further reduce pathogens (PFRP). For example, turned windrows must reach min. 55C for 15 days with at least 5 turnings during that period.

14. Select Pathogens: Salmonella <3 MPN/4grams of TS, or Coliform Bacteria <10000 MPN/gram.

15. Trace Contaminants Metals (Lead, Mercury, Etc.) Product must meet US EPA, 40 CFR 503 regulations.

D. Blood Meal: 12-0-0. Blood Meal is a 100% organic, dehydrated, slow release, fine granular product, with a minimum analysis of 12 percent Nitrogen (N) for use

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in soil. Material shall be Dark red and granular. Apply 2-3 pounds per 100 square foot and mix well in to top layer of soil.

E. Bone Meal: Organic, commercial bone meal finely ground and having a minimum analysis of 1 percent nitrogen and 15 percent phosphoric acid, applied at a rate of 5-10 pounds per 100 square feet.

2.03 COMPOSTED GREEN WASTE, ORGANIC COMPOST AND FERTILIZERS

A. Agricultural Gypsum (Calcium sulfate)

B. For composted green waste, or organic compost, refer to Section 02900 "Planting" and refer to Part 2 titled Organic Compost, Soil Amendment, Soil Conditioners, Mulches, and Fertilizers.

C. Commercial fertilizer shall be 6-20-20 (0.75% Zn)

D. Potassium sulfate shall be 0-0-50

E. Ferrous Iron sulfate or Chelated iron sulfate

F. Ammonium sulfate shall be 21-0-0

G. Sulfur Coated Urea shall be 32-0-0

H. Complete fertilizers shall be 16-6-8

I. Blood Meal: 12-0-0. Blood Meal is a 100% organic, dehydrated, slow release, fine granular product, with a minimum analysis of 12 percent Nitrogen (N) for use in soil. Material shall be Dark red and granular. Apply 2-3 pounds per 100 square foot and mix well in to top layer of soil.

J. Bone Meal: Organic, commercial bone meal finely ground and having a minimum analysis of 1 percent nitrogen and 15 percent phosphoric acid, applied at a rate of 5-10 pounds per 100 square feet.

K. Foliar Feed: The technique of feeding plants by applying liquid fertilizer directly to their leaves. As indicated elsewhere, this will be required if chlorosis symptoms still exist on the poplar trees in the fall after Phase 1 and 2 have been completed. Foliar feeding will be done as extra work and determined if required at the end of Phase 1 and 2 work, upon review by the City Arborist.

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2.04 BACKFILL MIX

A. To be installed in planting pits.

B. Soil mix shall be 2 parts native soil, 1 part leaf litter or organic leaf compost, or peat moss, or ¼' fir bark, or organic compost, plus 48 gro-paks of 12-5-8 fertilizer, or nine pounds of 15-8-10 osmocote per cubic yard of backfill mix.

C. For organic compost and fertilizer packets, refer to "Organic Compost, Soil Amendment, Soil Conditioners, Mulches and Fertilizers" herein, and the Soils and Plant lab report to be supplied by the Contractor.

2.05 ORGANIC LEAF COMPOST AMENDMENT

A. Gradation: A minimum of 90 percent of the material by weight shall pass a 1/2-inch screen. Material passing the 1/2-inch screen shall meet the following criteria:

Percent Passing	Sieve Size
85 – 100	3/8 inch
50 – 80	No. 8
0 – 40	No. 35

B. Organic content: Minimum 50 percent based on dry weight and determined by ash method. Minimum 250 lbs organic matter per cubic yard of compost.

C. Carbon to nitrogen ratio: Maximum 35:1.

D. pH: 5.5-8.0 as determined in saturated paste.

E. Soluble salts: Soluble nutrients typically account for most of the salinity levels but sodium should account for less than 25 percent of the total. To avoid a leaching requirement, the addition of the compost shall result in a final ECe of the amended soil of less than 4.0 dS/m @ 25 degrees C as determined in a saturation extract. The soil testing laboratory shall determine the maximum allowable ECe (dS/m of saturation extract) of compost and the use rate.

F. Contaminants: The compost shall be free of contaminants such as glass, metal, and visible plastic. Heavy metals, fecal coliform, and Salmonella sp shall not exceed levels outlined in California Integrated Waste Management regulations.

G. Maturity characteristics:

1. Color: dark brown to black

2. Odor: Acceptable = none, soil-like, musty, or moldy; Unacceptable = sour, ammonia or putrid

3. Particle Characterization: identifiable wood pieces are acceptable but the balance of material shall be soil-like without recognizable grass or leaves.

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2.06 FERTILIZER PAKS

A. Controlled Released Fertilizer Packets: 20-10-5 (N-P-K) in a biodegradable packet, and shall contain POLYON® coated fertilizers; contains an expanded minor and secondary element package; contains a significant amount of kelp based organic matter to promote soil biology. Best PAKS 20-10-5, by Simplot Professional Products, P.O. Box 198, Lathrop, CA 95330, 800-992-6066, or approved equal:

TOTAL NITROGEN 20.00%
4.10% Ammoniacal Nitrogen
1.90% Nitrate Nitrogen
14.00% Urea Nitrogen
AVAILABLE PHOSPHATE 10.00%
SOLUBLE POTASH 5.00%
Calcium 2.00%
Magnesium 2.00%
Sulfur 3.00%
Copper 0.25%
Iron 0.90%
Manganese 0.25%
Molybdenum 0.002%

Zinc 0.150%

PART 3 EXECUTION

3.01 INSPECTIONS

A. Prior to the work of this section, verify grades and inspect the work of other trades. Verify that all such work is complete to the point where the installation may properly commence.

B. In the event of discrepancy, immediately notify the Engineer in writing. Do not proceed with this installation until all discrepancies have been resolved or take responsibility of condition of site at no additional expense to the City.

C. Inspect trees, shrubs and ground cover plants upon delivery for injury, insect infestations, and proper pruning.

3.02 SOIL TESTING

A. See “Import Topsoil” 32 91 15

3.03 SOIL PREPARATION

A. Subgrade shall be excavated to the required subgrade depths as described on the plans. Maintain all required angles of repose of the adjacent materials. Do not over excavate compacted subgrades of adjacent materials, pavements or structures. Remove all construction debris and materials.

B. Confirm that the sub grade is at the proper elevation and compacted as required. Subgrade elevations shall slope parallel to the finished grade and/or toward the lines and grades as shown on the drawings.

C. Upon achieving subgrade, subgrade shall be ripped to 12 inch depth in both directions prior to amending subgrade and placement of top soil.

D. Provide compost amendments, chemicals, and fertilizers described herein, and as recommended in the soil report for subgrade and imported topsoils. These are minimum requirements. Provide such additional amendments and chemicals as required by the Soil Reports.

E. Organic compost amendment quantities shall be adjusted in accordance with the soil test and organic leaf compost test reports: 6 cubic yards per 1,000 square feet.

F. Fertilizers quantities shall be adjusted in accordance with the soil test and organic compost amendment test reports: 20 pounds per 1,000 square feet of 6-20-20 or 6-24-24, (N-P-K).

G. Other Chemicals Recommended by Soil Test: gypsum, sulfur, lime, etc.

H. After approval of amendment and fertilizer applications by the Project Inspector or Project Landscape Architect, incorporate soil amendments and fertilizers into the top 12 inches of subgrade soil by repeated rotary-hoe cultivation.

I. Subgrade areas shall be water tested to ensure some degree of percolation prior to integrating the first lift of topsoil.

J. Do not mechanically compact with heavy machinery or compactors during placement. Do not saturate soils with water. Soil in plantings areas shall be a

CITY COUNCIL REFERENCE ONLY

minimum 85 percent relative compaction, sufficient to prevent soil settlement with changing friable soil conditions. Provide additional topsoil as needed to achieve the required finished grades and to sill settled areas.

3.04 IMPORTED TOPSOIL PLACEMENT

A. Refer to Section 31 20 00 “Rough Grading” and Section 32 91 15 “Import Topsoil” for additional information.

B. Topsoil shall be placed only on properly ripped and conditioned subgrade.

C. Watering: At completion of soil amendment, fertilizer installation, and topsoil placement, water the topsoil in all landscaped areas for a period of 30 Days. Maintain sufficient soil moisture at all times to induce weed seed germination, but not to saturate the soil.

3.05 FIELD QUALITY CONTROL

A. Supervision: Qualified foreman must be continuously on site during work operations.

3.06 MEASUREMENT AND PAYMENT

A. The square foot contract price paid for “**Soil Preparation and Amendment**” of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City’s Landscape Architect.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 32 91 15 IMPORT TOPSOIL

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. These special provisions are part of the plans and shall include all labor, materials, equipment, reasonable incidental, and services necessary to the execution of the work.

B. Refer to all other sections, determine the extent and character of related work, and coordinate all work to produce a complete, properly constructed product.

C. This section is complete in its entirety and is not supplemental to the standard specifications for Caltrans except where specifically noted.

1.02 RELATED SECTIONS

A. Section 01 56 39 – Tree Protection

B. Section 31 20 00 – Rough Grading

C. Section 32 84 00 – Irrigation

D. Section 32 90 00 – Planting

E. Section 32 91 13 – Soil Prep and Amendment

CITY COUNCIL REFERENCE ONLY

1.03 ENVIRONMENTAL REQUIREMENTS AND SOILS

A. Friable refers to the structure and moisture content of soil. Friable soil shall be understood to mean soil that crumbles easily in the hand, does not stick to the hand, and does not form a ball when squeezed. Friable soil is not wet or muddy but is moist and damp. Obtain City Representative's determination of soil condition acceptability prior to installation and working of soils.

B. Soils in landscape areas that are worked when not friable shall be removed at the Contractor's expense and replaced with friable imported topsoil complying with the specifications for topsoil herein.

1.04 REFERENCES AND REQUIREMENTS

A. City of Fremont Standard Details (Amended April 11, 2006) and Park Standard Details (PSD; December 13, 2011) and the latest edition of the City of Fremont Landscape Development Requirements and Policies (LDRP) for work within City right of way (see Exhibits – City of Fremont).

1.05 DESCRIPTION OF WORK

A. Provide labor, materials, and equipment necessary for completion of landscape planting as shown on the drawings and specified herein.

1.06 SUBMITTALS

A. Procedures: In accordance with Section 01 30 00.

B. Materials data: Submit complete materials list of plants, soils, amendments, fertilizers and non-proprietary items to be provided under this Section, including source, size, and quantity.

C. Product data: Submit manufacturer's specifications, installation instructions, data sheets, and catalog cuts for all materials different from those specified. Submit (3) three manufacturer's catalog cuts for all specified materials listed herein. Requests for substitutions shall comply with Section 01 30 00.

D. Submit the following items, and other items as may be required by the Project Landscape Architect, and obtain written approval prior to delivery of materials to the site. Finished work shall match approved samples.

1. Soil Testing Report(s) for import soil and existing subgrade

2. Topsoil: 1/2 pound sample with soil analysis certificate.

E. Certification

1. Furnish the Project Landscape Architect with:

a. Duplicate, legible copies of certificates and/or invoices for all soil, and other materials, stating the grade, weight or quantity, source, and date of delivery.

b. Certification from soil supplier and an accredited laboratory that the biotreatment soil meets the requirements of these specifications.

F. Test Reports for Topsoil: Provide material samples directly to testing laboratory. Recommended Testing Lab: Soil and Plant Laboratory, 352 Matthew Street, Santa Clara, CA 95052-0153 (408) 727-0330. Test results, including analysis and comment with any soil amendment recommendations to be specified using organic compost amendments, are to be sent directly to Project Landscape Architect and general contractor by testing agency. Tests to be performed:

1. Provide Project Specifications for import topsoil, soil amendments and fertilizer to Testing Laboratory along with samples of import topsoil. Include manufacturer's analysis of proposed amendment, dated within 6 months before delivery, or sample of organic amendment for Testing Laboratory's analysis if manufacturer's analysis is not available.

2. Testing Laboratory shall certify that proposed import topsoil complies with Specifications and that it is compatible with site soil.

3. Testing Laboratory shall propose changes in amendment program specified, if required, and shall certify that amendments proposed are suitable for use with site soil and import topsoil.

4. Existing Subgrade: Provide Test AO5, for agricultural suitability, fertility, particle size analysis; including recommendations for soil amendment and backfilling, and fertilization during Maintenance Period. Number of samples to be as recommended by Testing Laboratory, minimum 1 sample. Samples to be collected as directed by the Testing Laboratory. As a minimum requirement samples are to be taken from soils 12" below finish grade and delivered in separate sealed containers uniquely labeled identifying their location on the site. Samples must be collected in clean containers and must not be mixed.

5. Certify that soil is free of herbicides or other harmful substances. Perform monocot and dicot growth trials, Test M05. Number of samples as recommended by Testing Laboratory, minimum 4 trials.

CITY COUNCIL REFERENCE ONLY

6. Import Topsoil: Submit test reports of representative sample prior to delivery and for every 100 cubic yards (or 75 cubic meters) delivered to the site. Test AO5, for agricultural suitability, fertility, particle size analysis; including recommendations for soil amendments specified as organic amendments, and organic fertilization during Maintenance Period. Test results must be approved by the Landscape Architect prior to delivery of soil to the site. As a minimum requirement samples are to be taken 12" below finish grade and delivered in separated sealed containers uniquely labeled identifying their locations on the site. Samples must be collected in clean containers and must not be mixed.

7. All Other Fertilizers and Amendments: For standard products, submit manufacturer's analysis. For all other products, submit analysis by testing Laboratory. Specify amendments using organic amendments.

8. Submit test results for site soil, import soil and organic amendment together, as a package.

9. Compost – Laboratory analysis as per specifications

1.07 INSPECTIONS

1. Right of inspection by the City Representative for acceptance or rejection is reserved at the nurseries or on the Jobsite at any time upon delivery or during the work.

2. Contractor shall notify City Representative in writing a minimum of 5 Working Days in advance of inspections.

1.08 PROJECT QUALITY

A. Perform all work to the highest standard of quality. All work is subject to the acceptance of the City Representative. Work that is deemed unacceptable or defective by the City Representative shall be removed by the Contractor immediately and replaced with work that is acceptable to the City Representative.

1.09 PROJECT CONDITIONS

A. Existing Conditions:

1. General: Exercise caution against injury to, or defacement of, existing conditions. At Contractor's expense, repair or replace items damaged from installation operations.

1.10 SCHEDULING

A. General: Prior to starting work, coordinate work with other trades to insure proper sequencing of construction.

1.11 QUALITY ASSURANCE

A. Testing laboratory: Recognized laboratory for soil and plant disease analysis for ornamental horticulture, approved by Architect. Acceptable laboratory: Soil and Plant Laboratory, Santa Clara, CA (408) 727-0330.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

2.01 GENERAL

A. All products shall be in conformance with the specifications listed below. Any changes to products to be used shall be approved, in writing, by the Project Landscape Architect prior to job site delivery.

2.02 IMPORT TOPSOIL

A. Topsoils shall consist of fertile, friable soil of sandy, loamy character, and shall contain organic matter in amounts normal to the region. Imported topsoils shall be obtained from well-drained arable and fertile agricultural land and shall be free of rocks over one inch in diameter, free from refuse, plants or roots, clods, heavy or stiff clay, stones larger than one inch in size, coarse sand, noxious seeds, sticks, brush, litter, grasses, weeds, viable weed seeds, solvents, petroleum products, concrete, base rock, or other harmful substances, toxic waste, and other deleterious substances detrimental to the health of plants, animals, and humans. Imported topsoil shall be capable of sustaining healthy plant life.

B. Do not obtain topsoils from areas on which noxious and/or invasive weeds such as Common Fennel, Morning Glory, Sorrel, Bermuda Grass, Oxalis, Yellow Nutsedge, and the like are growing. Imported topsoil installed on the Jobsite under this Contract that contains noxious and/or invasive weeds shall be removed from the Jobsite and replaced with approved imported topsoil free of the weeds at the Contractor's expense and to the satisfaction of the City Representative. The maintenance period will be extended at the Contractor's expense to ensure the weeds are removed.

C. Topsoils shall have no inherent tendency towards compaction due to texture or soil structure or both as indicated in the soils analysis. Topsoils for planting areas shall have a percolation rate of 1 inch minimum to 3 inches per hour. Treatment topsoils for vegetated swale areas shall be the responsibility of the Contractor to determine and shall be in accordance with the Alameda County Clean Water Program. Vegetated swale (bioswale) and City of Fremont tree well treatment topsoils typically have a percolation rate of 5 to 10 inches per hour. See Civil vegetated swale and City of Fremont tree well filter requirements.

D. All costs related to furnishing and installing imported topsoils, soil tests, soil amendments and chemicals specified in these Construction Specifications, and any additional soil amendments and chemicals required by the soil tests, shall be included in the Contract Price and no additional compensation will be forthcoming therefor.

E. Remove all plant material, trash, debris, rock, gravel, contaminated soils, including, but not limited to, soil contaminated by concrete wash water, paint and cleaning chemicals, found in planting areas during the planting operations in accordance with these Construction Specifications. Install approved imported topsoil in planting beds as required to meet finish grades. All costs related to this work shall be at the Contractor's expense and to the satisfaction of the City Representative. Pay for and be responsible for removal of contaminated soils to a site legally entitled to receive the materials.

F. Topsoil: Topsoil has been imported as “Clean Fill”. All topsoil will be tested by the Contractor, and then approved by the Landscape Architect prior to placement or delivery to the site.

1. Agricultural Suitability:

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Salinity (ECe, mmhos/cm at 25°C): 0-4.0
Sodium (SAR): 0-4.0
Boron (PPM in Saturated Extract): 0-0.7
pH of saturated paste: 5.5 -7.5

2. Particle Size:

	Minimum	Maximum
Clay and Silt	20 percent	50 percent
Fine Sand	30 percent	40 percent
Coarse Sand	0 percent	15 percent
Gravel (Maximum Aggregate size 3/4")	0 percent	8 percent
Decomposed Organic Matter	0 percent	15 percent

3. Should the samples not meet all of the standards given above, the Testing Laboratory will submit in the report what additives (in addition to the material already called for in these specifications) are to be incorporated to correct these problems. All topsoil will be brought into conformance with these specifications and the recommendations of the Testing Laboratory at no additional cost to the city.

G. Subgrade: Subgrade has been established under Section 03 20 00 "Rough Grading".

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 INSPECTIONS

A. Prior to the work of this section, verify grades and inspect the work of other trades. Verify that all such work is complete to the point where the installation may properly commence.

B. In the event of discrepancy, immediately notify the Engineer in writing. Do not proceed with this installation until all discrepancies have been resolved or take responsibility of condition of site at no additional expense to the City.

C. Inspect trees, shrubs and ground cover plants upon delivery for injury, insect infestations, and proper pruning.

3.02 SOIL TESTING

A. General: Prior to planting, provide a soil test and recommendations as stated elsewhere in these specifications.

B. Testing shall be done by a reputable laboratory for soil and plant disease diagnosis and analysis, with a minimum of 5 years experience. (See Part 1 "Submittals").

C. Soil analysis at a minimum should be done for soil chemistry including pH, fertility, agricultural suitability, particle size analysis, infiltration rate, and presence of calcareous conditions, unless otherwise noted in these specifications.

D. Soil test results shall be presented in a report form, and should include recommendations for organic soil amendment, fertilization, drainage mitigation, and other necessary measures, for both planting and during the initial 90-day maintenance period.

3.03 SOIL PREPARATION

A. See Section 32 91 13 “Soil Preparation and Amendment”

3.04 IMPORTED TOPSOIL PLACEMENT

A. General: Topsoil shall be placed only on properly ripped and amended subgrade as described in Section 31 20 00 “Rough Grading”, Section 31 22 19 “Finish Grading” and Section 32 91 13 “Soil Preparation and Amendment”

B. Moisture content of topsoil shall be such that the soil may be easily worked. Soil shall not be placed or worked if it is excessively wet resulting in high compaction, or dry resulting in excessive dust.

C. Extraneous material such as weeds, wood, and rocks over 2" in diameter shall be removed from the topsoil and disposed of off-site.

D. Tested and approved imported topsoil and stockpiled topsoil shall be installed in areas to be planted in all disturbed areas, cut slopes, fill slopes, excavated areas, including but not limited to, backfill in planting areas, and backfill against concrete and asphalt walkways, and as directed by the Project Inspector or Engineer.

E. Greater or shallower depths of topsoil shall be provided in accordance with the contract drawings, existing conditions, and constructed site conditions. Depth of topsoil is measured down 1-1/2 to 2 inches from the finished surface of adjacent pavement, concrete, or finished grade of dirt areas, as described in the details.

F. Top soil shall be installed in 6 inch lifts. Prior to installing topsoil, subgrade shall be ripped to a minimum depth of 12 inches and amended per Section 32 91 13. Subgrade areas shall be water tested to ensure some degree of percolation prior to integrating the first lift of topsoil.

G. Do not mechanically compact with heavy machinery or compactors during placement. Do not saturate soils with water. Soil in plantings areas shall be at approximately 85 percent relative compaction, sufficient to prevent soil settlement with changing friable soil conditions. Provide additional topsoil as needed to achieve the required finished grades and to sill settled areas.

H. Provide adequate equipment to achieve consistent and uniform compaction of the planting soils. Use the smallest equipment that can reasonably perform the task of spreading and compaction.

I. Suspend installation operations if the planting soil becomes wet. Do not place planting soils on wet or frozen sub grade

J. The Contractor shall protect the stability and integrity of the compacted aggregate base and subgrade material underneath and next to all paving, curbs and footings adjacent to the planting areas receiving topsoil.

3.05 WATER SETTLEMENT

A. Water settlement intent is 2 fold – to settle material and areas that have been imported, soil conditioned and amended; and, to germinate any weeds, and eradicate those weed prior to shrub and tree planting and sod placement.

B. Weed control shall follow the requirements noted elsewhere in Section 32 90 00 under Plant Establishment Period.

CITY COUNCIL REFERENCE ONLY

C. At completion of soil conditioning and amendment, fertilizer installation, and topsoil placement on ripped subgrade, smooth the soil surface, and water the soil in all areas, including areas requiring sodding, for a full 30 days to induce weed seed germination, but do not saturate the soil. Soil shall be moist without being saturated to a minimum depth of 24 inches and shall not be allowed to dry out at any time within the 30 day watering period. Finished grade of soil shall be checked after 15 days. Imported topsoil soil shall be added in the areas that settle below finished grades as required by the plans and specifications. Irrigation system shall be complete prior to the 30-day watering period and shall be used to water soils. In areas where irrigation is by bubbler or drip, the contractor may, at their expense and option, install a temporary irrigation system to keep the soils moist. The contractor shall be responsible for ensuring that the temporary irrigation system does not create a safety hazard. In lieu of the temporary system in bubbler zone areas, the contractor may roll amended soil to not less than 80% and not more than 85% relative compaction.

D. After water settling, finish grade to a smooth, even surface conforming to established grades after settlement. Rake immediately prior to planting. See "Fine Grading" herein.

E. The placement of sod, shrubs or trees shall not begin until the water settlement period is complete and accepted by the City.

CITY COUNCIL REFERENCE ONLY

3.06 FINE GRADING

A. The Project Inspector and Project Landscape Architect shall view all rough grading prior to the installation of compost, fine grading, planting, and mulching.

B. Grade the finish surface of all planted areas to meet the grades shown on the drawings.. Allow the finished grades to remain higher than the grades on the grading plan to anticipate settlement. Set grades at time of installation high enough relative to the type of planting soil and settlement anticipated so that the planting soil will be at the correct grades after settlement.

C. At the end of the one year warranty period, if grades have settled greater than 5% of the soil depth below the grades shown on the drawings, reset the grades to the final grades shown on the grading plan.

D. Adjust the finish grades to meet field conditions as directed.

E. Provide for positive drainage from all areas toward the edges of planting beds and decomposed granite surfacing. Adjust grades as directed to reflect actual constructed field condition elevations. Notify the Landscape Architect in the event that conditions make it impossible to achieve positive drainage.

F. Provide smooth transitions between slopes of different gradients and direction. Modify the grade so that the finish grade is flush with all paving surfaces or as directed by the drawings.

G. Fill all dips and remove any bumps in the overall plane of the slope. The tolerance for dips and bumps in shrub and ground cover planting areas shall be a 1" deviation from the plane in 10'.

H. Restore all grades after the installation of plants.

3.07 FIELD QUALITY CONTROL

A. Supervision: Qualified foreman must be continuously on site during work operations.

3.08 CLEAN-UP

A. All pavement shall be washed off, and site shall be left in clean condition. Clean up operations shall take place throughout the course of work so that walks and drives are clean at all times.

B. Perform cleanup during the installation of work and upon completion of the work. Maintain the site free of soil and sediment, free of trash and debris. Remove from site all excess soil materials, debris, and equipment. Repair any damage to adjacent materials and surfaces resulting from installation of this work.

C. Overspray: Installing contractor is responsible for washing or otherwise cleaning excess material off all area not intended to receive treatment.

3.09 PROTECTION DURING CONSTRUCTION

A. The Contractor shall protect landscape work and materials from damage due to landscape operations, operations by other Contractors or trespassers. Maintain protection during installation until acceptance. Treat, repair or replace damaged planting soil installation work immediately.

B. Till compacted planting soil and replace planting soil that has become contaminated as determined by the Landscape Architect. Planting soil shall be tilled or replaced by the Contractor at no expense to the Owner.

3.10 REPAIR OF SETTLED PLANTING SOIL

A. At the end of twelve months, after the date of substantial completion of the planting soil installation work, and prior to completion of the one year warranty, inspect the site and restore any areas where the grades have settled beyond the elevations shown on the drawings by an amount greater than 5% of the soil depth.

B. In shrub planting areas where the settlement is 3" or less, remove the mulch, top dress the area with the specified planting soil and re-mulch.

C. In all ground cover and sod areas and shrub planting areas where the settlement is greater than 3" remove the mulch and plants, add the specified planting soil, re plant and re mulch.

3.11 CLEAN-UP

A. During installation, keep pavements clean and work area in an orderly condition.

B. Keep the site free of garbage at all times. Immediately dispose of wrappings or waste materials associated with products necessary for the completion of the work.

C. All garbage shall be kept in a central collection container. Do not bury garbage in back-fill.

D. Once installation is complete, remove any excess soil from pavements or embedded fixtures.

CITY COUNCIL REFERENCE ONLY

3.12 GUARANTEE

A. All plants installed under the contract shall be guaranteed to live and grow for a period of one year from the date of final acceptance of contract work.

B. Any material found to be dead, missing, or in poor condition during the guarantee period, shall be replaced by the Contractor within fifteen.

3.13 MEASUREMENT AND PAYMENT

A. Payment for "**Import Topsoil**" utilized for general planting is considered included in the contract lump sum price for "**Soil Preparation and Amendment**" and no separate payment shall be made therefor

END OF SECTION

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SECTION 32 92 23 SOD

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preparation of subsoil.

B. Placing topsoil.

C. Fertilizing.

D. Sod installation.

E. Maintenance

1.02 RELATED REQUIREMENTS

A. Section 01 30 00 Submittals

B. Section 31 20 00 Rough Grading

C. Section 31 22 19 Finish Grading

D. Section 32 84 00 Irrigation

E. Section 32 90 00 Planting

F. Section 32 91 15 Import Topsoil

G. Section 32 91 13 Soil Preparation

1.03 REFERENCE STANDARDS

A. TPI (SPEC) - Guideline Specifications to Turfgrass Sodding; Turfgrass Producers International; 2006.

1.04 DEFINITIONS

A. Weeds: Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.05 SUBMITTALS

A. See Section 01 30 00 – Submittals

B. Product Data: Submit list of all products including sod product brochure, fertilizer, and nitrolized sawdust amendment including names of producers or Suppliers.

C. Analytical Data: Submit a sample of all supplied materials accompanied by analytical data from an approved laboratory source for all products illustrating compliance or bearing the manufacturer's guaranteed analysis.

D. Sod Topsoil Percolation Test: Submit sod topsoil percolation test results in accordance with “Planting”, Article 2.16 Soil Analysis Report. Minimum required sod topsoil percolation rate is 5 inches per hour. Sods grown on topsoil with percolation rates less than 5 inches per hour will not be accepted.

E. Samples: Submit one 2-foot by 2-foot square fresh sample of each type of sod specified.

F. Certificates/Invoices: Submit duplicate, legible copies of certificates or invoices

CITY COUNCIL REFERENCE ONLY

for all grass species and location of sod source, chemicals, fertilizers, and other materials stating the grade, weight, or quantity, source, and date of delivery.

G. Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

1.06 QUALITY ASSURANCE

A. Sod Producer: Company specializing in sod production and harvesting with minimum five years experience, and certified by the State of California.

B. Installer Qualifications: Company approved by the sod producer.

1.07 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer and herbicide composition.

B. Provide certificate of compliance from authority having jurisdiction indicating approval of fertilizer and herbicide mixture.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Harvest, deliver, store, and handle sod according to requirements in TPI's "Guideline Specifications to Turfgrass Sodding". Deliver sod on pallets. Protect exposed roots from dehydration.

B. Deliver sod in time for planting within 24 hours of harvesting. Protect sod from breakage, seed contamination and drying.

C. Do not deliver more sod than can be laid within 24 hours.

1.09 STORAGE OF MATERIALS

A. Fertilizer and lime shall not be stored with other landscape materials.

B. Soil sterilant shall not be stored with other landscape materials.

C. Storage of materials shall only be areas designated or as approved by the Project Inspector.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

2.01 MATERIALS

A. Sod shall be grown in accordance with California agricultural codes.

1. Sod shall be healthy field grown sod containing not more than 1/2-inch thick thatch.

2. Soil upon which the sod has been grown shall be peat, sand or sandy-loam with a minimum 5 inch per hour percolation rate.

3. The age of the sod shall be not less than 8 months or more than 16 months.

4. Sod shall be machine cut at a uniform soil thickness of 5/8 inch, plus or minus 1/4 inch, not including top growth and thatch. Ship sod in rolls and

covered to prevent drying out en-route. Keep sod moist at all times to prevent drying out.

5. Sod shall be thick, well-grown, medium texture, deep root system, good wear tolerance and quick recovery form wear, tolerant of saline soils and saline irrigation, adaptable to USDA zones 3 to 9, requires sun most of the day with moderate shade tolerance, mowable to 1” to 3”. Regular roll sizes, purchased from a commercial grower.

6. Sod shall be a fescue/bluegrass blend (70%-30%). With the additional bluegrass, there is no need for net, and the sod will be able to "fill in" weaker areas, spots damaged by pedestrian traffic, dog urine, and high traffic areas.

7. Sod shall be free of netting.

8. Sod shall be free of the following: weeds, disease, excessive thatch, burned or bare spots, stones, insects, and non-desirable types of grasses and clovers and shall show no signs of mechanical injury.

B. Sod shall be one of the following approved products:

1. West Coaster No-Net” from West Coast Turf; 1-888-893-8873.

2. 90/10 Tall Fescue from Delta Blue Grass; 1-800-637-8873

3. Medallion Plus (90% fescue/10% Bluegrass) from Pacific Sod; 1-800-942-5296.

C. Contractor shall provide a submittal identifying supplier, type of sod, and other characteristic of the material, unless sod type is identified on the plans. Care should be taken to prevent drying during shipping and handling.

D. Sod shall be delivered to the site in vigorous condition, free of stones, burned or bare spots; weed and disease-free.

E. Grass from sod shall be used in other refined turf areas which are damaged by this construction work. Replacement sod mix shall match the existing sod and be approved by the Project Inspector or Project Landscape Architect prior to installation. Remove existing damaged sod areas prior to installing new replacement sod, prepare soil and comply with the requirements of these Construction Specifications.

F. Fertilizer: As Approved; recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil, as indicated by analysis.

CITY COUNCIL REFERENCE ONLY

2.02 SOURCE QUALITY CONTROL

A. Submit minimum 10 oz sample of topsoil proposed. Forward sample to approved testing laboratory in sealed containers to prevent contamination.

PART 3 EXECUTION

3.01 GENERAL

A. Deliver sod to Jobsite, unload and store sod on pallets. Deliver to Jobsite within 24 hours of being lifted from growing ground and lay sod the same day as delivery.

B. Sod installation shall not begin until all other improvements have been installed in each area that is to receive grass from sod.

C. Sod shall be installed the same day as delivered.

D. No sod installation shall occur during weather conditions that will adversely affect materials or installation or when soil is in a muddy condition. During wet weather, allow sod to dry sufficiently to prevent tearing during lifting and handling.

3.02 INSTALLATION

A. Prior to any sod installation, landscape preparation, 30-Day watering and weeding period, finish grading and soil preparation as specified in Section 32 90 00 “Planting”, Section 32 91 15 “Import Topsoil”, and Section 32 91 13 “Soil Preparation and Amendment” must be completed and accepted by the Project Inspector or Project Landscape Architect.

B. Ensure topsoil has been imported, amended, and fine graded to the Project Inspectors satisfaction before rolling and placing sod.

C. Soil amendments shall be applied at the rates specified herein, in Section 02920, and in accordance with the soil test and report.

D. After cultivation, soil preparation, installation of irrigation systems, and excavation and backfilling of plant holes are completed, areas to be planted with sod shall be fine graded and rolled. Areas to be planted with sod shall be graded for positive drainage to drain at the minimum slopes described on the plans, without low spots or birdbaths in all areas and shall be smooth and uniform prior to placing sod.

E. Areas to be planted with sod adjacent to sidewalks, concrete headers, and other paved borders and surfaced areas, such as irrigation trenches, shall be 1-1/2 inches, plus or minus 1/4 inch, below the finish grade of the adjacent hardscape features, after fine grading, rolling, and settlement of the soil. Do not mechanically compact planting areas. Soil in planting areas shall remain friable and not to exceed 85 percent relative compaction.

F. The 30-Day watering and weeding period must be completed prior to installation of sod. Prior to placing sod and after 30-Day watering and weeding period has been completed, recheck finish grades and add or remove topsoil as required.

G. Just prior to laying of sod, broadcast ammonium phosphate (16-20-0) at the rate of 20 lbs./1000 sq. ft. unless otherwise noted in the drawings, or as recommended in the soil test and report.

H. Unroll the sod; fit each strip tightly to the preceding strip. Do not stretch. Install each strip together as tightly as possible and without gaps or overlap. Sod shall be placed so that the ends of adjacent strips of sod are staggered a minimum of 2 feet. Edges and ends of sod shall be placed firmly against adjacent sod and against sidewalks, concrete headers, header boards, and other paved borders and surfaced areas. Fit sod around trees leaving an minimum 18-inch radius clearance between face of trunk and edge of sod. Cut circular holes at each location of irrigation head and cut shape of irrigation valve boxes for exposure. Prevent heel marks or footprints in the earth as sod is installed.

I. After placement of the sod, the entire sodded area shall be lightly rolled to eliminate air pockets and to ensure close contact with the soil. After rolling, the sodded areas shall be watered so that the soil is moistened to a minimum depth

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of 4 inches. The second rolling shall be at a cross angle from the first rolling. Upon completion of the rolling, apply sufficient water to wet the sod and soil to a depth of 6 inches. Sod shall be kept moist for the next 10 Days. Care shall be taken to prevent footprints in the sod. Sod shall not be allowed to dry out.

J. If irregular or uneven areas appear before or during the plant maintenance period, these areas shall be restored to a smooth and even appearance. Rocks, clods, and debris, which appear on the surface, shall be removed. Heaved, settled, or eroded areas, including but not limited to soil settlement, damage from burrowing and browsing animals, vandalism, and car traffic shall be restored by excavating, filling, finish grading, rolling, and re-sodding as required.

K. Temporary Construction Fencing shall be placed around sod areas beginning at finish grading operation through to final inspection to prevent through traffic. Barriers shall not create a hazard for pedestrian or vehicular traffic.

L. Apply second application of fertilizer after 45-60 Days. Apply ammonium phosphate (16-20-0) at the rate of 10 lbs per 1,000 square feet. Apply additional fertilizer applications as required and in accordance with accepted horticultural practices for sod maintenance. Mow, trim, cut down seed heads and keep sod in a neat orderly appearance at all times and as directed by the City's Representative. Bag grass cuttings while mowing and sweep up all trimmings and plant debris and dispose off Jobsite. Sod that has become uneven, weedy, damaged, diseased, vandalized or dies prior to final acceptance shall be removed and replaced with same type of sod. Replanting shall follow same planting procedures as outlined above. All grass from sod areas shall be healthy, strongly rooted, free of the following, weeds, disease, thatch, pests, damage, bare spots or stones, and shall show no signs of mechanical injury at final inspection.

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3.03 PRELIMINARY INSPECTION

A. At the completion of work, request a preliminary inspection to determine the condition of the grass from sod.

B. Inspection shall be requested 48 hours in advance.

3.04 INSPECTION

A. Grass from sod considered ready for inspection shall conform to the following:

1. Grass from sod areas shall be established and show a uniform, undamaged, healthy, and full stand of grass with a smooth and uninterrupted grass surface.

2. Sodded areas shall be uniform in slope in accordance with these Construction Specifications and shall conform to the finish grades as shown on the Contract Drawings.

3.05 APPROVAL

A. If the installation is found satisfactory, the work will be accepted by the City's Representative in writing.

B. If the installation is found unsatisfactory, the Project Inspector or Project Landscape Architect will provide a punch list to the Contractor. The Contractor is

responsible for requesting additional inspections after the conditions of the punch list have been corrected.

3.06 REPLACEMENT

A. Replace grass from sod in any area where growth is not vigorous, damaged, diseased, spotty, missing, or dead.

B. The replacement grass from sod shall be of the same type and quality as the original.

3.07 MAINTENANCE OF SOD

A. The overall Plant Establishment Period scope is described in "Plant Establishment Period

B. Maintenance of sod shall be addressed herein below.

C. The Plant Establishment Period shall begin after the completion of all other planting, and the correction of all punch list items, and to the satisfaction of the Project Inspector or Project Landscape Architect.

D. The start of the maintenance of sod shall coincide with the plant maintenance period. A longer period may be required if necessary to establish acceptable stands of thriving grass.

E. Maintenance shall include, but is not limited to all watering, weeding, fertilizing, cultivation, grass mowing and trimming, rodent control, other wildlife and animal control, spraying, re-sodding and replacement of damaged, dead and dying grass areas, and mowing and trimming as directed by the Project Inspector or Project Landscape Architect and as necessary to keep the sod in a healthy growing condition and to keep the planted areas neat and attractive in appearance throughout the maintenance period. Sod shall be kept at optimum moisture condition for thriving growth without over watering. During the maintenance period, should the appearance of any sod areas indicate weakness and the probability of dying, in the opinion of the Project Inspector or Project Landscape Architect, the area showing such weakness shall be removed and re-sodded immediately by the Contractor. Replacement of grass from sod shall be made in the same manner as specified for the original grass from sod. At the end of the maintenance period, all grass from sod areas shall be in a healthy growing condition and free of physical injury of any kind.

F. Mowing

1. Winter: Mow grass to 2-1/2 inches when it reaches a height of 3-1/2 inches.

2. Other Seasons: Mow grass to 3 inches when it reaches a height of 4 inches.

3. Bruising or rough cutting of grass will not be permitted. Mowers will also be adjusted and operated so that the grass is cut at a uniform height. Scalping of high places or crowns of mounds will not be permitted. Remove papers and debris prior to mowing.

4. The Contractor shall be responsible for mowing installed sod and all adjacent sod within the temporary construction fence and outside said fence for the entirety of the Plant Establishment Period. At no time shall the contractor allow sod outside the temporary construction fence reach a height greater than 6 inches.

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5. At no point shall City crews enter the project limits of work to perform mowing. If City enters the site, at the request of the Contractor, or at the direction of the City due to negligence of the Contractor to perform mowing, the Contractor shall be charged on a time and materials basis, by the City, and the cost for performing said work shall be retained from their contract, and deducted.

G. Work under this Construction Specifications Section shall include complete responsibility for maintaining adequate protection for all areas. Damaged areas shall be repaired at no additional expense to the City.

H. Weed all areas at intervals of not more than 10 Days.

I. Rocks, clods, and debris, which appear on the surface, shall be removed. Heaved, settled, or eroded areas shall be restored by excavating, filling, finish grading, rolling, and re-sodding as required.

J. All other aspects of the scope of the Plant Establishment Period as needed to maintain sod, shall apply to this section.

3.08 FINAL INSPECTION AND ACCEPTANCE

A. Final inspection will be conducted at the end of the Maintenance Period. Notice requesting final inspection shall be submitted by the Contractor to the Project Inspector or Project Landscape Architect at least 7 Days prior to the anticipated date.

B. Acceptance of the work by the Project Inspector or Project Landscape Architect will be contingent upon proper maintenance and the establishment of a vigorous, uniform stand of grass over all areas with grass from sod. Any portion thereof, which does not show a vigorous, uniform stand of grass, shall make all grass from sod areas subject to continued maintenance at the Contractor's expense.

C. The irrigation system shall also be tested at this time. See Section 32 84 00 “Irrigation”, for additional information.

D. Just prior to final inspection, 16-6-8 granular form commercial fertilizer shall be applied as follows:

Plant Size	Qty. Fertilizer
Grass from sod	6 lbs./1,000 sq. ft.

E. At the final inspection, the Project Inspector or Project Landscape Architect will determine the condition of improvements, and grass from sod. Grass from sod, which is missing, spotty, vandalized, dead, or unhealthy, shall be replaced by the Contractor with the same species and methods originally specified. The Contractor shall make replacements within 2 weeks after final inspection, and maintain grass from sod areas for an additional 30 Days.

F. If Contract improvements, corrective work, and maintenance have not been performed as specified, maintenance shall continue at the Contractor's expense until such time as the work has been successfully completed. Should work have been performed as specified, the City will assume maintenance responsibilities following the final inspection. City Representative will send written Notice of Acceptance of the work to the Contractor.

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3.09 MEASUREMENT AND PAYMENT

The square foot final pay quantity for "**Sod**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work under this section, complete and in place, including sod over irrigation trenches, as shown on the plans as required by these Special Provisions, and as directed by the City's Engineer or his designee. Quantities will not be measured. The quantity shown on the Engineer's Estimate for rough grading shall be the final pay quantity for which payment is made as specified in Section 8.8 "Final Payment" of the General Conditions.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

Division 33 – Utilities

SECTION 33 05 13 MANHOLES AND STRUCTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Modular precast concrete manhole bases, sections with tongue-and-groove joints, covers, and accessories for sanitary sewer and storm drain systems. Section also includes cast in place manhole bases.

1.02 RELATED SECTIONS

A. Section 01 30 00 Submittals.

B. Section 01 45 00 Construction Quality Assurance.

C. Section 01 57 23 Storm Water Pollution Prevention.

D. Section 31 20 00 Rough Grading.

E. Section 31 23 33 Trenching and Backfilling.

1.03 REFERENCES

A. American Concrete Institute (ACI) 308 - Standard Specification for Curing Concrete.

B. ACI 318 - Building Code Requirements for Structural Concrete.

C. American Society for Testing and Materials (ASTM) A48/A48M - Standard Specification for Gray Iron Castings.

D. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

E. ASTM C150 - Standard Specification for Portland Cement.

F. ASTM C443 REV A- Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.

G. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections.

H. ASTM C497 - Standard Test Methods for Concrete Pipe, Manhole Sections, or Tile.

I. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals.

J. ASTM C891 - Standard Practice for Installation of Underground Precast Concrete Utility Structures.

K. ASTM C1244 - Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill.

L. Corps of Engineers Specification No. CRD-C572 - Handbook for Concrete and Cement Corps of Engineers Specification for Polyvinylchloride Waterstop.

M. The term "State Standard Specifications" is understood to refer to the Standard Specifications, State of California, Business, Transportation and Housing Agency, Department of Transportation (CALTRANS), May 2006 edition. In cases of conflict between the State Standard Specifications and these specifications, these specifications shall govern.

CITY COUNCIL REFERENCE ONLY

1.04 SUBMITTALS

A. See Section 01 30 00 for submittal procedures.

B. Product Data: Submit product technical data acknowledging that products meet requirements of standards referenced.

C. Manufacturer's Installation Instructions: Indicate special procedures required to install products specified.

D. Laboratory Testing: Submit results of laboratory compression testing on precast concrete.

PART 2 PRODUCTS

2.01 MANHOLE SECTIONS, BASES, RISERS AND TOPS

A. Concrete: State Standard Specifications, CALTRANS Section 90-10, Minor Concrete, conforming to ACI 308, ACI 318, and ASTM C150.

B. Manhole sections, bases, risers and tops: Precast reinforced concrete per ASTM C478, with resilient connectors per ASTM C923.

C. Provide precast reinforced manholes, frame and cover as indicated on Drawings and as detailed. Inside dimensions, depth, clear lid opening, and pipe penetrations shall be as indicated on the Drawings. Cone section shall be eccentric.

D. Cast-in-place concrete bases may be used as an alternative to a precast concrete bases. Concrete shall conform to CALTRANS Section 90 and shall be Class “A” containing six packs of Portland Cement per cubic yard of concrete with a minimum design compressive strength of 3,000 psi after 28-days. Reinforcing bars shall be of intermediate grade billet steel conforming to ASTM A615 and shall be the size shown on the Drawings. Provide waterstop for cast-in-place bases in accordance with manufacturer’s instruction. PVC waterstops shall be manufactured from virgin polyvinyl chloride conforming to the Corps of Engineers Specification No. CRD-C572.

E. For pipe penetrations through manholes, core through, install gasket around pipe, grout penetration on both sides and install a minimum of 6 inches (thickness and distance) around collar outside of the manhole or inlet structure penetration. Connections shall be A-lok for ductile iron pipe, Kor-n-seal for PVC pipe, or equal.

2.02 MANHOLE FRAME AND COVER

A. Frame and Cover: Cast iron per ASTM A48 Class 35B and conforming to Section 55-2.03 and 75-1.02 of the CALTRANS Standard Specifications. Manhole frame and cover shall be D&L Supply A-1024, South Bay Foundry SBF 1900 CPH, or equal.

B. Provide Frame and Cover as detailed and shall be H-20 traffic rated.

2.03 MANHOLE SEALANT GASKETS

A. Precast reinforced concrete sewer manhole sections shall be joined with rubber gaskets conforming to ASTM C443. Sealant gaskets shall be Ram-Nek, Kent Seal, or equal. Use of mortar will not be allowed.

PART 3 EXECUTION

CITY COUNCIL REFERENCE ONLY

3.01 INSTALLATION

A. Installation of manhole structures shall conform to ASTM C478 and ASTM C891.

B. Excavation and backfill for manholes shall conform to applicable provisions of Section 31 20 00 Rough grading and Section 31 23 33 Trenching and Backfilling.

C. Place concrete base pad, trowel top surface level. Set precast manhole base unit level on the base material or concrete work slab as specified herein for a cast-in-place base.

D. Place manhole sections plumb and level, trim to correct elevations, anchor to base pad. Place manhole cylinder plumb and level, to correct dimensions and elevations.

E. Cut and fit for pipe.

F. Grout base of shaft sections to achieve slope to exit piping. Trowel smooth. Contour as required.

G. Set cover frames and cover level without tipping, to correct elevations.

H. Installation shall comply with requirements of Section 01 57 23 Storm Water Pollution Prevention.

3.02 TESTING

A. Precast, reinforced, concrete manhole bases, risers and tops shall be tested in accordance with ASTM C497 by an approved testing laboratory, for concrete compression tests on cores drilled from 5 percent of the lot.

B. When the groundwater table is too low to permit visual detection of leaks, 20 percent of the total of all manholes shall be hydrostatically tested. The test shall consist of plugging all inlets and outlets and filling the manhole with water to a height determined by the Owner. Leakage in each manhole shall not exceed 0.2 gallon per hour per foot of head above the invert over a period of 30 minutes. A manhole may be filled 24 hours prior to time of testing, if desired, to permit normal absorption into the pipe walls to take place. Repair all manholes that do not meet the leakage test, or are unsatisfactory from visual inspection, to conform to the requirements herein, at no additional cost to the Owner. If more than 25 percent of the manholes tested fail the hydrostatic test, the Contractor will be required to test all or as many manholes as the Owner may deem necessary.

C. Manhole vacuum testing per ASTM C1244 will be acceptable as an alternative to hydrostatic testing. A minimum of 9 inches of mercury shall be held for a minimum time of one minute.

D. Perform field inspection and testing in accordance with Section 01 45 00 Quality Assurance.

E. Precast, reinforced, concrete manhole bases, risers and covers shall be subject to rejection for failure to conform to any of the Specification requirements. In addition, individual sections of manhole risers and covers may be rejected for any of the following reasons:

1. Fracture or cracks passing through the wall, except for a single end crack that does not exceed the depth of the joint.

2. Defects that indicate imperfect proportioning, mixing, or molding.

3. Surface defects indicating honeycombed or open texture.

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4. Damaged ends, where such damage would prevent making a satisfactory joint as determined by the .Owner.

5. The internal diameter of the manhole section varying more than 1 percent from the nominal diameter.

6. Any continuous crack having a surface width of 0.01 inch or more and extending for a length of 12 inches or more, regardless of the position in the section wall.

3.03 MEASUREMENT AND PAYMENT

Payment for "**Manholes and Structure**" is considered included in the unit price paid for "**4" Sanitary Sewer**", and no separate payment will be made therefor

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 33 05 26 UTILITY LINE SIGNS, MARKERS, AND FLAGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Utility line signs, markers, and flags for underground utilities.

1.02 RELATED SECTIONS

A. Section 01 63 00 Project Substitution Procedures.

B. Section 01 30 00 Submittals.

C. Section 01 45 00 Construction Quality Assurance.

1.03 REFERENCES

A. American Society of Mechanical Engineers (ASME) A13.1 - Scheme for the Identification of Piping Systems

1.04 SUBMITTALS

A. See Section 01 30 00 for submittal procedures.

B. Product Data: Provide data acknowledging that products meet requirements of standards referenced.

C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

PART 2 PRODUCTS

2.01 PLASTIC LINE MARKER

A. Detectable warning tape shall be provided for all underground utilities. Underground-type conductive line markers shall conform to ASME A13.1 and be permanent, brightly colored, continuous-printed plastic tape, intended for direct burial service; not less than 6 inches wide by 4 mils thick. Provide color coding appropriate with utility with "CAUTION _____ (insert applicable utility) LINE BURIED BELOW" in large black letters. Plastic line markers and tracer tape shall be Presco, Emed Co. Inc., or equal.

2.02 TRACER WIRE

A. All underground chilled water, domestic water, utility water, non-metallic gas, pressurized sanitary sewer, and storm drain piping shall be accompanied by a tracer wire. Tracer wire shall be solid core #10 copper wire with a thermoplastic insulation recommended for direct burial.

B. Wire Connectors: Wire connections shall be made with 3M DBR-6, a properly sized split bolt connector or equal. The connection shall be watertight and provide electrical continuity. 3M Scotchkote Electrical Coating, or equal.

CITY COUNCIL REFERENCE ONLY

PART 3 EXECUTION

3.01 INSTALLATION

A. Utility piping markers and tracers shall be installed in accordance with the manufacturer's instructions. Have on hand all installation manuals, brochures, and procedures for the equipment and materials concerned.

B. Plastic coding tape shall be installed directly over the pipe, 18 to 24 inches above the top of the pipe.

C. Tracer wire shall be fastened to the top of the pipe so as not to be displaced or broken during backfilling, such as by affixing the wire to the pipe with duct tape at approximately 10-foot intervals.

D. Both ends of tracer wire shall be accessible at all utility valve boxes and locator boxes and shall be terminated on the top of the valve or locator box as detailed.

E. For directional drilling, auguring or boring installations, a minimum of two #10 tracer wires shall be installed with the pipe and connected to the tracer wire at both ends to ensure at least one wire is useable.

F. When connecting tracer wire with 3M DBR-6 Direct Bury Splice Kit, install per manufactures instructions. When connecting tracer wire with a split bolt connector, wrap the connection with vinyl electrical tape then apply 3M Scotchkote Electrical Coating evenly over splice, extending a short distance onto the cable insulation. Repeat application to provide two layers of tape and coating.

3.02 TESTING

A. Perform field inspection and testing in accordance with Section 01 45 00 Quality Assurance.

B. Contractor shall perform continuity testing on all trace wire in the presence of the Owner.

3.03 REPAIR/RESTORATION

A. If the trace wire is found to be not continuous after testing, Contractor shall repair or replace the failed segment of the wire.

3.04 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section "**Utility Line Signs, Markers, Flags**" not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefore.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 33 11 00 WATER UTILITY DISTRIBUTION PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe and fittings for site domestic, utility water (irrigation service), and chilled water supply and return.

B. Valves and appurtenances.

1.02 RELATED SECTIONS

A. Section 01 30 00 Submittals.

B. Section 01 45 00 Construction Quality Assurance.

C. Section 01 57 23 Storm Water Pollution Prevention.

1.03 REFERENCES

A. American Water Works Association (AWWA) C104/A21.4 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water; American Water Works Association; 2003 (ANSI/AWWA C104/A21.4).

B. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems; American Water Works Association; 1999 (ANSI/AWWA C105/A21.5).

C. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; American Water Works Association; 2000 (ANSI/AWWA C111/A21.11).

D. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast, for Water; American Water Works Association; 2002 (ANSI/AWWA C151/A21.51).

E. AWWA C508 - Swing-Check Valves for Waterworks Service, 2 In. Through 24 In. NPS; American Water Works Association; 2001 (ANSI/AWWA C508).

F. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service; American Water Works Association; 2001 (ANSI/AWWA C509).

G. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 In. Through 12 In., for Water Distribution; American Water Works Association; 1997 (ANSI/AWWA C900/C900a).

H. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; The American Society of Mechanical Engineers; 2001(R 2002) (ANSI B16.18).

I. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; The American Society of Mechanical Engineers; 2001.

J. ASTM B 88 - Standard Specification for Seamless Copper Water Tube; 2003.

K. AWS A5.8 - Specification for Filler Metals for Brazing and Braze Welding; American Welding Society; 2004 and errata.

1.04 SUBMITTALS

A. See Section 01 30 00 for submittal procedures.

B. Product Data: Provide data acknowledging that products meet requirements of standards referenced.

C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

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D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Restraint Calculation: Provide calculations and plans for mechanical thrust restraint distances for all pipe joints. Provide data acknowledging that calculations provided conform to manufacturer's recommendations for size of pipe, type of pipe, and site soil type.

F. Project Record Documents:

1. Record location of pipe runs, connections, valves, restraints and invert elevations.

2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

PART 2 PRODUCTS

2.01 PIPE MATERIALS

A. Ductile Iron: Ductile Cast Iron cement lined pressure class 350.

B. Plastic - 4 inches and over: PVC pipe shall be minimum Class 200 AWWA C900 (minimum Class 165 AWWA C905 for pipes 16 inches and larger). Underwriters' Laboratories, Inc. (UL) listed, Factory Mutual and National Sanitation Foundation (NSF) approved. Pipe shall be furnished in minimum standard lengths of 20 feet.

1. Fittings: AWWA C111, cast iron mechanical joint type, 250 pound working pressure, ductile iron, mechanical joints with SBR rubber ring gaskets. Flanged outlets shall conform to ANDI B16.1, 125 pounds.

2. Bolts and nuts for flanges shall be Type 304 stainless steel, American Society for Testing and Materials (ASTM) A193, Grade B8M hex head bolts and American Society for Testing and Materials A194, Grade 8M, hex head nuts. Washers shall be of the same material as the bolts.

C. Copper - Less than 4 inches: Copper Tubing ASTM B 88, Type K:

1. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.

2. Joints: Compression connection or AWS A5.8, BCuP silver braze.

2.02 VALVES

A. Valves: Manufacturer's name and pressure rating marked on valve body.

B. Valves less than 2 Inches:

1. Bronze Gate Valve: Stockham Model B103/B104, Nibco Model T-113/S-113, or equal with non rising stem, class 125 minimum.

C. Valves 2 inches through 12 inches:

1. Gate valve: American Flow Control Series 2500, Mueller 2360 Series, or equal. Valve shall be resilient seat, with non-rising stem opening counter-clockwise with O-ring stem seal and suitable ends for connection to the type of pipe or fitting used. The working pressure rating of gate valve shall be a minimum of 250 p.s.i.g. Buried valves shall have a 2 inch square operating nut. The interior and exterior of the body and bonnet shall be coated with fusion bonded epoxy. The body to bonnet bolts and nuts shall be stainless steel.

D. Valves greater than 12 inches:

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1. Class 150B Butterfly valve: Pratt Groundhog Buried Service, Mueller Lineseal III, or equal. Valves shall be flanged or mechanical joint type and shall be of the rubber seat type. Valve discs shall rotate 90 degrees from the full open position to the tight shut position. The valve seat shall provide a tight shutoff at a pressure differential of 150 p.s.i. upstream and 0 p.s.i. downstream in either direction. The valve operator shall be the traveling nut type. Valve shall open with a counter-clockwise rotation of the 2 inch operating nut, and have o-ring seals.

2.03 BEDDING AND COVER MATERIALS

A. Bedding: As specified in Section 31 23 33 Trenching and Backfilling.

B. Cover: As specified in Section 31 23 33 Trenching and Backfilling.

2.04 COUPLINGS AND SLEEVES

A. General: All couplings and sleeves shall be a minimum of 250 psi working pressure-rated unless otherwise noted.

B. For DIP and PVC pipe:

1. Unless otherwise noted, couplings and sleeves for DIP and PVC shall be ductile iron conforming to AWWA C153, size 3 through 24 inch and AWWA C110 greater than 24 inch, and shall be 350 psi working pressure rated. AWWA C100 fittings shall be ductile iron only. Couplings, sleeves, and accessories shall be manufactured by U.S. Pipe TrimTyte, Union Foundry, Tyler; or equal.

2. Unless otherwise noted, flanges on all DIP spools shall conform to AWWA C115.

3. Push-on joints shall have SBR rubber ring gaskets.

4. All fittings shall be restrained joints. Pipes shall be restrained using a wedge-action, self-actuating lug type restraint devise as manufactured by EBAA Iron Sales, StarGrip, or equal. Concrete thrust blocks are not permitted except at connections to existing unrestrained pipe or fittings or at fire hydrants.

5. All pipe joints within the minimum distances listed in the following table shall be restrained. Restraint shall be by use of locking gasket for ductile iron pipe. Restraint for PVC pipe shall by use of a restraint harness EBAA Series 2800, StarGrip, or equal.

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	Minimum Restraint Length, feet						
	Horizontal Elbows				Tee, Run & Branch	One-Size Reducer	Dead End
Pipe Diameter, inches	11.25	22.5	45	90			
3	1	2	3	8	8		24
4	1	2	4	10	10	9	29
6	1	3	6	14	14	21	42
8	2	4	7	18	18	23	55

10	2	4	9	21	21	22	66
12	2	3	7	17	17	26	53
14	2	4	8	20	20	16	61
16	2	4	9	22	22	16	69
18	2	5	10	25	25	16	77
20	3	5	11	27	27	16	84
24	3	6	13	32	32	30	100
30	4	8	16	38	38	42	121
36	4	9	18	45	45	43	143

CITY COUNCIL REFERENCE ONLY

2.05 ACCESSORIES

A. Mechanical Restraints:

1. PVC Pipes: Certain Teed Certa Lock, Romac Grip Rings, or equal.

2. Ductile Iron Pipes: Field Lock Gaskets, Mega Lug 1100 series, TR Flex, or equal.

B. Domestic Backflow Preventer: reduced pressure type backflow preventer, matching service size (unless otherwise indicated on Drawings), FEBCO 860 or 880/880V, Watts, or equal. Provide removable, U.V. resistant, insulated blanket (fiberglass jacketing is not acceptable).

C. Valve Boxes: Precast concrete with cast iron traffic covers with the word WATER embossed on the top surface of the lid. Christy G5 or equal. Cover shall be painted light blue (ICI Devoe DC41000 semi gloss or equal) for domestic water valves and white (ICI Devoe, DevFlex-659 White Semi Gloss 4206, or equal) for Utility water valves. For chilled water valves, the letters “CHW” shall be welded or embossed on the top surface of the lid and the cover shall be painted green. For all valves an identification number shall be welded onto valve box rim. Identification number shall be assigned by Owner.

D. Miscellaneous nuts and bolts shall be stainless steel.

E. Rods and Clamps: Socket clamps shall be stainless steel, four bolt type, equipped with stainless steel socket clamp washers and nuts Grinnell Fig. 595 and 594, Elcen Fig. 37 and 37X, or equal.

1. Rods shall be stainless steel, 3/4 inch diameter.

F. Domestic Meter: 3-Inch Compound type with an Impulse Contactor Transmitting Register, 10 gallons/contact, Repeater Totalizer, ACT-PAK Model 7113AC-1 with non-resettable totalizer to read 10 gallon increments. Meter to have local readout. Meter to come with an NIST traceable certification. Meter does not interface with BMS. Provide a ¾” conduit from meter to utility meter j-box in Mechanical room. Meter to be accessible for maintenance personnel. Sensus Compound Meter SRH (3-inch), to match Owner standard.

G. All underground water piping shall be accompanied by a Solid Core #10 copper tracer wire. Both ends of tracer wire shall be accessible at all utility valve boxes.

H. Line Marker: Underground-type conductive line marker, permanent, brightly colored, continuous-printed plastic tape, intended for direct burial service; not less than 6 inches wide by 4 mils thick. Provide blue tape with "CAUTION WATER LINE BURIED BELOW" in black letters; Allen Systems Inc., Emed Co. Inc., or equal.

I. Tapping Sleeve: Cast iron or stainless mechanical joint type sleeve, sized specifically for actual O.D. and piping material, Mueller, Clow, or equal.

PART 3 EXECUTION

3.01 PREPARATION

A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare pipe connections to equipment with flanges or unions.

3.02 TRENCHING

A. See Section 31 23 33 Trenching and Backfilling for additional requirements.

B. Hand trim excavation for accurate placement of pipe to elevations indicated.

C. Buried pipe shall have at least 36 inches of cover for pipes up to 8 inches, 40 inches of cover for 10 inch pipes, 44 inches of cover for 12 inch pipes and 48 inches of cover for 16” pipes and larger and 12 inches of clearance from other utilities.

D. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, and then complete backfilling.

3.03 INSTALLATION - PIPE

A. Have on hand all installation manuals, brochures, and procedures for the equipment and materials concerned.

B. Follow manufacturer instructions, where such are provided, in all cases that cover points not shown on the Drawings or specified herein. Manufacturer's instructions do not take precedence over the Drawings and Specifications. Where manufacturer's instructions are in conflict with the Drawings and Specification, submit the conflicting instructions to the Owner for clarification before performing the work.

C. Use fittings to make all changes in direction and size unless otherwise indicated on the Drawings.

D. Maintain factory plastic end covers on the pipe during storage. Caps shall be removed upon installation of pipe to insure cleanliness.

E. Lay piping on a bed of the specified sand, at least 6-inches thick, on firm undisturbed earth. Remove loose rock, clods, and debris from the trench before placing bedding sand and before laying any pipe.

F. The piping shall be made up with the pipe barrel bearing evenly along its full length on the sand bed on the bottom of the trench.

G. In the case of steel or other rigid joint piping, excavate holes under joints and connections for access for making up, welding, testing and wrapping joints.

CITY COUNCIL REFERENCE ONLY

H. Thoroughly clean out each section of pipe and fitting before lowering into the trench. Clean each pipe or fitting by swabbing-out, brushing-out, blowing-out with compressed air, washing-out with water, or by any combination of these methods necessary to remove all foreign matter.

I. If cleaned pipe sections and fittings cannot be placed in the trench without getting dirt into the open ends, tie tightly woven canvas or other type of approved cover over the ends of the pipes and fittings until they have been lowered into position in the trench. After removal of the covers in the trench, completely remove foreign matter from the pipe ends and fittings.

J. Do not lower any pipe or fitting into a trench that contains water. Pump water from wet trenches, and keep the trenches dry until the joints have been completed and the open ends of the pipes have been closed with watertight plugs or bulkheads. Do not remove the plug or bulkhead unless the trench is dry.

K. Assemble lengths of PVC that are joined by couplings, Tyton type push-on joints, Ring-Tite, Fluid-Tite, or equal, such that centerline of two pipes being joined do not form an angle exceeding 2 inches in any plane. In addition, the angle formed in the vertical plane shall not exceed 1-1/2 inch.

L. Transition plastic pipe to ductile iron when within 10 feet of a steam line. Provide 6 inches minimum powdered insulation around ductile iron sewer pipe when within 5 feet of steam line. Install insulation according to manufacturer's recommendations.

M. Install trace wire on top of pipe.

N. Install continuous line marker 18 inches above top of pipe; coordinate with Section 31 23 33 Trenching and Backfilling.

3.04 INSTALLATION - VALVES

A. Set valves on solid bearing.

B. Center and plumb valve box over valve. Set box cover flush with finished grade.

3.05 CONNECTIONS TO EXISTING WATER SYSTEM

A. Under no circumstances shall existing lines or utilities be interrupted without prior approval of the Owner. Submit a request for this approval to the Owner, and also state the maximum duration of shutdown. Operation of the central plant governs. The Contractor's schedule may have to be adjusted or work performed during off-hours.

B. Schedule all outages for utility tie-in work well in advance, and by written notice to the Owner at least 7 working days in advance of the desired shutdown.

C. In preparation for tie-ins to the utility systems, the Contractor shall coordinate with the Owner before draining and/or blowing the existing piping prior to start of tie-in work by the Contractor. In all cases, the Owner will close the appropriate valves to isolate the area of work.

3.06 FLUSHING

A. The entire piping system shall be thoroughly flushed out until acceptance of the Owner. All tests shall be conducted at such times as directed by and in the presence of the Owner.

3.07 PIPE TESTING

CITY COUNCIL REFERENCE ONLY

A. Water piping shall be hydrostatically tested at 150 psi pressure for four hours and proven watertight. Provide all instruments, facilities, and labor to conduct testing and placing in operation.

B. Piping shall be tested in sections. Testing under this Section of the work shall be done before final connections to existing utility piping is made, with the provision that subsequent leaks, if developed, at these conditions shall be corrected.

C. Any part of the system, including all accessories, that shows failure during testing shall immediately be repaired or replaced with new materials. The system shall be completely retested after repair for replacement. This procedure shall be repeated, if necessary, until all parts of the system withstand the specified tests. All retesting costs shall be part of the Contract.

D. Leakage rate shall not exceed 1.5 gallons/hour/1000 feet of pipe over a 2-hour test period.

E. Tests shall be witnessed by the Owner. At least 48 hours notice of tests shall be given.

3.08 DISINFECTION

A. All domestic water piping shall be disinfected upon installation according to City Standards. Refer to Section 33 13 00 Disinfecting of Water Utility Distribution.

B. Disinfect fire hydrant lateral and fire sprinkler line from point of connection to double check assembly per Section 33 13 00 Disinfecting of Water Utility Distribution.

3.09 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01 45 00 Construction Quality Control.

3.10 CONSTRUCTION WASTE MANAGEMENT

A. Comply with the applicable provisions of Section 01 77 00 including, but not limited to:

B. Separate packaging materials by type and place in locations designated by the Contractor.

C. Place unused scrap material in locations designated by the Contractor.

3.11 MEASUREMENT AND PAYMENT

A. The linear foot unit price paid for "**1" Domestic Water - PVC**" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved, complete in place as shown on the plans, including valves and disinfection of water service piping as required by these Special Provisions, and as directed by the City Engineer.

B. The linear foot unit price paid for "**2" Domestic Water - Copper**" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved, complete in place as shown on the plans, including valves and disinfection of water service piping as required by these Special Provisions, and as directed by the City Engineer.

C. The linear foot unit price paid for "**6" Fire Sprinkler Extension**" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved, complete in place as shown on the plans, including hook up, valve and disinfection of water service piping as required by these Special Provisions, and as directed by the City Engineer

CITY COUNCIL REFERENCE ONLY

D. The each unit price paid for "**Fire Sprinkler Tap to Existing**" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved, complete in place as shown on the plans, including hook up, valve and disinfection of water service piping as required by these Special Provisions, and as directed by the City Engineer

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 33 13 00 DISINFECTION OF DOMESTIC WATER PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This specification applies to the installation of all new and repaired potable (domestic) water lines. All new domestic water lines shall be disinfected before they are connected to existing piping and placed in service. All domestic water lines taken out of service for inspection, repair, or other activities that might lead to contamination of water shall be disinfected before they are returned to service.

B. Except as specifically noted, Contractor shall furnish all labor, equipment, and materials to prepare, disinfect and test domestic water lines in conformity with the procedures and standards described in this section.

1.02 RELATED SECTIONS

A. Section 33 11 00 Water Utility Distribution Piping.

1.03 REFERENCES

A. American Water Works Association (AWWA) C651- AWWA Standard for Disinfecting Water Mains and applicable local and government regulations.

B. AWWA B300 – Hypochlorites

C. AWWA M12 - Simplified Procedures for Water Examination – Fifth Edition

D. Standard Methods for the Examination of Water and Wastewater

1.04 SUBMITTALS

A. Submit a Disinfection Plan describing flushing procedures; type, form, and dose of disinfectant to be used; proposed locations for adding disinfectants and collecting disinfection verification samples; final flushing procedures; and location for disposal of flushing water.

B. Following completion of disinfection, provide a Disinfection Certification Report confirming compliance with specification to the Owner. This report, together with acceptable disinfection verification sample results collected and analyzed by the Owner will form the basis for approval of disinfection.

1.05 SUPERVISION AND TESTING

A. Disinfection shall not commence until the Owner has accepted the Disinfection Plan. The Owner shall supervise the start of disinfection and the conclusion of the disinfection retention period.

B. Unless otherwise approved by the Owner the final disinfection verification water samples will be collected by the Owner with analysis performed by a California Department of Health Services laboratory selected and paid for by the University. Contractor shall assist the Owner in completing this task.

PART 2 PRODUCTS

2.01 MATERIALS

A. The following forms of chlorine are approved for use as disinfecting agents:

B. Sodium hypochlorite in liquid form, conforming to American National Standards Institute/American Water Works Association (ANSI/AWWA) B300.

CITY COUNCIL REFERENCE ONLY

C. Contractor shall comply with all applicable local, state and federal regulations concerning transport, handling and reporting of the materials used for disinfection.

PART 3 EXECUTION

3.01 PREVENTIVE AND CORRECTIVE MEASURES DURING CONSTRUCTION

A. General. The procedures of this section must be observed to assure that water pipelines and appurtenances have been thoroughly cleaned for the final disinfection by chlorination. New pipelines must be isolated until bacteriological tests described in this section, are satisfactorily completed and disinfection is approved by the Owner.

B. Keeping pipe clean and dry. The interiors of pipes, fitting, and valves shall be protected from contamination. Pipe delivered for construction shall be strung to minimize the entrance of foreign material. All opening in the pipelines shall be closed with water tight plugs when pipe laying is stopped at the close of the day's work or for other reasons, such as rest breaks or meal periods. Rodent-proof plugs may be used when watertight plugs are not practicable and when thorough cleaning will be performed by flushing or other means.

C. Packing materials. Yarning or packing material shall consist of molded or tubular rubber rings, rope of treated paper, or other approved materials. Materials such as jute or hemp shall not be used. Packing material shall be handled in a manner that avoids contamination. Packing materials are only acceptable if specified as part of the piping system and provided in accordance with piping requirement specified in other sections of specification. Refer to piping specification Section 33 11 00 Water Utility Distribution Piping,

D. Sealing materials. No contaminated material or any material capable of supporting prolific growth of microorganisms shall be used for sealing joints. Sealing material or gaskets shall be handled in a manner that avoids contamination. Sealing materials are only acceptable if specified as part of the piping system and provided in accordance with piping requirement specified in other sections of specification. Refer to Section 33 11 00 Water Utility Distribution Piping.

E. Cleaning and swabbing. If dirt enters the pipe, it shall be removed and the interior pipe surface swabbed with a 1 to 5 percent hypochlorite disinfecting solution. If, in the opinion of the Owner, the dirt remaining in the pipe will not be removed using the flushing operation, then the interior of the pipe shall be cleaned using mechanical means, such as a hydraulically propelled foam pig (or other suitable device acceptable to the Owner in conjunction with the application of a 1 percent hypochlorite disinfecting solution. The cleaning method used shall not force mud or debris into the interior pipe-joint spaces and shall be acceptable to the Owner.

F. Flooding by storm or accident during construction. If the pipeline is flooded during construction, it shall be cleared of the floodwater by draining and flushing with potable water until the main is clean. The section exposed to the floodwater shall then be filled with chlorinated potable water that, at the end of a 24-hour holding period, will have a free chlorine residual of not less than 25 mg/L. The chlorinated water may then be drained or flushed from the pipeline. After construction is completed, the pipeline shall be disinfected using the continuous-feed method.

3.02 METHODS OF CHLORINATION

CITY COUNCIL REFERENCE ONLY

A. General. The continuous feed method shall be used for disinfection. AWWA's "tablet method" and "slug method" are not allowed. All valves, faucets, and fixtures shall be installed and piping installation shall be completed before chlorination is initiated.

B. Notification and Scheduling. Contractor shall notify the Owner of their intent to begin the disinfection process. Prior to scheduling this work, the disinfection submittal must have been approved by the Owner. The Contractor will coordinate the disinfection, final flushing, and disinfection verification sampling with the Owner at least 72 hours prior to commencing chlorination. Disinfection verification sampling must be scheduled only on Mondays, Tuesdays, Wednesdays or Thursdays and be completed prior to 3:30 P.M.

C. Preflushing of source water. The source water (typically a fire hydrant) used for disinfection and pressure testing shall be flushed prior to its use to ensure that contaminants or debris are not introduced into the new pipe. Flushed water shall not be discharged, either directly or indirectly, into campus storm drainage systems. Flushed water shall either be discharged into the campus sanitary sewer system, or managed in a manner to retain the water on site. The Owner will provide the Contractor a location to discharge flushing water during formation of the Disinfection Plan.

D. Preliminary flushing. Before the pipeline is chlorinated, it shall be filled to eliminate air pockets and flushed to remove particulates. The flushing velocity in the pipeline shall not be less than 2.5 ft/s unless the Owner determines that conditions do not permit the required flow to be discharged to waste. As practical, as determined by the Owner, all fixtures shall be flushed in the full-open position until the water is clear. The Owner will provide the Contractor the duration of flushing at 2.5 ft/s during formation of the Disinfection Plan.

E. Critical service disruptions. When emergency eyewashes and/or emergency showers for in-use laboratories are removed from service due to disinfection procedures, alternative emergency eyewashes and showers shall be provided.

F. Procedure for chlorinating the pipeline.

1. Water supplied from a temporary, backflow-protected connection to the existing domestic water system shall flow at a measured rate into the newly installed water pipeline. In the absence of a meter, the rate may be approximated using a Pitot gauge in the discharge, measuring the time to fill a container of known volume, or other approved method.

2. A service cock shall be installed on piping intended for disinfection for the introduction of hypochlorite solution and for use as a sample bib for testing purposes. Service cock shall be located no more than 10 feet downstream of the supply point for disinfection water.

3. For disinfection of hot water systems, the temperature of the hot water system shall be reduced to that of the cold water system before initiating chlorination.

4. Prior to initiating chlorination, each outlet and valve shall be posted with signs indicating water may not be used; e.g., "Do Not Use", "Chlorinated Water – Do Not Drink". Postings must be made in English and Spanish. Water lines must remain isolated from use, and faucets and valves must remain posted until conditional or final approval for use has been given by Owner.

5. At a point not more than 10 feet downstream from the beginning of the new pipeline, water entering the new pipeline shall receive a dose of

CITY COUNCIL REFERENCE ONLY

hypochlorite fed at a constant rate such that the water will have not less than 25 mg/L and not more than 35 mg/L free chlorine. To ensure that this concentration is provided, measure chlorine concentration at regular intervals in accordance with the procedures described in the current edition of Standard Methods for the Examination of Water and Wastewater or AWWA Manual M12, or using approved chlorine test kits. The hypochlorite solution may be applied to the water pipeline with a gasoline or electrically powered chemical-feed pump designed for feed chlorine solutions. Feed lines shall be made of material capable of withstanding the corrosion caused by the concentrated chlorine solutions and the maximum pressures that may be created by the pumps. All connections shall be checked for tightness before the solution is applied to the pipeline.

6. All fixtures shall be partially opened to allow for a simultaneous trickle of flow. Chlorine application shall not cease until the entire pipeline is filled with heavily chlorinated water, as verified by measurements at the fixtures. The Owner will witness the initial concentrations measured by the Contractor and may take disinfection verification samples to confirm compliance. Following verification of chlorination, each outlet and valve shall be closed.

7. The chlorinated water shall be retained in the pipeline for at least 24 hours, but not more than 48 hours, unless approved by the Owner. At the end of the retention period, the treated water in all portions of the pipelines shall have residual of not less than 10 mg/L of free chlorine.

G. Final Flushing.

1. Clearing the pipeline of heavily chlorinated water. After the application retention period, heavily chlorinated water should not remain in prolonged contact with pipe. In order to prevent damage to the pipe lining or to prevent corrosion damage to the pipe itself, the heavily chlorinated water shall be flushed from the main fittings, valves, and branches until chlorine measurements show that the concentration of the water leaving the pipeline is no higher than that generally prevailing in the distribution system or 0.5 ppm. The Owner shall take samples and determine the chlorine concentration of the flush water.

2. Disposing of heavily chlorinated water. Flushed water shall not be discharged, either directly or indirectly, into campus storm drainage systems. Flushed water may be discharged into the campus sanitary sewer system if approved by the University Representative, otherwise Contractor is responsible to retain the water on site, remove and dispose off-site in accordance with applicable regulations.

CITY COUNCIL REFERENCE ONLY

3.03 DISINFECTION VERIFICATION

A. Sampling. After final flushing and before the new water pipeline is connected to the distribution system, 2 consecutive sets of samples, taken at least 24-hours apart, shall be collected from the new pipeline. Under normal circumstances, the first set of samples will be collected immediately following final flushing. At a minimum, the Owner will take samples every 1,000 feet of pipeline, plus 1 set from the end of the pipeline, and at least 1 set from each branch. The Contractor shall provide dedicated and clean sampling taps at these locations. A corporation cock may be installed in the pipeline with a copper-tube gooseneck assembly. After samples have been collected, the gooseneck assembly may be removed and retained for future use. The number and location of samples from fixtures is

at the discretion of the Owner and shall be determined on a project specific basis. The source water will also be sampled. The University will test the samples for bacteriological quality, turbidity, and pH in accordance with Standard Methods for the Examination of Water and Wastewater. For approval by the Owner, 2 consecutive sets of samples from each location shall show the absence of coliform organisms and turbidity and pH consistent with that of the source water.

B. Special conditions. Under certain circumstances, such as when excessive quantities of dirt or debris are known to have entered the pipeline, the Owner may elect to collect bacteriological samples after allowing the water to stand in the new pipeline for at least 16 hours after final flushing has been completed.

3.04 REDISINFECTION

A. If the initial disinfection fails to produce satisfactory bacteriological results, the new pipeline may be re-flushed and resampled. If the check samples also fail to produce acceptable results, the pipeline shall be re-chlorinated by the continuous-feed method until satisfactory results are obtained. Re-flushing, resampling, and re-chlorination shall be at no expense to the University.

3.05 APPROVAL

A. Conditional Approval. After satisfactory completion of the disinfection procedure, the Owner may issue a conditional approval for immediate use of the water distribution system pending results of bacteriological analysis of water samples.

B. Final Approval. Upon receipt of laboratory confirmation that all samples are negative for coliform bacteria, the system will be approved for immediate use.

3.06 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section “Disinfection of Domestic Water Piping” not otherwise provided for, shall be considered as included in prices paid for “**1” Domestic Water – PVC**”, “**2” Domestic Water – Copper**”, and “**6” Fire Sprinkler Extension**” and “**Fire Sprinkler Tap to Existing**” and no additional compensation will be allowed therefor.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

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CITY COUNCIL REFERENCE ONLY

SECTION 33 31 00 SANITARY UTILITY SEWERAGE PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sanitary sewer piping, fittings, and accessories (gravity systems only).

B. Connection of site sanitary sewer system to existing sanitary sewer system.

C. Manholes and Cleanouts.

1.02 RELATED SECTIONS

A. Section 01 30 00 Submittals.

B. Section 01 57 23 Storm Water Pollution Prevention.

C. Section 33 05 13 Manholes and Structures.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM) A 746 - Standard Specification for Ductile Iron Gravity Sewer Pipe; 2003.

B. ASTM D 3034 - Standard Specification for Type PSM Poly Vinyl Chloride (PVC) Sewer Pipe and Fittings; 2004a.

C. ASTM D 2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2005.

D. American Water Works Association (AWWA) C111/A21.11 – American National Standard for Rubber Gasket Joints For Cast Iron and Ductile Iron Pressure Pipe and Fittings; 2000.

1.04 DEFINITIONS

Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.05 SUBMITTALS

A. See Section 01 30 00 for submittal procedures.

B. Product Data: Provide data acknowledging that products meet requirements of standards referenced.

C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Project Record Documents:

1. Record location of pipe runs, connections, cleanouts, manholes and invert elevations.

2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

PART 2 PRODUCTS

2.01 SEWER PIPE MATERIALS

CITY COUNCIL REFERENCE ONLY

A. Plastic Pipe: ASTM D 3034, Type PSM, Poly Vinyl Chloride (PVC) material; inside nominal diameter as indicated on Drawings.

B. Plastic Pipe Joint Seals: ASTM D 3212 PVC elastomeric joints using elastomeric seals complying with ASTM F 477.

C. Ductile Iron Pipe: A 746; inside nominal diameter as indicated on Drawings.

D. Ductile Iron Pipe Joint Seals: AWWA C111/A21.11 rubber gaskets.

E. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

2.02 PIPE ACCESSORIES

A. Line Marker: Provide warning detectable tape; permanent, bright-colored, continuous-printed plastic tape, intended for direct burial service; not less than 6 inches wide by 4 mils thick. Provide green tape with "CAUTION SEWER LINE BURIED BELOW" in black letters.

2.03 CLEANOUTS

A. Cleanouts: As indicated on Drawings.

2.04 BEDDING AND COVER MATERIALS

A. Pipe Bedding Material: As specified in Section 31 23 33 Trenching and Backfilling.

B. Pipe Cover Material: As specified in Section 31 23 33 Trenching and Backfilling.

PART 3 EXECUTION

3.01 TRENCHING

A. See Section 31 23 33 Trenching and Backfilling for additional requirements.

B. Hand trim excavation for accurate placement of pipe to elevations indicated.

C. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.02 INSTALLATION - PIPE

A. Lay piping beginning at low point of system, true to grades and alignment indicated on Drawings, with unbroken continuity of invert. Lay pipe with bell face upstream.

B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.

C. Plastic Pipe: Also comply with ASTM D 2321.

D. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch in 10 feet.

E. Install continuous line marker 18 inches above top of pipe; coordinate with Section 31 23 33 Trenching and Backfilling.

3.03 PIPE PENETRATIONS

For pipe penetrations through existing manholes, core through, install gasket around pipe, grout penetration on both sides and install a minimum of 6 inches around collar outside of the manhole or inlet structure penetration.

CITY COUNCIL REFERENCE ONLY

3.04 TAP CONNECTIONS

A. Make connections to existing underground structures so that finished Work will conform as nearly as practicable to requirements specified for new Work.

B. Take care while making tap connections to prevent concrete or debris from entering existing pipe or structure. Remove debris, concrete, or other extraneous material, which may accumulate.

3.05 CLEANING

A. Piping greater than 6 inches: clean pipe to be tested by propelling a snug fitting inflated rubber ball through the pipe with water to remove any debris.

B. Piping 6 inches and smaller: flush piping applying full size pipe flushing.

3.06 LEAK TESTING

A. Testing of all portions of the sewer including manholes is required.

B. For either exfiltration or infiltration test, the maximum leakage shall not exceed 250 gallons per inch of pipe diameter per mile per 24 hours as measured over a period of 30 minutes minimum. Should the leakage exceed the maximum allowable rate, the contractor shall repair, overhaul, or rebuild the defective portion of the sewer line. After repairs have been completed by the Contractor, the line shall be retested as specified above.

C. Manholes shall be filled with water to the rim of the frame casting and shall lose no more than 2 inches over a period of 30 minutes.

D. The final test shall be performed after the line has been laid and all backfill placed and compacted. The Contractor, at Contractor's option, may test the line at any time during construction. However, the final test for acceptance shall be made only after all backfill is in place and compacted. In the event that the exfiltration test prescribed above is impractical due to wet trench conditions, these portions of the sewer line where such conditions are encountered will be tested for infiltration. The Owner shall determine whether the exfiltration or infiltration test will be used.

E. Even though the test for leakage is within the prescribed limits, the Contractor shall repair any obvious leaks.

F. Low pressure air testing may be used in lieu of water testing at the option of the Contractor. Water testing may be required by the Owner. The following procedure shall be used for air testing:

1. Plug all pipe outlets with suitable test plugs. Brace each plug securely.

2. If the pipe to be tested is submerged in ground water, insert a pipe probe, by boring or jetting, into the backfill material adjacent to the center of the pipe, and determine the pressure in the probe when air passes slowly through it. This is the back pressure due to ground water submergence over the end of the probe. All gauge pressures in the test should be increased by this amount.

3. Add air slowly to the portion of the pipe installation under test until the internal pressure is raised to 5.0 psig.

4. Check exposed pipe and plugs for abnormal leakage by coating with a soap solution. If any leakage is observed, bleed off air and make necessary repairs.

CITY COUNCIL REFERENCE ONLY

5. After an internal pressure of 5.0 psig is obtained, allow at least two minutes for air temperature to stabilize, adding only the amount of air required to maintain pressure.

6. After the two minute period, disconnect the air supply and start stopwatch. The pressure of 5.0 psig shall be maintained for 5 minutes.

7. As an alternate, the contractor may request the air testing procedure as presented in Section 306-1.4.4 of the 1997 edition of the "Greenbook" Standard Specifications.

G. Vacuum testing in accordance with ASTM C1244 may be requested as an alternate testing method.

3.07 CONSTRUCTION WASTE MANAGEMENT:

A. Comply with the applicable provisions of Section 01 77 00 including, but not limited to:

B. Separate packaging materials by type and place in locations designated by the Contractor.

C. Place unused scrap material in locations designated by the Contractor.

3.08 MEASUREMENT AND PAYMENT

A. The linear foot unit price paid for "**4" Sanitary Sewer**" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentials and for doing all the work involved, complete in place as shown on the plans, including trenching and backfill, manholes and sanitary structures as required by these Special Provisions, and as directed by the City Engineer.

B. The unit price paid for "**Sanitary Utility Sewer Clean Out**" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentials and for doing all the work involved, complete in place as shown on the plans, including manholes and sanitary structures as required by these Special Provisions, and as directed by the City Engineer.

END OF SECTION

CITY COUNCIL REFERENCE ONLY

SECTION 33 41 00 STORM UTILITY DRAINAGE PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Storm drainage piping, fittings, and accessories (gravity systems only).

B. Connection of drainage system to existing drainage system.

C. Inlets and Cleanouts.

1.02 RELATED SECTIONS

A. Section 01 30 00 Submittals.

B. Section 01 57 23 Storm Water Pollution Prevention.

C. Section 31 23 33 Trenching and Backfilling.

D. Section 33 05 13 Manholes and Structures.

E. Section 33 05 26 Utility Line Signs, Markers, and Flags.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM) A 746 - Standard Specification for Ductile Iron Gravity Sewer Pipe; 2003.

B. ASTM D 3034 - Standard Specification for Type PSM Poly Vinyl Chloride (PVC) Sewer Pipe and Fittings; 2004a.

C. ASTM D 2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2005.

D. American Water Works Association (AWWA) C111/A21.11 – American National Standard for Rubber Gasket Joints For Cast Iron and Ductile Iron Pressure Pipe and Fittings; 2000.

1.04 DEFINITIONS

Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.05 SUBMITTALS

A. See Section 01 30 00 for submittal procedures.

B. Product Data: Provide data acknowledging that products meet requirements of standards referenced.

C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Project Record Documents:

1. Record location of pipe runs, connections, inlets, cleanouts, manholes and invert elevations.

2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

CITY COUNCIL REFERENCE ONLY

PART 2 PRODUCTS

2.01 DRAINAGE PIPE MATERIALS

A. Plastic Pipe: ASTM D 3034, Type PSM, SDR 35, Poly Vinyl Chloride (PVC) material; inside nominal diameter as indicated on Drawings.

B. Plastic Pipe Joint Seals: ASTM D 3212 PVC elastomeric joints using elastomeric seals complying with ASTM F 477.

C. Ductile Iron Pipe: A 746; inside nominal diameter as indicated on Drawings.

D. Ductile Iron Pipe Joint Seals: AWWA C111/A21.11 rubber gaskets.

E. Corrugated High Density Polyethylene Pipe (CPEP): Pipe shall have a smooth interior and annular exterior corrugations. Pipe and fitting material shall be high density polyethylene meeting ASTM D3350 minimum cell classification 324420C for 4-10 inches diameters or 335420C for 12-60 inches diameters. Pipes 4-10 inches in diameter shall meet American Association of State Transportation Officials (AASHTO) M252, Type S, and 12-48 inches diameter shall meet AASHTO M294, Type S. Pipe material shall be a slow crack resistance material evaluated using the single point notched constant tensile load (SP-NCTL) test. Average SP-NCTL test specimens must exceed 24 hours with no test result less than 17 hours.

F. Corrugated High Density Polyethylene Pipe (CPEP) Joint Device: Bell-and-spigot meeting AASHTO M252, AASHTO M294 or MP7. Joints shall be silt-tight and non-rated watertight. Gaskets shall be made of polyisoprene meeting the requirements of ASTM F477 with the addition that the gaskets shall not have any visible cracking when tested according to ASTM D1149 after 72-hour exposure in 50 PPHM ozone at 104 degrees F.

G. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

2.02 PIPE ACCESSORIES

A. Line Marker: Provide line markers in accordance with Section 33 05 26 Utility Line Signs, Markers, and Flags.

2.03 CLEANOUTS AND CATCH BASINS

Cleanouts and Catch Basins: As indicated on Drawings.

2.04 BEDDING AND COVER MATERIALS

A. Pipe Bedding Material: As specified in Section 31 23 33 Trenching and Backfilling.

B. Pipe Cover Material: As specified in Section 31 23 33 Trenching and Backfilling.

PART 3 EXECUTION

3.01 TRENCHING

A. See Section 31 23 33 Trenching and Backfilling for additional requirements.

B. Hand trim excavation for accurate placement of pipe to elevations indicated.

C. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

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3.02 INSTALLATION - PIPE

A. Lay piping beginning at low point of system, true to grades and alignment indicated on Drawings, with unbroken continuity of invert.

B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.

C. Plastic Pipe: Also comply with ASTM D 2321.

D. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch in 10 feet.

E. Install continuous line marker 18 inches above top of pipe; coordinate with Section 31 23 33 Trenching and Backfilling.

3.03 INSTALLATION - CATCH BASINS

A. Provide as recommended by manufacturer.

3.04 PIPE PENETRATIONS

For pipe penetrations through existing manholes, core through, provide gasket around pipe, grout penetration on both sides and provide a minimum of 6 inches around collar outside of the manhole or inlet structure penetration.

3.05 TAP CONNECTIONS

A. Make connections to existing piping and underground structures so that finished Work will conform as nearly as practicable to requirements specified for new Work.

B. Into underground structures or pipes 24 inches and larger: Cut opening into unit sufficiently large to allow 3 inches of concrete to be packed around entering connection. Cut ends of connection passing through pipe or structure wall to conform to shape of and be flush with inside wall. On outside of pipe or structure wall, encase entering connection in 6 inches of concrete for minimum length of 12 inches to provide additional support of collar from connection to undisturbed ground. Provide 3000 pounds per square inch concrete. Use epoxy bonding compound as interface between new and existing concrete and piping materials.

C. Take care while making tap connections to prevent concrete or debris from entering existing pipe or structure. Remove debris, concrete, or other extraneous material, which may accumulate.

3.06 CLEANING

A. Piping greater than 6 inches: clean pipe to be tested by propelling a snug fitting inflated rubber ball through the pipe with water to remove any debris.

B. Piping 6 inches and smaller: flush piping applying full size pipe flushing.

3.07 LEAK TESTING

A. Testing of all portions of the sewer including manholes is required.

B. For either exfiltration or infiltration test, the maximum leakage shall not exceed 250 gallons per inch of pipe diameter per mile per 24 hours as measured over a period of 30 minutes minimum. Should the leakage exceed the maximum allowable rate, the contractor shall repair, overhaul, or rebuild the defective portion of the sewer line. After repairs have been completed by the Contractor, the line shall be retested as specified above.

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C. Manholes shall be filled with water to the rim of the frame casting and shall lose no more than 2 inches over a period of 30 minutes.

D. The final test shall be performed after the line has been laid and all backfill placed and compacted. The Contractor, at Contractor's option, may test the line at any time during construction. However, the final test for acceptance shall be made only after all backfill is in place and compacted. In the event that the exfiltration test prescribed above is impractical due to wet trench conditions, these portions of the sewer line where such conditions are encountered will be tested for infiltration. The Owner shall determine whether the exfiltration or infiltration test will be used.

E. Even though the test for leakage is within the prescribed limits, the Contractor shall repair any obvious leaks.

F. Low pressure air testing may be used in lieu of water testing at the option of the Contractor. Water testing may be required by the Owner. The following procedure shall be used for air testing:

1. Plug all pipe outlets with suitable test plugs. Brace each plug securely.

2. If the pipe to be tested is submerged in ground water, insert a pipe probe, by boring or jetting, into the backfill material adjacent to the center of the pipe, and determine the pressure in the probe when air passes slowly through it. This is the back pressure due to ground water submergence over the end of the probe. All gauge pressures in the test should be increased by this amount.

3. Add air slowly to the portion of the pipe installation under test until the internal pressure is raised to 5.0 psig.

4. Check exposed pipe and plugs for abnormal leakage by coating with a soap solution. If any leakage is observed, bleed off air and make necessary repairs.

5. After an internal pressure of 5.0 psig is obtained, allow at least two minutes for air temperature to stabilize, adding only the amount of air required to maintain pressure.

6. After the two minute period, disconnect the air supply and start stopwatch. The pressure of 5.0 psig shall be maintained for 5 minutes.

7. As an alternate, the contractor may request the air testing procedure as presented in Section 306-1.4.4 of the 1997 edition of the "Greenbook" Standard Specifications.

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3.08 MEASUREMENT AND PAYMENT

A. The linear foot price paid for "**12" Storm Drain**" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved, complete in place as shown on the plans as required by these Special Provisions, and as directed by the City Engineer.

B. The unit price paid for "**Storm Drain Field Inlet**" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved, complete in place as shown on the plans as required by these Special Provisions, and as directed by the City Engineer.

C. The unit price paid for "**Existing Storm Drain Connection**" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals

and for doing all the work involved, complete in place as shown on the plans as required by these Special Provisions, and as directed by the City Engineer.

END OF SECTION

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Division 34 – Transportation (Not Used)

Division 35 – Waterway and Marine Construction (Not Used)

PROCESS EQUIPMENT

Division 40 – Process Integration (Not Used)

Division 41 – Material Processing and Handling Equipment (Not Used)

Division 42 – Process Heating, Cooling and Drying Equipment (Not Used)

Division 43 – Process Gas, Liquid Handling, Purification, Storage Equip. (Not Used)

Division 44 – Pollution Control Equipment (Not Used)

Division 45 – Industry-Specific Manufacturing Equipment (Not Used)

Division 48 – Electrical Power Generation (Not Used)

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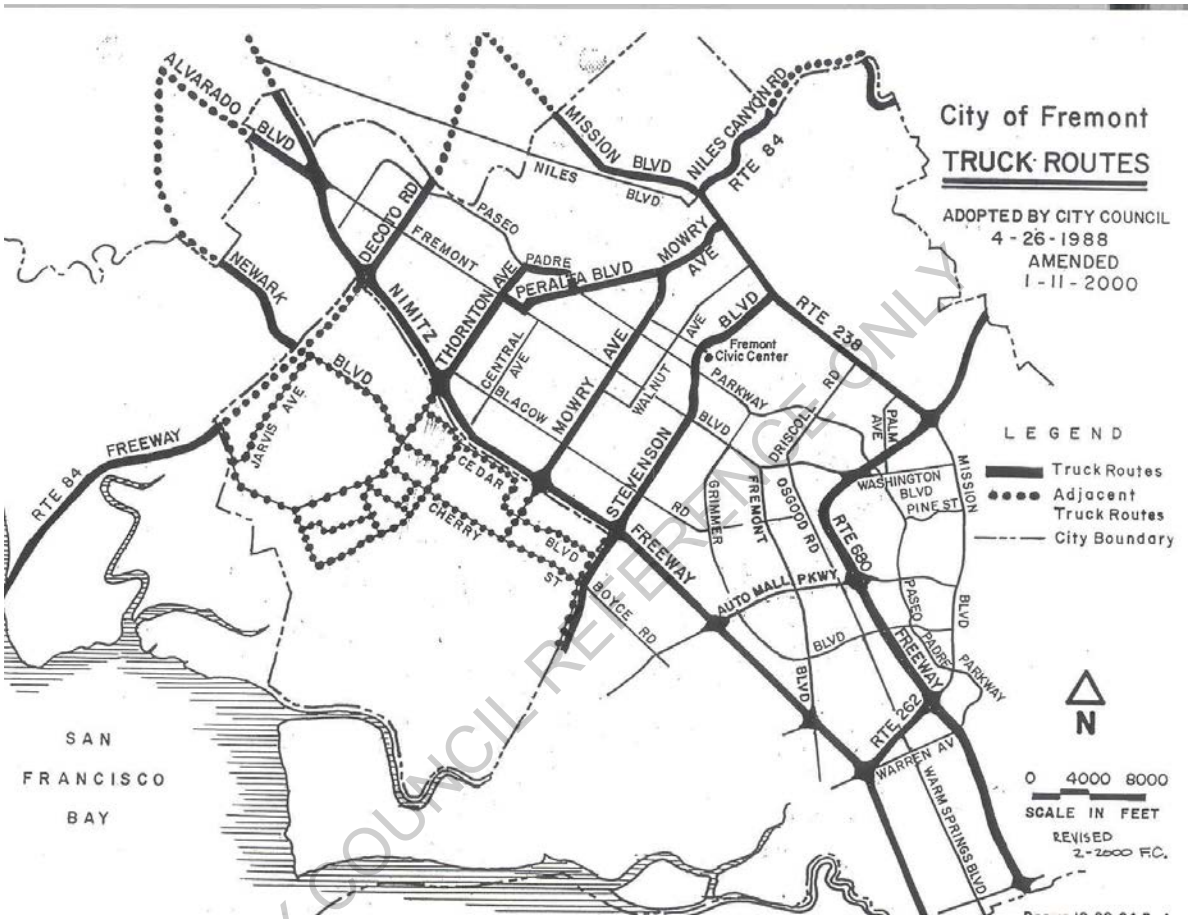
APPENDICES

Appendix A – Truck Routes

Truck Routes. Pursuant to City ordinances, use only authorized truck routes. More Info http://www.fremont.gov/Permits/EngineeringPermits/TransportationPermit.htm



CITY COUNCIL REFERENCE ONLY

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CITY COUNCIL REFERENCE ONLY

APPENDIX B

SUBCONTRACTOR BUSINESS TAX SHEET STATUS

CITY COUNCIL REFERENCE ONLY

Must Be Validated Prior to Final Inspection

SUBCONTRACTOR BUSINESS TAX STATUS SHEET

GENERAL CONTRACTOR'S NAME: _____

JOB ADDRESS: _____ B.P. NUMBER: _____

LICENSE CLASS	SPECIALTY CLASS	NAME OF FIRM / ADDRESS / TELEPHONE	STATE CONTRACTOR'S LICENSE NUMBER
A	General Engineering	( ) -	
B-1	General Contractor	( ) -	
C-2	Insulation/ Acoustical	( ) -	
C-4	Boiler / Water Heater	( ) -	
C-6	Cabinet/ Millwork	( ) -	
C-8	Concrete	( ) -	
C-9	Drywall	( ) -	
C-10	Electrical	( ) -	
C-11	Elevator	( ) -	
C-12	Earthwork/ Paving	( ) -	
C-13	Fencing	( ) -	
C-15	Flooring & Covering	( ) -	
C-16	Fire Protection	( ) -	
C-17	Glazing	( ) -	
C-20	Heat/Vent/ Air Condition	( ) -	
C-21	Bldg Move / Demo	( ) -	
C-23	Ornamental Metal	( ) -	
C-26	Lathing	( ) -	
C-27	Landscape	( ) -	
C-29	Masonry	( ) -	

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LICENSE CLASS	SPECIALTY CLASS	NAME OF FIRM / ADDRESS / TELEPHONE	STATE CONTRACTOR'S LICENSE NUMBER
C-32	Parking/ Hwy. Improvement	( ) -	
C-33	Painting / Decorating	( ) -	
C-34	Pipeline	( ) -	
C-35	Plastering	( ) -	
C-36	Plumbing	( ) -	
C-38	Refrigeration	( ) -	
C-39	Roofing	( ) -	
C-42	Sanitation System	( ) -	
C-43	Sheet Metal	( ) -	
C-45	Electrical Sign	( ) -	
C-46	Solar	( ) -	
C-47	Gen. Manuf. Housing	( ) -	
C-50	Reinforcing Steel	( ) -	
C-51	Structural Steel	( ) -	
C-53	Swimming Pool	( ) -	
C-54	Tile	( ) -	
C-55	Water Conditioning	( ) -	
C-57	Well Drilling	( ) -	
C-60	Welding	( ) -	
C-61	Limited Specialty	( ) -	

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NOTE: Final Inspection and/or Utility Release shall not be authorized until this form has been completed and returned to the Building Inspection Office.

Prepared by: _____ Date: _____

APPENDIX C

SOIL SAMPLING AND ANALYSIS TECHINCAL REPORT

CITY COUNCIL REFERENCE ONLY

THE CONSULTING GROUP
394 CECILIA WAY, TIBURON, CA 94920
TELE: 415.381.2560 / FAX: 415.381.1741
EMAIL: tcg@tcg-international.com

19 June 2013

Mr. Mark Mennucci
Associate Landscape Architect
City of Fremont – Public Works Department - Engineering
PO Box 5006
Fremont, CA 94537-5006

Re: Soil Sampling & Analysis, Results Interpretation, Waste Profiling, and Reporting, PWC 8777 – Warm Springs Community Park Restroom & Meeting Room Replacement, Fremont, CA, TCG Project #120203zi

CITY COUNCIL REFERENCE ONLY

Dear Mr. Mennucci:

We are pleased to provide this Letter Report for the above-referenced project. All field and laboratory tasks are complete and this document represents the report task (Figures 1 and 2).

SCOPE-OF-WORK

We have prepared a SOW that addresses your goals for the project. We designed the SOW and CE after review of project goals in regard to current regulations and requirements. The tasks are:

1. Collect one (1) four-point Composite Group Soil (CGS) samples from four (4) locations shown in Figure 2, attached;
2. Have the laboratory composite the four (4) CGS samples into one (1) Composite Soil (CS) sample for analysis;
3. Have the laboratory analyze the CS sample for:
   a. California Assessment Manual (CAM) suite of seventeen metals (CAM17) using Total Threshold Limit Concentration (TTLC) procedures,
   b. Diesel Range Organics (DRO), Motor Oil Range Organics (MORO) with Silica Gel Strip (w/SG), and
   c. Volatile Organic Compounds (VOCs) with Gasoline Range Organics (GRO),
   d. Soluble Threshold Limit Concentration (STLC) on Cr that exceeded its Trigger Level, when using TTLC procedures;
4. Review laboratory results and discuss results and recommendations for disposal of material with City;
5. Preparation of a Letter Report that describes field and laboratory tasks and for dealing with protocols for handling soils.

SOIL SAMPLING

On 29 May 2013, TCG collected four (4) CGS samples (see Figure 2) for compositing 4:1 into one (1) CS sample (CS Sample: COMPOSITE) from the project area located Warm Springs Community Park, in Fremont CA.

TCG collected the four (4) CGS samples at a depth of approximately eight (8) inches below grade, in native soil, not fill material, in a stainless steel tubes, sealed each tube with Teflon-lined plastic caps, labeled, and placed them on ice pending delivery to the laboratory, under strict Chain-of-Custody (COC) protocol.

SAMPLE ANALYTICAL RESULTS

The four (4) CGS samples were delivered to Test America (TA), under strict COC procedures, to their laboratory, in Pleasanton California. TA is a state-certified laboratory.

The laboratory analyzed the sample for:

- VOCs w/GRO,
- DRO and MORO w/SG, and
- CAM17 Metals.

CS SAMPLE COMPOSITE

Analytical results for composite sample COMPOSITE indicated that:

- VOCs w/GRO were Not Detected (ND) with Reporting Limits (RLs) ranging from 4.7 micrograms/kilogram (ug/kg) to 240 ug/kg,
- DRO was detected at 2.7 milligrams per kilogram (mg/kg) with an RL of 0.98 mg/kg.
- MORO was ND with an RL of 49 mg/kg.
- The CAM17 Metals Analysis indicated that:
  - Arsenic at 4.6 mg/kg with an RL of 3.8 mg/kg,
  - Barium at 210 mg/kg with an RL of 1.9 mg/kg,
  - Beryllium at 0.40 mg/kg with an RL of 0.38 mg/kg,
  - Chromium was detected at 56 mg/kg with an RL of 1.9 mg/kg,
  - Cobalt was detected at 11 mg/kg with an RL of 0.76 mg/kg,
  - Copper was detected at 23 mg/kg with an RL of 5.7 mg/kg,
  - Lead was detected at 12 mg/kg with an RL of 1.9 mg/kg,
  - Nickel was detected at 83 mg/kg with an RL of 1.9 mg/kg,
  - Vanadium was detected at 31 mg/kg with an RL of 1.9 mg/kg,
  - Zinc was detected at 68 mg/kg with an RL of 5.7 mg/kg, and
  - Mercury was detected at 0.11 mg/kg with an RL of 0.0091 mg/kg.

Due to elevated TTLC Cr results, detected at over 50 mg/kg (Trigger Level), the sample was further analyzed Cr by STLC procedures to determine the soluble component of the soil. These

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results would be compared to their STLC Action Levels and that comparison would determine if the soil was a State-Regulated Hazardous Waste.

STLC Cr Analytical results for composite sample COMPOSITE indicated that:

- STLC Cr was ND with an RL of 0.25 mg/L.

SOIL PROFILING

The results were compared to Title 22 requirements[1] for disposal and to residential Environmental Screening Levels[2] (rESLs) and commercial/industrial Environmental Screening Levels (c/iESLs) for re-use possibilities. The applicable Title 22 requirements are tabulated in Table 1. The applicable rESLs and c/iESL are tabulated in the Table 2.

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Table 1 – Detected Results and Title 22 Standards Comparison

ANALYTE	COMPOSITE	Title 22 TL
DRO	**2.7**	NE
As	**4.6**	50
Ba	**210**	1000
Be	**0.4**	7.5
Cr	**56**	50
Co	**11**	800
Cu	**23**	250
Pb	**12**	50
Ni	**83**	200
V	**31**	240
Zn	**68**	2500
Hg	**0.11**	2

NOTES:
DRO = Diesel Range Organics, As = arsenic, Ba = barium, Be = beryllium, Cr = chromium, Co = cobalt, Cu = copper, Pb = lead, Ni = nickel, V = vanadium, Zn = zinc, and Hg = mercury.
Bold = detection, all results + standards in mg/kg.
Title 22 TL = Title 22 Trigger Level = 10X STLC action level.
Shaded = > Trigger Level

As shown in Table 1 above, the Total Threshold Limit Concentration (TTLC) results were above the Title 22 Trigger Levels (TL) for Cr indicating that Soluble Threshold Limit Concentration (STLC) analysis was required as the next step in Title 22. The results of STLC analysis indicate

[1] Title 22: Social Security, Division 4.5: Environmental Health Standards for the Management of Hazardous Waste, Chapter 11: Identification and Listing of Hazardous Waste, Article 3: Characteristics of Hazardous Waste.
[2] *Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater* (November 2007), San Francisco Bay Regional Water Quality Control Board, California EPA, http://www.waterboards.ca.gov/sanfranciscobay/esl.htm

that Cr was not above its STLC Action Level.

Table 2 - Detected Results and rESLs and c/iESLs Comparison

ANALYTE	COMPOSITE	rESL	c/iESL
DRO	**2.7**	100	500
As*	**4.6**	0.39	0.96
Ba	**210**	750	1500
Be	**0.4**	4	8
Cr	**56**	750	750
Co	**11**	23	80
Cu	**23**	230	230
Pb	**12**	80	320
Ni	**83**	150	15-
V	**31**	200	200
Zn	**68**	600	600
Hg	**0.11**	6.7	10

NOTES:
DRO = Diesel Range Organics, As = arsenic, Ba = barium, Be = beryllium, Cr = chromium, Co = cobalt, Cu = copper, Pb = lead, Ni = nickel, V = vanadium, Zn = zinc, and Hg = mercury.
Bold = detection, all results + standards in mg/kg.
rESL = residential Environmental Screening Level, c/iESL = commercial/industrial Environmental Screening Level.
Shaded = >both r + c/I ESL
* = Direct Exposure, As is naturally in soil between ND and 10 mg/kg, concentration should be considered background.

As shown in the above Table 2, the rESLs[3] were not exceeded in sample COMPOSITE for any of the detected analytes indicating that the soil can be reused at the site or some other location within the City limits.

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OBSERVATIONS, CONCLUSIONS, AND RECOMMENDATIONS

OBSERVATIONS

The following observation are made:

- GRO, or BTEX compounds were not detected in the sample.
- Arsenic was detected, but at background concentrations.
- Chromium was detected above the Title 22 TL of 50 mg requiring STLC analysis.
- Lead was detected, but at background concentrations.
- DRO was detected in the sample, but well below rESL action level.
- STLC Cr was ND with an RL of 0.25 mg/L.

[3] As is for Direct Exposure, it naturally occurs in soil between ND and 10 mg/kg, concentration should be considered background. Less than 10 mg/kg has been accepted as background in Fremont historically.

CONCLUSIONS

The following conclusions are drawn:

- The TTLC results for all analytes, except Cr, were below the TTLC Trigger Levels and were not considered a State-Regulated Hazardous Waste.
- TTLC Cr was detected above its Title 22 Trigger Level in the sample indicating that STLC analysis was required since one of the options being considered was disposal of the soil.
- STLC Cr analysis indicated that Cr was ND with an RL of 0.25 mg/L, which is below the STLC Action Level for the compound and therefore not a State-Regulated Hazardous Waste.
- The TTLC results were all below the rESL concentrations, indicating that the soil could be re-used on-site or within the City limits.

RECOMMENDATIONS

The following recommendations are made:

- Re-use the soil within the City limits, or
- Dispose of this soil as a Class III – Municipal Waste after submitting results to landfills for their approval.

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LIMITATION

This report has been prepared by the staff of TCG under the supervision of our senior environmental assessor whose stamp and signature appear below.

This report has been prepared by TCG for the exclusive use of The City of Fremont (client) and not for use by any other party. Any use by a third party of any of the information contained in this report shall be at their own risk and shall constitute a release and an agreement to defend and indemnify TCG from and against any and all liability in connection therewith whether arising out of TCG's negligence or otherwise.

All interpretations, conclusions, and recommendations are based solely on information gathered during this investigative stage and on no other unspecified information. This report is prepared as a tool for the client to use in determining the condition of the site. This report makes no certification, either implied or otherwise, that the site is free from pollution; it simply reports the findings of the study. Soil sampling is so sample specific that if contaminants are not found in a sample it does not universally suggest that there are none of these contaminants present at the site. Water sampling, while being less sample-specific than soil sampling, is still area-specific and if contaminants are not found in a sample it does not universally suggest that there are none of these contaminants present at the site.

The results and findings contained in this report are based on certain information from sources outside the control of TCG. While exercising all reasonable diligence in the acceptance and use of information provided, TCG does not warrant or guarantee the accuracy thereof. The report was developed specifically for this project (**PWC 8777– Warm Springs Community Park Restroom & Meeting Room Replacement, Fremont, CA, TCG Project #120203zi**) and should not be used for any other site.

Copyright law covers this report. Any reproduction, either in total or in part, without the permission of TCG is prohibited.

Please review this report and let us know if you have any questions and/or comments (415.381.2560). We look forward to working together in the future.

Sincerely,
The Consulting Group

Sherwood Lovejoy, Jr.
Environmental Assessor / Consulting Hydrogeologist
Principal-in-Charge Environmental & Geological Services

Figure: 1 – Site Location
2 – Site Location w/Sample Locations

Appendix 1 – Laboratory Reports and COC Forms

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FIGURES

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Site - 15168 ft above ground surface

Site - 2523 ft above ground surface

Site - 546 ft above ground surface

not to scale

FOR REFERENCE ONLY

THE CONSULTING GROUP
394 Cecilia Way, Tiburon, CA 94920
Tel: 415.381.2560 / Fax: 415.381.1741

Job No.	130203zi
Date	17 June 2013
Drawn by	WL
Rev WL	Apprvd WL

Site Location

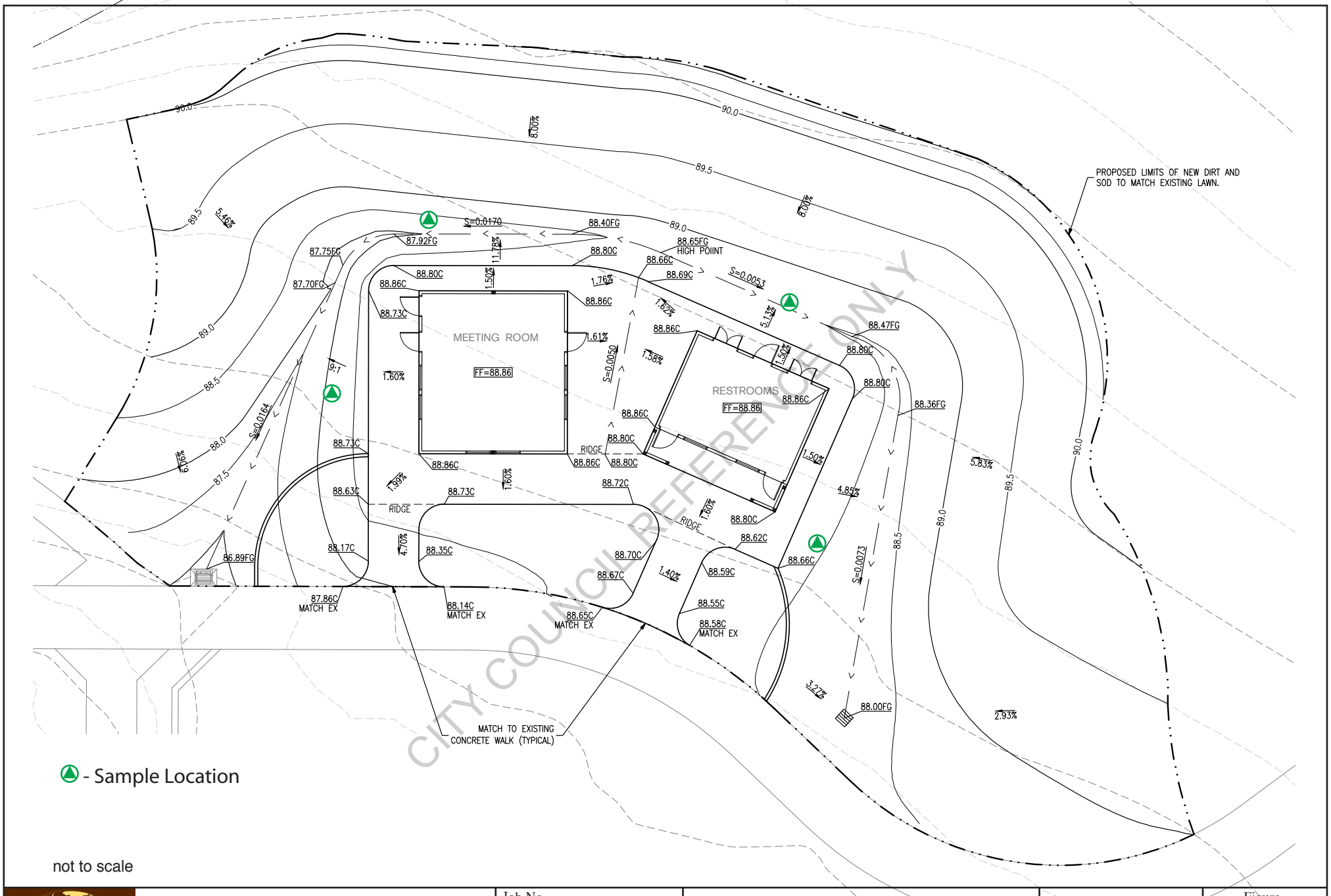
Project

PWC 8777 - Warm Springs Comunity Park Restroom
& Meeting Room Replacement, Fremont, CA
for Mark Mennucci
COF-PWD-Engineering, PO Box 5006, Fremont, CA

N

Figure

1



- Sample Location

not to scale

THE CONSULTING GROUP
394 Cecilia Way, Tiburon, CA 94920
Tel: 415.381.2560 / Fax: 415.381.1741

Job No.	130203zi
Date	17 June 2013
Drawn by	WL
Rev WL	Apprvd WL

Site Location w/Sample Locations

Project
PWC 8777 - Warm Springs Comunity Park Restroom
& Meeting Room Replacement, Fremont, CA
for Mark Mennucci
COF-PWD-Engineering, PO Box 5006, Fremont, CA

N

Figure
2

APPENDIX 1 – LABORATORY REPORTS AND COC FORMS

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

TestAmerica Job ID: 720-49976-1
Client Project/Site: Warm Springs

For:
TCG (The Consulting Group)
394 Cecilia Way
Tiburon, California 94920-2105

Attn: Mr. Woody Lovejoy

Authorized for release by:
6/7/2013 5:39:43 PM
Afsaneh Salimpour, Project Manager I
afsaneh.salimpour@testamericainc.com

Designee for

Onieka Howard, Project Manager I
onieka.howard@testamericainc.com

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LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at:
www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Chain of Custody 23
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Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

CITY COUNCIL REFERENCE ONLY

Job ID: 720-49976-1

Laboratory: TestAmerica Pleasanton

Narrative

Job Narrative
720-49976-1

Comments
No additional comments.

Receipt
The samples were received on 5/29/2013 2:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 14.2º C.

GC/MS VOA

No other analytical or quality issues were noted.

GC VOA
No analytical or quality issues were noted.

GC Semi VOA
No analytical or quality issues were noted.

Metals
No other analytical or quality issues were noted.

Organic Prep
No analytical or quality issues were noted.

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Detection Summary

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-1

Client Sample ID: COMPOSITE

Lab Sample ID: 720-49976-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	2.7		0.98		mg/Kg	1		8015B	Silica Gel Cleanup
Arsenic	4.6		3.8		mg/Kg	4		6010B	Total/NA
Barium	210		1.9		mg/Kg	4		6010B	Total/NA
Beryllium	0.40		0.38		mg/Kg	4		6010B	Total/NA
Chromium	56		1.9		mg/Kg	4		6010B	Total/NA
Cobalt	11		0.76		mg/Kg	4		6010B	Total/NA
Copper	23		5.7		mg/Kg	4		6010B	Total/NA
Lead	12		1.9		mg/Kg	4		6010B	Total/NA
Nickel	83		1.9		mg/Kg	4		6010B	Total/NA
Vanadium	31		1.9		mg/Kg	4		6010B	Total/NA
Zinc	68		5.7		mg/Kg	4		6010B	Total/NA
Mercury	0.11		0.0091		mg/Kg	1		7471A	Total/NA

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This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-1

Client Sample ID: COMPOSITE

Lab Sample ID: 720-49976-5

Date Collected: 05/29/13 12:00
Matrix: Solid
Date Received: 05/29/13 14:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Acetone	ND		47		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Benzene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Dichlorobromomethane	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Bromobenzene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Chlorobromomethane	ND		19		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Bromoform	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Bromomethane	ND		9.5		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
2-Butanone (MEK)	ND		47		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
n-Butylbenzene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
sec-Butylbenzene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
tert-Butylbenzene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Carbon disulfide	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Carbon tetrachloride	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Chlorobenzene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Chloroethane	ND		9.5		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Chloroform	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Chloromethane	ND		9.5		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
2-Chlorotoluene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
4-Chlorotoluene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Chlorodibromomethane	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,2-Dichlorobenzene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,3-Dichlorobenzene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,4-Dichlorobenzene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,3-Dichloropropane	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,1-Dichloropropene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,2-Dibromo-3-Chloropropane	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Ethylene Dibromide	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Dibromomethane	ND		9.5		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Dichlorodifluoromethane	ND		9.5		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,1-Dichloroethane	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,2-Dichloroethane	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,1-Dichloroethene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
cis-1,2-Dichloroethene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
trans-1,2-Dichloroethene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,2-Dichloropropane	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
cis-1,3-Dichloropropene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
trans-1,3-Dichloropropene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Ethylbenzene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Hexachlorobutadiene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
2-Hexanone	ND		47		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Isopropylbenzene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
4-Isopropyltoluene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Methylene Chloride	ND		9.5		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
4-Methyl-2-pentanone (MIBK)	ND		47		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Naphthalene	ND		9.5		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
N-Propylbenzene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Styrene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,1,1,2-Tetrachloroethane	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1

CITY COUNCIL REFERENCE ONLY

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-1

Client Sample ID: COMPOSITE
Date Collected: 05/29/13 12:00
Date Received: 05/29/13 14:10

Lab Sample ID: 720-49976-5
Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2,2-Tetrachloroethane	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Tetrachloroethene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Toluene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,2,3-Trichlorobenzene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,2,4-Trichlorobenzene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,1,1-Trichloroethane	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,1,2-Trichloroethane	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Trichloroethene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Trichlorofluoromethane	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,2,3-Trichloropropane	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,2,4-Trimethylbenzene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
1,3,5-Trimethylbenzene	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Vinyl acetate	ND		47		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Vinyl chloride	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Xylenes, Total	ND		9.5		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
2,2-Dichloropropane	ND		4.7		ug/Kg		06/03/13 19:59	06/03/13 22:37	1
Gasoline Range Organics (GRO) -C5-C12	ND		240		ug/Kg		06/03/13 19:59	06/03/13 22:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*82*		*45 - 131*	*06/03/13 19:59*	*06/03/13 22:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*60 - 140*	*06/03/13 19:59*	*06/03/13 22:37*	*1*
Toluene-d8 (Surr)	*96*		*58 - 140*	*06/03/13 19:59*	*06/03/13 22:37*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC) - Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**2.7**		0.98		mg/Kg		05/31/13 14:25	05/31/13 22:44	1
Motor Oil Range Organics [C24-C36]	ND		49		mg/Kg		05/31/13 14:25	05/31/13 22:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Capric Acid (Surr)	*0.03*		*0 - 1*	*05/31/13 14:25*	*05/31/13 22:44*	*1*
p-Terphenyl	*88*		*38 - 148*	*05/31/13 14:25*	*05/31/13 22:44*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.9		mg/Kg		05/31/13 17:37	06/03/13 11:13	4
Arsenic	**4.6**		3.8		mg/Kg		05/31/13 17:37	06/03/13 11:13	4
Barium	**210**		1.9		mg/Kg		05/31/13 17:37	06/03/13 11:13	4
Beryllium	**0.40**		0.38		mg/Kg		05/31/13 17:37	06/03/13 11:13	4
Cadmium	ND		0.48		mg/Kg		05/31/13 17:37	06/03/13 11:13	4
Chromium	**56**		1.9		mg/Kg		05/31/13 17:37	06/03/13 11:13	4
Cobalt	**11**		0.76		mg/Kg		05/31/13 17:37	06/03/13 11:13	4
Copper	**23**		5.7		mg/Kg		05/31/13 17:37	06/03/13 11:13	4
Lead	**12**		1.9		mg/Kg		05/31/13 17:37	06/03/13 11:13	4
Molybdenum	ND		1.9		mg/Kg		05/31/13 17:37	06/03/13 11:13	4
Nickel	**83**		1.9		mg/Kg		05/31/13 17:37	06/03/13 11:13	4
Selenium	ND		3.8		mg/Kg		05/31/13 17:37	06/03/13 11:13	4
Silver	ND		0.95		mg/Kg		05/31/13 17:37	06/03/13 11:13	4
Thallium	ND		1.9		mg/Kg		05/31/13 17:37	06/03/13 11:13	4
Vanadium	**31**		1.9		mg/Kg		05/31/13 17:37	06/03/13 11:13	4

CITY COUNCIL REFERENCE ONLY

Client Sample Results

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-1

Client Sample ID: COMPOSITE

Lab Sample ID: 720-49976-5

Date Collected: 05/29/13 12:00

Matrix: Solid

Date Received: 05/29/13 14:10

Method: 6010B - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	68		5.7		mg/Kg		05/31/13 17:37	06/03/13 11:13	4

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.11		0.0091		mg/Kg		06/06/13 09:02	06/06/13 21:58	1

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Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 720-137560/6
Matrix: Solid
Analysis Batch: 137560

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		5.0		ug/Kg			06/03/13 19:42	1
Acetone	ND		50		ug/Kg			06/03/13 19:42	1
Benzene	ND		5.0		ug/Kg			06/03/13 19:42	1
Dichlorobromomethane	ND		5.0		ug/Kg			06/03/13 19:42	1
Bromobenzene	ND		5.0		ug/Kg			06/03/13 19:42	1
Chlorobromomethane	ND		20		ug/Kg			06/03/13 19:42	1
Bromoform	ND		5.0		ug/Kg			06/03/13 19:42	1
Bromomethane	ND		10		ug/Kg			06/03/13 19:42	1
2-Butanone (MEK)	ND		50		ug/Kg			06/03/13 19:42	1
n-Butylbenzene	ND		5.0		ug/Kg			06/03/13 19:42	1
sec-Butylbenzene	ND		5.0		ug/Kg			06/03/13 19:42	1
tert-Butylbenzene	ND		5.0		ug/Kg			06/03/13 19:42	1
Carbon disulfide	ND		5.0		ug/Kg			06/03/13 19:42	1
Carbon tetrachloride	ND		5.0		ug/Kg			06/03/13 19:42	1
Chlorobenzene	ND		5.0		ug/Kg			06/03/13 19:42	1
Chloroethane	ND		10		ug/Kg			06/03/13 19:42	1
Chloroform	ND		5.0		ug/Kg			06/03/13 19:42	1
Chloromethane	ND		10		ug/Kg			06/03/13 19:42	1
2-Chlorotoluene	ND		5.0		ug/Kg			06/03/13 19:42	1
4-Chlorotoluene	ND		5.0		ug/Kg			06/03/13 19:42	1
Chlorodibromomethane	ND		5.0		ug/Kg			06/03/13 19:42	1
1,2-Dichlorobenzene	ND		5.0		ug/Kg			06/03/13 19:42	1
1,3-Dichlorobenzene	ND		5.0		ug/Kg			06/03/13 19:42	1
1,4-Dichlorobenzene	ND		5.0		ug/Kg			06/03/13 19:42	1
1,3-Dichloropropane	ND		5.0		ug/Kg			06/03/13 19:42	1
1,1-Dichloropropene	ND		5.0		ug/Kg			06/03/13 19:42	1
1,2-Dibromo-3-Chloropropane	ND		5.0		ug/Kg			06/03/13 19:42	1
Ethylene Dibromide	ND		5.0		ug/Kg			06/03/13 19:42	1
Dibromomethane	ND		10		ug/Kg			06/03/13 19:42	1
Dichlorodifluoromethane	ND		10		ug/Kg			06/03/13 19:42	1
1,1-Dichloroethane	ND		5.0		ug/Kg			06/03/13 19:42	1
1,2-Dichloroethane	ND		5.0		ug/Kg			06/03/13 19:42	1
1,1-Dichloroethene	ND		5.0		ug/Kg			06/03/13 19:42	1
cis-1,2-Dichloroethene	ND		5.0		ug/Kg			06/03/13 19:42	1
trans-1,2-Dichloroethene	ND		5.0		ug/Kg			06/03/13 19:42	1
1,2-Dichloropropane	ND		5.0		ug/Kg			06/03/13 19:42	1
cis-1,3-Dichloropropene	ND		5.0		ug/Kg			06/03/13 19:42	1
trans-1,3-Dichloropropene	ND		5.0		ug/Kg			06/03/13 19:42	1
Ethylbenzene	ND		5.0		ug/Kg			06/03/13 19:42	1
Hexachlorobutadiene	ND		5.0		ug/Kg			06/03/13 19:42	1
2-Hexanone	ND		50		ug/Kg			06/03/13 19:42	1
Isopropylbenzene	ND		5.0		ug/Kg			06/03/13 19:42	1
4-Isopropyltoluene	ND		5.0		ug/Kg			06/03/13 19:42	1
Methylene Chloride	ND		10		ug/Kg			06/03/13 19:42	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/Kg			06/03/13 19:42	1
Naphthalene	ND		10		ug/Kg			06/03/13 19:42	1
N-Propylbenzene	ND		5.0		ug/Kg			06/03/13 19:42	1
Styrene	ND		5.0		ug/Kg			06/03/13 19:42	1

CITY COUNCIL REFERENCE ONLY

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 720-137560/6
Matrix: Solid
Analysis Batch: 137560

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		5.0		ug/Kg			06/03/13 19:42	1
1,1,2,2-Tetrachloroethane	ND		5.0		ug/Kg			06/03/13 19:42	1
Tetrachloroethene	ND		5.0		ug/Kg			06/03/13 19:42	1
Toluene	ND		5.0		ug/Kg			06/03/13 19:42	1
1,2,3-Trichlorobenzene	ND		5.0		ug/Kg			06/03/13 19:42	1
1,2,4-Trichlorobenzene	ND		5.0		ug/Kg			06/03/13 19:42	1
1,1,1-Trichloroethane	ND		5.0		ug/Kg			06/03/13 19:42	1
1,1,2-Trichloroethane	ND		5.0		ug/Kg			06/03/13 19:42	1
Trichloroethene	ND		5.0		ug/Kg			06/03/13 19:42	1
Trichlorofluoromethane	ND		5.0		ug/Kg			06/03/13 19:42	1
1,2,3-Trichloropropane	ND		5.0		ug/Kg			06/03/13 19:42	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0		ug/Kg			06/03/13 19:42	1
1,2,4-Trimethylbenzene	ND		5.0		ug/Kg			06/03/13 19:42	1
1,3,5-Trimethylbenzene	ND		5.0		ug/Kg			06/03/13 19:42	1
Vinyl acetate	ND		50		ug/Kg			06/03/13 19:42	1
Vinyl chloride	ND		5.0		ug/Kg			06/03/13 19:42	1
Xylenes, Total	ND		10		ug/Kg			06/03/13 19:42	1
2,2-Dichloropropane	ND		5.0		ug/Kg			06/03/13 19:42	1
Gasoline Range Organics (GRO) -C5-C12	ND		250		ug/Kg			06/03/13 19:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*93*		*45 - 131*		*06/03/13 19:42*	*1*
1,2-Dichloroethane-d4 (Surr)	*112*		*60 - 140*		*06/03/13 19:42*	*1*
Toluene-d8 (Surr)	*99*		*58 - 140*		*06/03/13 19:42*	*1*

Lab Sample ID: LCS 720-137560/7
Matrix: Solid
Analysis Batch: 137560

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl tert-butyl ether	50.0	57.0		ug/Kg		114	70 - 144
Acetone	250	282		ug/Kg		113	30 - 162
Benzene	50.0	47.3		ug/Kg		95	70 - 130
Dichlorobromomethane	50.0	57.1		ug/Kg		114	70 - 131
Bromobenzene	50.0	49.2		ug/Kg		98	70 - 130
Chlorobromomethane	50.0	49.8		ug/Kg		100	70 - 130
Bromoform	50.0	52.7		ug/Kg		105	59 - 158
Bromomethane	50.0	48.8		ug/Kg		98	59 - 132
2-Butanone (MEK)	250	283		ug/Kg		113	53 - 124
n-Butylbenzene	50.0	56.2		ug/Kg		112	70 - 142
sec-Butylbenzene	50.0	56.4		ug/Kg		113	70 - 136
tert-Butylbenzene	50.0	55.0		ug/Kg		110	70 - 130
Carbon disulfide	50.0	45.2		ug/Kg		90	60 - 140
Carbon tetrachloride	50.0	52.8		ug/Kg		106	70 - 138
Chlorobenzene	50.0	51.1		ug/Kg		102	70 - 130
Chloroethane	50.0	49.6		ug/Kg		99	65 - 130
Chloroform	50.0	50.3		ug/Kg		101	77 - 127

CITY COUNCIL REFERENCE ONLY

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-137560/7
Matrix: Solid
Analysis Batch: 137560

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloromethane	50.0	48.4		ug/Kg		97	55 - 140
2-Chlorotoluene	50.0	53.3		ug/Kg		107	70 - 138
4-Chlorotoluene	50.0	53.2		ug/Kg		106	70 - 136
Chlorodibromomethane	50.0	47.5		ug/Kg		95	70 - 146
1,2-Dichlorobenzene	50.0	50.1		ug/Kg		100	70 - 130
1,3-Dichlorobenzene	50.0	52.7		ug/Kg		105	70 - 131
1,4-Dichlorobenzene	50.0	52.9		ug/Kg		106	70 - 130
1,3-Dichloropropane	50.0	53.7		ug/Kg		107	70 - 140
1,1-Dichloropropene	50.0	54.0		ug/Kg		108	70 - 130
1,2-Dibromo-3-Chloropropane	50.0	51.5		ug/Kg		103	60 - 145
Ethylene Dibromide	50.0	54.5		ug/Kg		109	70 - 140
Dibromomethane	50.0	51.3		ug/Kg		103	70 - 139
Dichlorodifluoromethane	50.0	40.8		ug/Kg		82	37 - 158
1,1-Dichloroethane	50.0	48.9		ug/Kg		98	70 - 130
1,2-Dichloroethane	50.0	52.7		ug/Kg		105	70 - 130
1,1-Dichloroethene	50.0	40.2		ug/Kg		80	76 - 122
cis-1,2-Dichloroethene	50.0	52.9		ug/Kg		106	70 - 138
trans-1,2-Dichloroethene	50.0	45.3		ug/Kg		91	67 - 130
1,2-Dichloropropane	50.0	50.4		ug/Kg		101	73 - 127
cis-1,3-Dichloropropene	50.0	54.7		ug/Kg		109	68 - 147
trans-1,3-Dichloropropene	50.0	47.0		ug/Kg		94	70 - 136
Ethylbenzene	50.0	53.6		ug/Kg		107	80 - 137
Hexachlorobutadiene	50.0	49.8		ug/Kg		100	70 - 132
2-Hexanone	250	311		ug/Kg		124	44 - 133
Isopropylbenzene	50.0	60.2		ug/Kg		120	88 - 128
4-Isopropyltoluene	50.0	54.2		ug/Kg		108	70 - 133
Methylene Chloride	50.0	46.1		ug/Kg		92	70 - 134
4-Methyl-2-pentanone (MIBK)	250	315		ug/Kg		126	60 - 160
Naphthalene	50.0	52.1		ug/Kg		104	60 - 147
N-Propylbenzene	50.0	56.7		ug/Kg		113	70 - 130
Styrene	50.0	56.8		ug/Kg		114	70 - 130
1,1,1,2-Tetrachloroethane	50.0	56.5		ug/Kg		113	70 - 130
1,1,2,2-Tetrachloroethane	50.0	55.3		ug/Kg		111	70 - 146
Tetrachloroethene	50.0	51.7		ug/Kg		103	70 - 132
Toluene	50.0	50.8		ug/Kg		102	80 - 128
1,2,3-Trichlorobenzene	50.0	48.9		ug/Kg		98	60 - 140
1,2,4-Trichlorobenzene	50.0	48.7		ug/Kg		97	60 - 140
1,1,1-Trichloroethane	50.0	53.0		ug/Kg		106	70 - 130
1,1,2-Trichloroethane	50.0	53.6		ug/Kg		107	70 - 130
Trichloroethene	50.0	50.2		ug/Kg		100	70 - 133
Trichlorofluoromethane	50.0	55.2		ug/Kg		110	60 - 140
1,2,3-Trichloropropane	50.0	54.5		ug/Kg		109	70 - 146
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	46.9		ug/Kg		94	60 - 140
1,2,4-Trimethylbenzene	50.0	55.0		ug/Kg		110	70 - 130
1,3,5-Trimethylbenzene	50.0	54.6		ug/Kg		109	70 - 131
Vinyl acetate	50.0	62.9		ug/Kg		126	38 - 176
Vinyl chloride	50.0	49.7		ug/Kg		99	58 - 125

CITY COUNCIL REFERENCE ONLY

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-137560/7 — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 137560

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
m-Xylene & p-Xylene	100	116		ug/Kg		116	70 - 146
o-Xylene	50.0	58.0		ug/Kg		116	70 - 140
2,2-Dichloropropane	50.0	54.7		ug/Kg		109	70 - 162

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*106*		*45 - 131*
1,2-Dichloroethane-d4 (Surr)	*108*		*60 - 140*
Toluene-d8 (Surr)	*102*		*58 - 140*

Lab Sample ID: LCS 720-137560/9 — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 137560

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline Range Organics (GRO) -C5-C12	1000	954		ug/Kg		95	61 - 128

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*98*		*45 - 131*
1,2-Dichloroethane-d4 (Surr)	*105*		*60 - 140*
Toluene-d8 (Surr)	*104*		*58 - 140*

Lab Sample ID: LCSD 720-137560/10 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 137560

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (GRO) -C5-C12	1000	961		ug/Kg		96	61 - 128	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*96*		*45 - 131*
1,2-Dichloroethane-d4 (Surr)	*105*		*60 - 140*
Toluene-d8 (Surr)	*102*		*58 - 140*

Lab Sample ID: LCSD 720-137560/8 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 137560

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methyl tert-butyl ether	50.0	55.8		ug/Kg		112	70 - 144	2	20
Acetone	250	274		ug/Kg		109	30 - 162	3	30
Benzene	50.0	47.9		ug/Kg		96	70 - 130	1	20
Dichlorobromomethane	50.0	56.2		ug/Kg		112	70 - 131	1	20
Bromobenzene	50.0	51.0		ug/Kg		102	70 - 130	4	20
Chlorobromomethane	50.0	49.4		ug/Kg		99	70 - 130	1	20
Bromoform	50.0	50.0		ug/Kg		100	59 - 158	5	20
Bromomethane	50.0	49.5		ug/Kg		99	59 - 132	1	20

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Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 720-137560/8
Matrix: Solid
Analysis Batch: 137560

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Butanone (MEK)	250	237		ug/Kg		95	53 - 124	18	20
n-Butylbenzene	50.0	53.5		ug/Kg		107	70 - 142	5	20
sec-Butylbenzene	50.0	56.8		ug/Kg		114	70 - 136	1	20
tert-Butylbenzene	50.0	56.6		ug/Kg		113	70 - 130	3	20
Carbon disulfide	50.0	46.3		ug/Kg		93	60 - 140	2	20
Carbon tetrachloride	50.0	53.8		ug/Kg		108	70 - 138	2	20
Chlorobenzene	50.0	50.8		ug/Kg		102	70 - 130	1	20
Chloroethane	50.0	49.7		ug/Kg		99	65 - 130	0	20
Chloroform	50.0	51.0		ug/Kg		102	77 - 127	1	20
Chloromethane	50.0	49.7		ug/Kg		99	55 - 140	3	20
2-Chlorotoluene	50.0	55.5		ug/Kg		111	70 - 138	4	20
4-Chlorotoluene	50.0	54.4		ug/Kg		109	70 - 136	2	20
Chlorodibromomethane	50.0	47.4		ug/Kg		95	70 - 146	0	20
1,2-Dichlorobenzene	50.0	49.8		ug/Kg		100	70 - 130	1	20
1,3-Dichlorobenzene	50.0	52.3		ug/Kg		105	70 - 131	1	20
1,4-Dichlorobenzene	50.0	52.3		ug/Kg		105	70 - 130	1	20
1,3-Dichloropropane	50.0	53.3		ug/Kg		107	70 - 140	1	20
1,1-Dichloropropene	50.0	54.4		ug/Kg		109	70 - 130	1	20
1,2-Dibromo-3-Chloropropane	50.0	48.8		ug/Kg		98	60 - 145	5	20
Ethylene Dibromide	50.0	52.4		ug/Kg		105	70 - 140	4	20
Dibromomethane	50.0	49.8		ug/Kg		100	70 - 139	3	20
Dichlorodifluoromethane	50.0	41.3		ug/Kg		83	37 - 158	1	20
1,1-Dichloroethane	50.0	49.7		ug/Kg		99	70 - 130	2	20
1,2-Dichloroethane	50.0	50.8		ug/Kg		102	70 - 130	4	20
1,1-Dichloroethene	50.0	41.4		ug/Kg		83	76 - 122	3	20
cis-1,2-Dichloroethene	50.0	53.2		ug/Kg		106	70 - 138	1	20
trans-1,2-Dichloroethene	50.0	46.4		ug/Kg		93	67 - 130	3	20
1,2-Dichloropropane	50.0	51.0		ug/Kg		102	73 - 127	1	20
cis-1,3-Dichloropropene	50.0	54.3		ug/Kg		109	68 - 147	1	20
trans-1,3-Dichloropropene	50.0	46.2		ug/Kg		92	70 - 136	2	20
Ethylbenzene	50.0	53.1		ug/Kg		106	80 - 137	1	20
Hexachlorobutadiene	50.0	45.7		ug/Kg		91	70 - 132	8	20
2-Hexanone	250	271		ug/Kg		108	44 - 133	14	20
Isopropylbenzene	50.0	58.0		ug/Kg		116	88 - 128	4	20
4-Isopropyltoluene	50.0	53.8		ug/Kg		108	70 - 133	1	20
Methylene Chloride	50.0	46.8		ug/Kg		94	70 - 134	2	20
4-Methyl-2-pentanone (MIBK)	250	279		ug/Kg		111	60 - 160	12	20
Naphthalene	50.0	46.1		ug/Kg		92	60 - 147	12	20
N-Propylbenzene	50.0	58.7		ug/Kg		117	70 - 130	3	20
Styrene	50.0	55.4		ug/Kg		111	70 - 130	3	20
1,1,1,2-Tetrachloroethane	50.0	56.4		ug/Kg		113	70 - 130	0	20
1,1,2,2-Tetrachloroethane	50.0	53.6		ug/Kg		107	70 - 146	3	20
Tetrachloroethene	50.0	51.8		ug/Kg		104	70 - 132	0	20
Toluene	50.0	51.2		ug/Kg		102	80 - 128	1	20
1,2,3-Trichlorobenzene	50.0	44.2		ug/Kg		88	60 - 140	10	20
1,2,4-Trichlorobenzene	50.0	44.9		ug/Kg		90	60 - 140	8	20
1,1,1-Trichloroethane	50.0	54.5		ug/Kg		109	70 - 130	3	20
1,1,2-Trichloroethane	50.0	51.0		ug/Kg		102	70 - 130	5	20

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Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 720-137560/8
Matrix: Solid
Analysis Batch: 137560

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Trichloroethene	50.0	50.1		ug/Kg		100	70 - 133	0	20
Trichlorofluoromethane	50.0	54.9		ug/Kg		110	60 - 140	1	20
1,2,3-Trichloropropane	50.0	53.1		ug/Kg		106	70 - 146	3	20
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	47.7		ug/Kg		95	60 - 140	2	20
1,2,4-Trimethylbenzene	50.0	55.7		ug/Kg		111	70 - 130	1	20
1,3,5-Trimethylbenzene	50.0	56.0		ug/Kg		112	70 - 131	2	20
Vinyl acetate	50.0	56.7		ug/Kg		113	38 - 176	10	20
Vinyl chloride	50.0	50.9		ug/Kg		102	58 - 125	2	20
m-Xylene & p-Xylene	100	114		ug/Kg		114	70 - 146	2	20
o-Xylene	50.0	56.7		ug/Kg		113	70 - 140	2	20
2,2-Dichloropropane	50.0	55.2		ug/Kg		110	70 - 162	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*100*		*45 - 131*
1,2-Dichloroethane-d4 (Surr)	*103*		*60 - 140*
Toluene-d8 (Surr)	*102*		*58 - 140*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 720-137458/1-A
Matrix: Solid
Analysis Batch: 137426

Client Sample ID: Method Blank
Prep Type: Silica Gel Cleanup
Prep Batch: 137458

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		1.0		mg/Kg		05/31/13 14:25	05/31/13 22:55	1
Motor Oil Range Organics [C24-C36]	ND		50		mg/Kg		05/31/13 14:25	05/31/13 22:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Capric Acid (Surr)	*0.0008*		*0 - 1*	*05/31/13 14:25*	*05/31/13 22:55*	*1*
p-Terphenyl	*95*		*38 - 148*	*05/31/13 14:25*	*05/31/13 22:55*	*1*

Lab Sample ID: LCS 720-137458/2-A
Matrix: Solid
Analysis Batch: 137426

Client Sample ID: Lab Control Sample
Prep Type: Silica Gel Cleanup
Prep Batch: 137458

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics [C10-C28]	83.3	66.2		mg/Kg		79	36 - 112

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
p-Terphenyl	*100*		*38 - 148*

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Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCSD 720-137458/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Silica Gel Cleanup**
Analysis Batch: 137426 — **Prep Batch: 137458**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	82.9	61.7		mg/Kg		74	36 - 112	7	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
p-Terphenyl	*111*		*38 - 148*

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 720-137479/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 137543 — **Prep Batch: 137479**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.50		mg/Kg		05/31/13 17:37	06/03/13 09:55	1
Arsenic	ND		1.0		mg/Kg		05/31/13 17:37	06/03/13 09:55	1
Barium	ND		0.50		mg/Kg		05/31/13 17:37	06/03/13 09:55	1
Beryllium	ND		0.10		mg/Kg		05/31/13 17:37	06/03/13 09:55	1
Cadmium	ND		0.13		mg/Kg		05/31/13 17:37	06/03/13 09:55	1
Chromium	ND		0.50		mg/Kg		05/31/13 17:37	06/03/13 09:55	1
Cobalt	ND		0.20		mg/Kg		05/31/13 17:37	06/03/13 09:55	1
Copper	ND		1.5		mg/Kg		05/31/13 17:37	06/03/13 09:55	1
Lead	ND		0.50		mg/Kg		05/31/13 17:37	06/03/13 09:55	1
Molybdenum	ND		0.50		mg/Kg		05/31/13 17:37	06/03/13 09:55	1
Nickel	ND		0.50		mg/Kg		05/31/13 17:37	06/03/13 09:55	1
Selenium	ND		1.0		mg/Kg		05/31/13 17:37	06/03/13 09:55	1
Silver	ND		0.25		mg/Kg		05/31/13 17:37	06/03/13 09:55	1
Thallium	ND		0.50		mg/Kg		05/31/13 17:37	06/03/13 09:55	1
Vanadium	ND		0.50		mg/Kg		05/31/13 17:37	06/03/13 09:55	1
Zinc	ND		1.5		mg/Kg		05/31/13 17:37	06/03/13 09:55	1

Lab Sample ID: LCS 720-137479/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 137543 — **Prep Batch: 137479**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	50.0	47.6		mg/Kg		95	80 - 120
Arsenic	50.0	47.6		mg/Kg		95	80 - 120
Barium	50.0	48.0		mg/Kg		96	80 - 120
Beryllium	50.0	48.5		mg/Kg		97	80 - 120
Cadmium	50.0	49.4		mg/Kg		99	80 - 120
Chromium	50.0	48.5		mg/Kg		97	80 - 120
Cobalt	50.0	49.6		mg/Kg		99	80 - 120
Copper	50.0	49.6		mg/Kg		99	80 - 120
Lead	50.0	49.0		mg/Kg		98	80 - 120
Molybdenum	50.0	48.8		mg/Kg		98	80 - 120
Nickel	50.0	49.0		mg/Kg		98	80 - 120
Selenium	50.0	46.8		mg/Kg		94	80 - 120
Silver	25.0	24.2		mg/Kg		97	80 - 120

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Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LCS 720-137479/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 137543 — **Prep Batch: 137479**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Thallium	50.0	50.1		mg/Kg		100	80 - 120
Vanadium	50.0	47.7		mg/Kg		95	80 - 120
Zinc	50.0	48.6		mg/Kg		97	80 - 120

Lab Sample ID: LCSD 720-137479/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 137543 — **Prep Batch: 137479**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	50.0	50.6		mg/Kg		101	80 - 120	6	20
Arsenic	50.0	50.6		mg/Kg		101	80 - 120	6	20
Barium	50.0	50.4		mg/Kg		101	80 - 120	5	20
Beryllium	50.0	50.9		mg/Kg		102	80 - 120	5	20
Cadmium	50.0	52.4		mg/Kg		105	80 - 120	6	20
Chromium	50.0	51.6		mg/Kg		103	80 - 120	6	20
Cobalt	50.0	52.8		mg/Kg		106	80 - 120	6	20
Copper	50.0	52.3		mg/Kg		105	80 - 120	5	20
Lead	50.0	52.1		mg/Kg		104	80 - 120	6	20
Molybdenum	50.0	51.7		mg/Kg		103	80 - 120	6	20
Nickel	50.0	52.2		mg/Kg		104	80 - 120	6	20
Selenium	50.0	49.6		mg/Kg		99	80 - 120	6	20
Silver	25.0	25.5		mg/Kg		102	80 - 120	5	20
Thallium	50.0	53.1		mg/Kg		106	80 - 120	6	20
Vanadium	50.0	50.5		mg/Kg		101	80 - 120	6	20
Zinc	50.0	51.8		mg/Kg		104	80 - 120	6	20

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 720-137777/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 137863 — **Prep Batch: 137777**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.010		mg/Kg		06/06/13 09:02	06/06/13 22:29	1

Lab Sample ID: LCS 720-137777/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 137863 — **Prep Batch: 137777**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.833	0.829		mg/Kg		100	80 - 120

Lab Sample ID: LCSD 720-137777/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 137863 — **Prep Batch: 137777**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.833	0.832		mg/Kg		100	80 - 120	0	20

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QC Association Summary

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-1

GC/MS VOA

Analysis Batch: 137560

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-49976-5	COMPOSITE	Total/NA	Solid	8260B	137575
LCS 720-137560/7	Lab Control Sample	Total/NA	Solid	8260B	
LCS 720-137560/9	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 720-137560/10	Lab Control Sample Dup	Total/NA	Solid	8260B	
LCSD 720-137560/8	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 720-137560/6	Method Blank	Total/NA	Solid	8260B	

Prep Batch: 137575

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-49976-5	COMPOSITE	Total/NA	Solid	5030B	

GC Semi VOA

Analysis Batch: 137426

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 720-137458/2-A	Lab Control Sample	Silica Gel Cleanup	Solid	8015B	137458
LCSD 720-137458/3-A	Lab Control Sample Dup	Silica Gel Cleanup	Solid	8015B	137458
MB 720-137458/1-A	Method Blank	Silica Gel Cleanup	Solid	8015B	137458

Analysis Batch: 137429

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-49976-5	COMPOSITE	Silica Gel Cleanup	Solid	8015B	137458

Prep Batch: 137458

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-49976-5	COMPOSITE	Silica Gel Cleanup	Solid	3546	
LCS 720-137458/2-A	Lab Control Sample	Silica Gel Cleanup	Solid	3546	
LCSD 720-137458/3-A	Lab Control Sample Dup	Silica Gel Cleanup	Solid	3546	
MB 720-137458/1-A	Method Blank	Silica Gel Cleanup	Solid	3546	

Metals

Prep Batch: 137479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-49976-5	COMPOSITE	Total/NA	Solid	3050B	
LCS 720-137479/2-A	Lab Control Sample	Total/NA	Solid	3050B	
LCSD 720-137479/3-A	Lab Control Sample Dup	Total/NA	Solid	3050B	
MB 720-137479/1-A	Method Blank	Total/NA	Solid	3050B	

Analysis Batch: 137543

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-49976-5	COMPOSITE	Total/NA	Solid	6010B	137479
LCS 720-137479/2-A	Lab Control Sample	Total/NA	Solid	6010B	137479
LCSD 720-137479/3-A	Lab Control Sample Dup	Total/NA	Solid	6010B	137479
MB 720-137479/1-A	Method Blank	Total/NA	Solid	6010B	137479

Prep Batch: 137777

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-49976-5	COMPOSITE	Total/NA	Solid	7471A	
LCS 720-137777/2-A	Lab Control Sample	Total/NA	Solid	7471A	

CITY COUNCIL REFERENCE ONLY

Metals (Continued)

Prep Batch: 137777 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 720-137777/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	
MB 720-137777/1-A	Method Blank	Total/NA	Solid	7471A	

Analysis Batch: 137863

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-49976-5	COMPOSITE	Total/NA	Solid	7471A	137777
LCS 720-137777/2-A	Lab Control Sample	Total/NA	Solid	7471A	137777
LCSD 720-137777/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	137777
MB 720-137777/1-A	Method Blank	Total/NA	Solid	7471A	137777

CITY COUNCIL REFERENCE ONLY

Lab Chronicle

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-1

Client Sample ID: COMPOSITE

Lab Sample ID: 720-49976-5

Date Collected: 05/29/13 12:00

Matrix: Solid

Date Received: 05/29/13 14:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			137575	06/03/13 19:59	LL	TAL PLS
Total/NA	Analysis	8260B		1	137560	06/03/13 22:37	AC	TAL PLS
Silica Gel Cleanup	Prep	3546			137458	05/31/13 14:25	AM	TAL PLS
Silica Gel Cleanup	Analysis	8015B		1	137429	05/31/13 22:44	DH	TAL PLS
Total/NA	Prep	3050B			137479	05/31/13 17:37	CDT	TAL PLS
Total/NA	Analysis	6010B		4	137543	06/03/13 11:13	EFH	TAL PLS
Total/NA	Prep	7471A			137777	06/06/13 09:02	ET	TAL PLS
Total/NA	Analysis	7471A		1	137863	06/06/13 21:58	CAM	TAL PLS

Laboratory References:

TAL PLS = TestAmerica Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

CITY COUNCIL REFERENCE ONLY

Certification Summary

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-1

Laboratory: TestAmerica Pleasanton

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	2496	01-31-14

CITY COUNCIL REFERENCE ONLY

Method Summary

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL PLS
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL PLS
6010B	Metals (ICP)	SW846	TAL PLS
7471A	Mercury (CVAA)	SW846	TAL PLS

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PLS = TestAmerica Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

CITY COUNCIL REFERENCE ONLY

Sample Summary

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
720-49976-5	COMPOSITE	Solid	05/29/13 12:00	05/29/13 14:10

CITY COUNCIL REFERENCE ONLY

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TESTAMERICA Pleasanton Chain of Custody

1220 Quarry Lane • Pleasanton CA 94566-4756
Phone: (925) 484-1919 • Fax: (925) 600-3002

720-49976

Reference #: 146251

Date 5/29/13 Page 1 of 1

6/7/2013

Report To

Attn: Woody Lavagy
Company: TCG
Address:
Email:
Bill To: TCG
Sampled By: SLZ
Attn: SLZ
Phone:

Analysis Request

Sample ID	Date	Time	Mat. Mx	Preserv.	Volatile Organics GC/MS (VOCs) ☒ EPA 8260B ☐ GRO	HVOCs by ☐ EPA 8260B	EPA 8260B: ☐ Gas ☐ BTEX ☐ 5 Oxygenates ☐ DCA, EDB ☐ Ethanol	TEPH EPA 8015B ☒ Silica Gel ☒ Diesel ☐ Motor Oil ☐ Other	SemiVolatile Organics GC/MS ☐ EPA 8270C	PNA/PAH's by ☐ 8270C ☐ 8270C SIM	Oil and Grease (EPA 1664/9071) ☐ Petroleum ☐ Total	Pesticides ☐ EPA 8081 PCBs ☐ EPA 8082	CAM17 Metals (EPA 6010/7470/7471)	Metals: ☐ 6010B ☐ 200.7 ☐ Lead ☐ LUFT ☐ RCRA ☐ Other:	Metals: ☐ 6020 ☐ 200.8 (ICP-MS):	☐ W.E.T (STLC) ☐ W.E.T (DI) ☐ TCLP	Hex Chrom by ☐ EPA 7196 ☐ or EPA 7199	pH ☐ 9040 ☐ SM4500	☐ Spec. Cond. ☐ Alkalinity ☐ TSS ☐ SS ☐ TDS	Anions: ☐ Cl ☐ SO_4 ☐ NO_3 ☐ F ☐ Br ☐ NO_2 ☐ PO_4	☐ Perchlorate by EPA 314.0	COD ☐ EPA 410.4 ☐ SM5220D ☐ Turbidity			Number of Containers
A	5/29/13	1200	S	ice	X			X					X												
B		1245	S																						
C		1230	S																						
D		1245	S																						

Project Info

Project Name/ #: Warm Springs
PO#: 13020321

Sample Receipt

# of Containers: 4
Head Space:
Temp: 14.2°C w/hrs
Credit Card Y/N. If yes, please call with payment information ASAP

TAT: 10 Day | 5 Day | 4 Day | 3 Day | 2 Day | 1 Day | Other:

Report: ☒ Routine ☐ Level 3 ☐ Level 4 ☐ EDD ☐ EDF
Special Instructions / Comments: ☐ Global ID

See Terms and Conditions on reverse

1) Relinquished by:	2) Relinquished by:	3) Relinquished by:
Signature: [signature] Time: 1410	Signature: Time:	Signature: Time:
Printed Name: Woody Lavagy Date: 5/29/13	Printed Name: Date:	Printed Name: Date:
Company: TCG	Company:	Company:

1) Received by:	2) Received by:	3) Received by
Signature: [signature] Time: 1410	Signature: Time:	Signature: Time:
Printed Name: Mullen Date: 5-29-13	Printed Name: Date:	Printed Name: Date:
Company: TestAmerica	Company:	Company:

720-49976 Chain of Custody

Rev 10/2012

CITY COUNCIL REFERENCE ONLY

Login Sample Receipt Checklist

Client: TCG (The Consulting Group)

Job Number: 720-49976-1

Login Number: 49976
List Number: 1
Creator: Gonzales, Justinn

List Source: TestAmerica Pleasanton

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

CITY COUNCIL REFERENCE ONLY

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

TestAmerica Job ID: 720-49976-2
Client Project/Site: Warm Springs

For:
TCG (The Consulting Group)
394 Cecilia Way
Tiburon, California 94920-2105

Attn: Mr. Woody Lovejoy

Authorized for release by:
6/17/2013 10:40:22 AM

Afsaneh Salimpour, Project Manager I
afsaneh.salimpour@testamericainc.com

CITY COUNCIL REFERENCE ONLY

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at:
www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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CITY COUNCIL REFERENCE ONLY

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

CITY COUNCIL REFERENCE ONLY

Case Narrative

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-2

Job ID: 720-49976-2

Laboratory: TestAmerica Pleasanton

Narrative

Job Narrative
720-49976-2

Comments
No additional comments.

Receipt
The samples were received on 5/29/2013 2:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 14.2º C.

Metals

No other analytical or quality issues were noted.

CITY COUNCIL REFERENCE ONLY

Detection Summary

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-2

Client Sample ID: COMPOSITE **Lab Sample ID: 720-49976-5**

No Detections.

CITY COUNCIL REFERENCE ONLY

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-2

Client Sample ID: COMPOSITE

Lab Sample ID: 720-49976-5

Date Collected: 05/29/13 12:00

Matrix: Solid

Date Received: 05/29/13 14:10

Method: 6010B - Metals (ICP) - STLC Citrate

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.25		mg/L		06/14/13 07:36	06/14/13 13:53	2.5

CITY COUNCIL REFERENCE ONLY

QC Sample Results

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-2

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 720-138328/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total Recoverable**
Analysis Batch: 138365 — **Prep Batch: 138328**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.010		mg/L		06/14/13 07:36	06/14/13 11:58	1

Lab Sample ID: LCS 720-138328/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total Recoverable**
Analysis Batch: 138365 — **Prep Batch: 138328**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium			1.00	0.976		mg/L		98	80 - 120		

Lab Sample ID: LCSD 720-138328/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total Recoverable**
Analysis Batch: 138365 — **Prep Batch: 138328**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium			1.00	0.976		mg/L		98	80 - 120	0	20

Lab Sample ID: LB4 720-138180/1-B LB4 — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: STLC Citrate**
Analysis Batch: 138365 — **Prep Batch: 138328**

Analyte	LB4 Result	LB4 Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.25		mg/L		06/14/13 07:36	06/14/13 13:30	2.5

CITY COUNCIL REFERENCE ONLY

QC Association Summary

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-2

Metals

Leach Batch: 138180

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-49976-5	COMPOSITE	STLC Citrate	Solid	CA WET Citrate	
LB4 720-138180/1-B LB4	Method Blank	STLC Citrate	Solid	CA WET Citrate	

Prep Batch: 138328

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-49976-5	COMPOSITE	STLC Citrate	Solid	3005A	138180
LB4 720-138180/1-B LB4	Method Blank	STLC Citrate	Solid	3005A	138180
LCS 720-138328/2-A	Lab Control Sample	Total Recoverable	Solid	3005A	
LCSD 720-138328/3-A	Lab Control Sample Dup	Total Recoverable	Solid	3005A	
MB 720-138328/1-A	Method Blank	Total Recoverable	Solid	3005A	

Analysis Batch: 138365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-49976-5	COMPOSITE	STLC Citrate	Solid	6010B	138328
LB4 720-138180/1-B LB4	Method Blank	STLC Citrate	Solid	6010B	138328
LCS 720-138328/2-A	Lab Control Sample	Total Recoverable	Solid	6010B	138328
LCSD 720-138328/3-A	Lab Control Sample Dup	Total Recoverable	Solid	6010B	138328
MB 720-138328/1-A	Method Blank	Total Recoverable	Solid	6010B	138328

CITY COUNCIL REFERENCE ONLY

Lab Chronicle

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-2

Client Sample ID: COMPOSITE

Lab Sample ID: 720-49976-5

Date Collected: 05/29/13 12:00

Matrix: Solid

Date Received: 05/29/13 14:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
STLC Citrate	Leach	CA WET Citrate			138180	06/12/13 10:00	JR	TAL PLS
STLC Citrate	Prep	3005A			138328	06/14/13 07:36	ET	TAL PLS
STLC Citrate	Analysis	6010B		2.5	138365	06/14/13 13:53	EFH	TAL PLS

Laboratory References:

TAL PLS = TestAmerica Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

CITY COUNCIL REFERENCE ONLY

Certification Summary

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-2

Laboratory: TestAmerica Pleasanton

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	2496	01-31-14

CITY COUNCIL REFERENCE ONLY

Method Summary

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-2

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL PLS

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PLS = TestAmerica Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

CITY COUNCIL REFERENCE ONLY

Sample Summary

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
720-49976-5	COMPOSITE	Solid	05/29/13 12:00	05/29/13 14:10

CITY COUNCIL REFERENCE ONLY

720-49976-2

From: Woody Lovejoy [slovejoyjr@tcg-international.com]
Sent: Monday, June 10, 2013 3:24 PM
To: Salimpour, Afsaneh
Cc: Mark Mennucci
Subject: Warm Springs and Fabbri Field.

Attachments: DetectionPage-WarmSprings.pdf; DetectionPage-FabbriField.pdf

DetectionPage-WarmSprings.pdf ... DetectionPage-FabbriField.pdf ...

We need to run STLC for Cr on both these composites, Detection page attached.

5-day TAT is fine.

Thanks
Woody Lovejoy
The Consulting Group
394 Cecilia Way, Tiburon, CA 94920
Tele: 415.381.2560
Fax: 415.381.1741
Website: tcg-international.com
Email: slovejoyjr@tcg-international.com
Mobile: 650.714.4200

720-49976 Chain of Custody

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CITY COUNCIL REFERENCE ONLY

Detection Summary

Client: TCG (The Consulting Group)
Project/Site: Warm Springs

TestAmerica Job ID: 720-49976-1

Client Sample ID: COMPOSITE

Lab Sample ID: 720-49976-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	2.7		0.98		mg/Kg	1		8015B	Silica Gel Cleanup
Arsenic	4.6		3.8		mg/Kg	4		6010B	Total/NA
Barium	210		1.9		mg/Kg	4		6010B	Total/NA
Beryllium	0.40		0.38		mg/Kg	4		6010B	Total/NA
Chromium	56		1.9		mg/Kg	4		6010B	Total/NA
Cobalt	11		0.76		mg/Kg	4		6010B	Total/NA
Copper	23		5.7		mg/Kg	4		6010B	Total/NA
Lead	12		1.9		mg/Kg	4		6010B	Total/NA
Nickel	83		1.9		mg/Kg	4		6010B	Total/NA
Vanadium	31		1.9		mg/Kg	4		6010B	Total/NA
Zinc	68		5.7		mg/Kg	4		6010B	Total/NA
Mercury	0.11		0.0091		mg/Kg	1		7471A	Total/NA

CITY COUNCIL REFERENCE ONLY

This Detection Summary does not include radiochemical test results.

Login Sample Receipt Checklist

Client: TCG (The Consulting Group)

Job Number: 720-49976-2

Login Number: 49976
List Number: 1
Creator: Gonzales, Justinn

List Source: TestAmerica Pleasanton

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

CITY COUNCIL REFERENCE ONLY

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CITY COUNCIL REFERENCE ONLY

APPENDIX D

PRE-DEMOLITION/RENOVATION ASBESTOS AND LEAD SURVEY AND EVALUATION

CITY COUNCIL REFERENCE ONLY

THE CONSULTING GROUP
394 CECILIA WAY, TIBURON, CA 94920
TELE: 415.381.2560 / FAX: 415.381.1741
EMAIL: tcg@tcg-international.com

Date: February 25, 2013
Report #: **130203zf**

Limited Scope Environmental Consulting Services

Pre-Demolition/Renovation Asbestos & Lead Survey and Evaluation

PROJECT:

Warm Springs Restroom & Meeting/Recreation Room (PWC8777)
Fremont, California

PREPARED FOR:

Mr. Mark Mennucci
City of Fremont
Public Works Department – Engineering
PO Box 5006, Fremont, CA 94537-5006

29 March 2013

CITY COUNCIL REFERENCE ONLY

Emanuel Dounias
Emanuel Dounias
DOSH Certified Site Surveillance Technician
Certificate No.**: 00-2766**

Sherwood Lovejoy, Jr.
Principal Environmental Assessor
Principal-in-Charge of Environmental Services

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CITY COUNCIL REFERENCE ONLY

Introduction

On 25 February 2013, The Consulting Group (TCG) performed a building survey to identify asbestos-containing materials (ACM) and lead-based paint (LBP). The survey was conducted in an effort to comply with pre-demolition/renovation regulatory requirements. TCG's consulting services were conducted at the request of Mark Mennucci of the City of Fremont, under Task Order #25. Consulting services were performed at:

PROJECT NAME	Warm Springs Restrooms & Meeting/Recreation room
PROJECT LOCATION	Fremont, California
FACILITY TYPE	Restrooms & Meeting/Recreation room

Certified Staff

TCG's team of licensed and accredited inspectors performed consulting services as follows:

CONSULTANT	DISCIPLINE	ISSUING AGENCY	CERTIFICATION NO.
Glen Koutz	Asbestos Lead	Cal OSHA CDPH	92-0019 2204
Emanuel Dounias	Asbestos Lead	Cal OSHA CDPH	00-2766 13059

Consulting Scope of Services

The client limited consulting services to the following scope:

ACM Survey

- Performed a visual survey of the project to identify, document, and assess suspect asbestos-containing materials (ACM).
- Collected representative samples to confirm or rebut the presence of ACM.
- Submitted necessary samples to a certified laboratory for analysis.
- Prepared this written report presenting an evaluation and assessment of the data.

LBP Survey

- Performed a visual survey of the project to identify, document, and assess suspect lead-based paint (LBP).
- Tested painted/coated surfaces using a calibrated X-ray fluorescence analyzer (XRF).
- Collected representative paint chip samples to confirm the presence or absence of lead.
- Submitted paint chip samples to a certified laboratory for analysis.
- Prepared this written report presenting an evaluation and assessment of the data.

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Survey Area(s) Requested by Client

The client limited services to the following areas:

-Warm Springs Restroom & Meeting Room

Scope of Work Notes

SOW limitations were established by the Client to include items of interest and concern to the Client. TCG is only responsible for the specific SOW as agreed. No other services are intended or implied.

Note: TCG does not provide expert roof patching services. We strongly urge the Client to hire a licensed roofing contractor to patch and repair our sample locations. TCG is not responsible for possible future roof leaks.

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Sample Results

Asbestos

Samples collected during this survey were submitted to a certified laboratory for analysis by standard polarized light microscopy (PLM). PLM sample results fell in to 1 of 4 types - as follows:

Types of Asbestos

Asbestos Types	Definition	Asbestos Content
ACM	Asbestos containing materials	By PLM: 1% - 100% asbestos
<1%	Less than 1% asbestos.	By PLM 400 point count or better: <1% asbestos
<0.1%	Less than 0.1% asbestos.	By PLM 1000 point count or better: <0.1%
ND	No asbestos detected	By PLM: No Asbestos Detected

Asbestos-Containing Materials (ACM)

The following materials contain asbestos. **Asbestos types are abbreviated as follows:** Chr = Chrysotile; Amo = Amosite; Cro = Crocidolite; Tre = Tremolite; Act = Actinolite, ND = no asbestos detected.

Material Description		Material Location(s)	Sample Numbers	Results Asbestos %
1.	Black sink undercoating	Metal sink in Meeting/Rec Room	01	2% Chr

Non-Asbestos Materials		
No asbestos was found in the following materials.		
Material Description	**Material Location(s)**	**Sample Numbers**
1. Tan 12 x 12 vinyl floor tile with yellow mastic	Meeting/Rec Room floor	02, 03
2 Window glazing	Interior Meeting/Rec Room windows	04, 05
3 Gray asphalt shingle roof	Meeting/Rec Room roof	06, 07
4 Caulking	Meeting/Rec Room roof patch	08
5 Shake roof felt	Restroom roof	09, 10

Lead

Painted/coated surfaces were tested in the field using an X-Ray fluorescence (XRF) spectrum analyzer and/or sampled (paint chips) and submitted to a certified laboratory for analysis by atomic absorption spectroscopy (AAS). Lead paint samples fell in to 1 of 3 types - as follows:

Types of Lead Materials		
Lead Types	**Definition**	**Lead Content Standard**
LBP	Lead-based paint (or material)	By XRF: 1 mg/cm^2 or greater By Paint Chip: 0.5 weight % or 5,000 mg/kg (at or above)
LCM	Lead containing material (or paint)	By XRF: <1 mg/cm^2 By Paint Chip: Below 0.5 wt % of 5,000 mg/kg
ND	No lead detected	By XRF: Requires paint chip confirmation By Paint Chip: No lead Detected or <0.006 wt %

Lead-Based Paint (LBP) – By XRF		
XRF Readings	• **2 (two)** XRF readings tested positive for lead-based paint/coating (see XRF report).	
Summary of LBP Components	Exterior Components	• Tan metal window sash

Lead-Containing Material (LCM) – By XRF		
XRF Readings	**11 (eleven)** XRF readings tested positive for low levels of lead (see XRF) report.	
Summary of LCM Components	Interior Components	• See XRF report
	Exterior Components	• See XRF report

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Non-Lead – By XRF	
XRF Readings	**28 (twenty-eight)** XRF readings tested negative (no lead detected) for the presence of lead (see XRF report). (Note: Cal OSAH does not accept XRF to prove "non-lead" – paint-chip lab analysis is required)

Paint-Chip – By Laboratory Analysis

Representative paint-chip samples were collected to confirm (or rebut) the presence of lead in materials the showed very low (or no) lead content by XRF analysis.

Component Type/Description		Substrate	Sample No(s).	Results Mg/kg (ppm)	Type
1	Interior white wood paint	Wood	LP-01	0.009	LCM
2	Interior brown wood paint	Wood	LP-02	<0.02	ND
3	Exterior tan wood paint	Wood	LP-03	0.008	LCM
4	Exterior green wood paint	Wood	LP-04	<0.006	ND

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Regulatory Assessment

Asbestos

Asbestos-Containing Materials (ACM)

Material Description		Material Location(s)	Regulatory Assessment		Approx. Quantity
			DOSH	EPA / AQMD	
1.	Black sink undercoating	Metal sink in rec center	Class II Abatement	Non-friable	1 sink

Cal OSHA Regulatory Assessment Notes

Asbestos-Containing Material (ACM): A material that contains greater than 1% asbestos. Cal OSHA does **not** allow composite analysis (mixing layers of materials together).

Less than 1% Asbestos: Materials containing less than 1% asbestos are not regulated by most governmental agencies. However, Cal OSHA is not one of those agencies. The Cal OSHA asbestos standard must be followed for work involving materials that contain a concentration of asbestos as low as **0.1%.**

Conformation of less than 1% Asbestos: If a material can be shown to contain less than 1% asbestos by PLM point count (or other approved method), it can be treated as an asbestos-containing construction material (ACCM). ACCM is a term Cal OSHA uses to describe materials containing **less than 1%** (but greater than 0.1%) asbestos. In certain situations, there may be some economic advantages to making this characterization. The decision to do so is evaluated on a case-by-case basis at the client's request.

Class I Asbestos Work: Cal OSHA prescribes specific work practices involving the removal of asbestos-containing insulation and surfacing (i.e. sprayed-on) materials.

Class II Asbestos Work: Cal OSHA prescribes specific work practices involving the removal of ACM, which is not insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing, cement products, and construction mastics.

EPA/AQMD Regulatory Assessment Notes

Asbestos-Containing Material (ACM): Any building material, which contains commercial asbestos in an amount greater than 1%.

Less than 1% Asbestos: Materials that are found to contain less than 1% asbestos by standard polarized light microscopy (PLM) may be considered non-asbestos (by EPA/AQMD) if confirmation analysis is performed. To be treated as a non-asbestos material, the EPA and AQMD require analytical verification by PLM Point Count (or better). This verification is required because the standard PLM analysis is not sensitive enough to accurately determine asbestos content at or below 1%. In certain situations, there may be some cost advantages to making this characterization. The decision to do so is evaluated on a case-by-case basis at the client's request.

Regulated Asbestos-Containing Material (RACM): RACM includes friable (easily crumbled) ACM, or Category I nonfriable ACM that has or will become friable or that has been subjected to sanding, drilling, grinding, cutting, or abrading, or Category II nonfriable ACM that may become or has become crumbled, pulverized, or reduced to powder.

Friable: Materials that can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure.

Non-Friable: Materials that **cannot** be easily crumbled, pulverized, or reduced to powder, when dry, by hand pressure. Non-friable materials are categorized by EPA/AQMD as follows:

- *Category I Nonfriable ACM:* Asbestos-containing packing, gaskets, resilient floor coverings, mastics and asphalt roofing products.
- *Category II Nonfriable ACM:* Asbestos-containing material, excluding Category I nonfriable asbestos-containing material, that, when dry, and in its present form, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

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Lead

Lead-Based Paint (LBP)

Material Description		Regulatory Assessment Governing Regulations
1.	Lead-based paint components (LBP)	• Cal OSHA standards apply if LBP will be disturbed by employees/workers • CDPH standards apply of lead "abatement" is performed • DTSC requires characterization of waste and proper disposal • US EPA standards apply if LBP is disturbed in a children occupied site
2.	Lead containing materials (LCM)	• Cal OSHA standards apply if LCM will be disturbed by employees • CDPH standards apply if worker exposure standards are exceeded • DTSC requires characterization of waste and proper disposal

Material Description		Regulatory Assessment Governing Regulations
3.	No Lead Detected by XRF	• Cal OSHA standards apply unless paint chip laboratory analysis confirms non-lead
4.	No Lead Detected by Paint-chip	• No regulations apply

Regulatory Assessment Notes

California Occupational Safety & Health Administration (Cal OSHA):
• Regulates any detectable amount of lead (does not have to be LBP) when trigger tasks are performed
• Requires worker training
• Regulates employee safety during lead-related work
• Enforces proper work practices
• Requires notification when 100 sq ft (or more) of LBP is disturbed.

California Department of Public Health (CDPH):
• Regulates "abatement" of Lead-based paint
• Requires *accredited* training for workers and supervisors
• Provides certification of workers and supervisors performing abatement
• Mandates lead abatement be performed in accordance with US HUD guidelines
• Defines "abatement" as an action performed for the purpose and intent of reducing or eliminating a lead "hazard"
• Requires notification when abatement is performed

California Department of Toxic Substance Control (DTSC):
• Regulates disposal of lead waste
• Requires testing of waste stream to characterize hazard level

US Environmental Protection Agency (US EPA):
• Regulates Lead-based paint in child occupied facilities
• Regulates work involving the disturbance of as little as 6 sq ft of interior & 20 sq ft exterior LBP
• Requires *accredited* training for workers and supervisors
• Requires certification of companies performing LBP work
• Mandates minimal work practices

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Discussion Notes

Lead

Lead-Based Paint & Lead Containing Materials

Lead-based paint (LBP) is defined as a material/coating/paint which contains a lead content at or in excess of 5,000 parts per million (PPM), 0.5% by weight, or 1 mg/cm^2 (by XRF). Materials containing a lead content below these levels are not considered LBP and are not considered a hazard by most regulatory agencies. However, the dust from materials containing low levels of lead can produce a lead hazard if enough lead dust accumulates.

Cal OSHA Trigger Tasks

Cal OSHA defines lead paint at the Consumer Product Safety Commission's (CPAC) level of 600 ppm for non-trigger tasks. However, Cal OSHA regulates **any detectable amount of lead** when trigger tasks are conducted.

The following table lists the Cal OSHA trigger tasks, presumed exposure and the type of respiratory protection that is required while performing those tasks:

Cal OSHA Trigger Task	Presumed Exposure	Required Respiratory Protection
• Manual demolition • Manual scraping and sanding • Heat gun use • Use of power tools with dust collection systems • Spray painting with lead paint • Any other activity that the employer has any reason to believe that an employee may be exposed in excess of the PEL.	50-100 $\mu m/m^3$	Half-mask, air purifying
• Using lead containing mortar • Lead burning • Rivet busting • Power tool cleaning without dust collection system • Clean-up of dry abrasive blast residue.	500-2500 $\mu m/m^3$	Full-face, air purifying, or Tight fitting PAPR, or Supplied air, contiguous flow
• Abrasive blasting • Welding • Cutting • Torch burning.	>2500 $\mu m/m^3$	Supplied air, pressure demand

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Conclusions & Recommendations

Asbestos

Asbestos Removal

In accordance with local, state, and federal asbestos regulations, any ACM that may be impacted during demolition should be removed prior to those destructive activities. In preparation for asbestos removal, TCG recommends that the following steps be taken:

- Warm Springs Bathroom and Meeting/Recreational Room has a sink that has an undercoating with asbestos of 2%. This needs to be removed by a licensed asbestos abatement contractor, but can just be disconnected, wrapped with poly and labeled for disposal.

Lead

- The impact of lead to the demolition project should be minimal, however, Cal OSHA worker protection rules, CDPH certification requirements, US EPA standards, and DTSC disposal requirements need to be assessed by each contractor/employer who performs work on this project.

- Contractors, whose employees work at this site, are required to assess if their work will be subject to the requirements of the Cal OSHA lead construction standard (CCR Title 8 § 1532). Cal OSHA standards are designed to regulate and enforce on-the-job worker safety. Employers are required by law to ensure that employees are not exposed to airborne lead levels, which exceed the permissible exposure limit (PEL). The standard requires worker exposure monitoring, medical surveillance, training, special work practices, etc.

- Each contractor/employer who bids and/or performs work at the site will need to assess potential lead exposure to employees performing their particular scope of work. Contractors who perform work at this site may need to obtain additional data (beyond the data presented in this report) during their assessment and Cal OSHA compliance planning. Individual contractors/sub-contractors should be allowed access to the project to obtain any needed data (samples, consultation, etc.) to complete their employee exposure assessment.

- TCG recommends that the building owner and/or general contractor disseminate this report as well as any other lead-related information to all prospective contractors bidding work at the subject site.

- Contractors, whose employees disturbs more that 100 sq ft of lead-based paint (LBP), are required to submit written notification to Cal OHSA (per Health and Safety Code, Title 17 CCR Section 36000 (c)). The Cal OSHA LBP notification rule requires 24-hour advance notice prior to LBP disturbance.

- Any work performed at the site where LBP or LCP is likely to be disturbed should be performed by a contractor trained and qualified to perform lead-related construction work. Any work that exceeds Cal OSHA's permissible exposure limit or is performed to remediate a lead hazard must be conducted by CDPH certified personnel. All lead related work should be conducted employing lead work practices in accordance with HUD guidelines.

Regulations

Asbestos

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Asbestos & Its Uses

Asbestos is a term that refers to a group of naturally occurring fibrous minerals. Because of their resistance to decay and their remarkable insulating properties, asbestos fibers have been incorporated into thousands of products and materials. Collectively these products are frequently referred to as asbestos-containing materials (ACM). Many types of ACM have been used in the construction of buildings and homes. ACM types are generally put into one of three classifications, they are:

1. Surfacing materials

Surfacing materials are those products, which have been sprayed or trowelled onto ceilings, walls and other structural elements. (E.g. fireproofing, thermal insulation or decoration) Because of the type of mixture used in the construction industry, these materials are commonly *friable*, that is they are easily crushed or reduced to powder form with hand pressure.

2. Thermal systems insulation (TSI)

The insulation applied to mechanical systems, hot water pipes and heating ducts often contains asbestos. Hot water pipes and heating systems are covered with asbestos insulation primarily to prevent heat loss and to protect other nearby surfaces from the hot pipes. Much of this asbestos insulation was manufactured from 1920 to 1972, and it was used in construction until 1978.

3. Miscellaneous

Miscellaneous ACM materials include all asbestos products, which cannot be classified as either surfacing material or TSI. These materials are usually non-friable and generally do not release asbestos fibers into the air unless damaged. Products such as floor tile, mastic, roofing material and concrete asbestos products are examples of miscellaneous ACM.

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The following is a summary of select major state and federal asbestos regulations. These summaries are not intended to be a comprehensive discussion of the specific regulations. In addition, this summary is not an all-inclusive overview of the asbestos regulatory universe.

Division of Occupational Safety And Health (Cal-OSHA) – Title 8 CCR § 1529
On July 2, 1996 Cal-OSHA implemented revised general industry and construction asbestos standards, which apply to all occupational exposure to asbestos. The new Cal-OSHA construction standard requires owners of buildings built prior to 1981 to presume that a variety of building materials contain asbestos unless they are sampled and proved to not contain asbestos. Employers whose employees work in these same buildings face the same responsibility to either test materials or treat them as ACM.

The standard describes four classes of asbestos-related work: I) removal of asbestos thermal systems insulation and surfacing materials, II) removal of asbestos material which are not thermal systems insulation or surfacing materials, III) repair and maintenance operations where small amounts of asbestos or presumed asbestos (PACM) is likely to be disturbed, and IV) maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste, and debris resulting from Class I, II, and III activities. For each class, OSHA specifies the type of training, work practices, air sampling, and personal protection required of the employer and worker. This regulation is a jobs-based standard. Specific notifications and work practices are required if asbestos will be disturbed.

EPA's NESHAP Regulation – 40 CFR Part 61, Subpart M
NESHAP requires building owners to inspect a building for asbestos prior to renovation or demolition. The EPA must be notified in advance of all demolition (whether there is asbestos present or not) and if more than 160 square feet, 260 linear feet, or 35 cubic feet of Regulated Asbestos Containing Materials (RACM) are going to be disturbed during renovation. RACM must be removed before any demolition or renovation work disturbs it. Specific work practices must be followed during the removal of RACM. RACM must be adequately wet when disturbed and must remain wet until placed in leak-proof containers. No visible emissions are allowed during collection, packaging, transportation, or disposal of RACM. Records must be kept regarding the transportation and disposal of RACM.

The federal NESHAP regulation is enforced by the local air quality management district (AQMD). The EPA has "delegated" NESHAP enforcement to these local agencies. Each AQMD has developed an enforcement regulation based on the NESHAP regulation, and in many instances these local regulations are more stringent then the Federal EPA NESHAP regulation.

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Lead

Lead & Its Uses

Lead is a soft, silvery-white or grayish metal that is very malleable, ductile, and dense and is a poor conductor of electricity. The soft metal is highly durable and resistant to corrosion, as is indicated by the continuing use of lead water pipes installed by the ancient Romans. Because of these properties, lead has been used for, and/or added to thousands of products including paint, leaded fuels, pesticides, car body filler, construction materials, lead-acid batteries, bullets and shots, weights, ceramic glazing, food additives, solder, fusible alloys and as a radiation shield.

However, lead is a poisonous substance to human beings (and animals). When too much lead is ingested or inhaled, it damages the nervous system and causes brain disorders. Excessive lead also causes blood disorders in mammals. Like the element mercury, another heavy metal, lead is a neurotoxin that accumulates both in soft tissues and the bones.

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Lead Regulations

California Department of Health Services (DHS) - Title 17, CCR, Division 1, Chapter 8, Sections 35000-361000:
The DHS has implemented a comprehensive regulation that provides an accreditation process for lead training providers and professionals. This regulation requires anyone conducting lead paint surveys, risk assessments, lead paint abatement and lead hazard reduction work in any public or residential building to be DHS trained and certified.

A written abatement plan describing exposure prevention procedures, abatement methods, items to be abated, re-survey recommendations, and instructions on how to maintain potential lead hazards in a safe condition is required for all abatement work. DHS also requires notification of upcoming abatement work on Form 8551. This form must be posted at all job site entrances five days before abatement begins.

The standard requires inclusion of certain elements in each hazard evaluation report including a copy of DHS Form 8552. In addition, the standard requires the use of HUD guidelines when performing lead risk assessments, surveys, monitoring, abatement and interim control work.

Environmental Protection Agency (EPA) - Title X:
Under the Housing and Community Development Act of 1992 (Title X) Congress required the EPA to take on many responsibilities. A few of the key issues are discussed below.

On August 28, 1996, the EPA issued a model lead training and accreditation regulation. States were given two years to develop their own programs or adopt the EPA program. In California, the Department of Public Health Services (CDPH) has developed a state training and accreditation program that is currently in effect.

In March 1996, the EPA issued the Real Estate Notification and Disclosure Rule. This rule requires owners of all private housing built before 1978 to take four actions, as follows:

1. Disclose any known hazards to potential buyers or renters.
2. Give potential buyers or renters the EPA/HUD lead disclosure pamphlet titled "Protect Your Family from Lead In Your Home."
3. Allow potential buyers ten days to conduct an optional survey or risk assessment.
4. Add language to real-estate contracts that confirms compliance with the activities described above.

The EPA's objective is to control renovation and remodeling work done in homes that might create lead dust hazards. In May 1998, they issued a regulation that will take effect in June 1999 requiring contractors working in pre-1978 homes to notify the owner if they will disturb more that two square feet of lead-paint.

Department of Housing and Urban Development (HUD):
HUD was the first agency to develop lead standards. By the end of the 1980's, HUD was developing numerous regulations and guidance documents to be used on HUD funded properties. In 1989, HUD published the most comprehensive lead guidance document for survey and management of lead paint hazards to date. A new guidance document ("Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing") for risk assessments, surveys, interim controls, and abatement of lead-based paint hazards replaced the old standard in August 1995. Chapter 7 of the 1995 guideline was revised in October 1997.

The new HUD Standard remains the most comprehensive lead risk assessment, survey, management, and abatement guidance document. Many other federal, state, and local regulations mandate compliance with HUD Guidelines.

California Occupational Safety and Health Administration - CCR Title 8 § 1532:
Cal OSHA regulations are designed to regulate and enforce on-the-job worker safety. Employers are required by law to ensure that employees are <u>not</u> exposed to airborne lead levels which exceed the permissible exposure limit (PEL) of 50 micrograms of lead per cubic meter of air (50 $\mu g/m^3$) over an 8 hour time weighted average (TWA). Both California and Federal OSHA standards requires worker training, air monitoring to determine work exposure to lead, initial blood testing, personal protective equipment, and specific work practices and engineering controls whenever employees disturb lead in **any concentration** (including less than 600 ppm) where the disturbance will result in exposures to airborne lead in concentrations over the OSHA Action Limit or PEL.

OSHA mandates that an employer **assume** the PEL will be exceeded when conducting "trigger activities". The Cal OSHA standard also requires DHS lead training and certification for any supervisors or workers who are shown to be exposed to airborne lead levels above the PEL.

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US Environmental Protection Agency (EPA) – Renovation, Repair and Painting (RRP) Regulation – 40 CFR Part 74

As of April 2010, work involving lead-based paint in certain properties built before 1978 must comply with EPA's lead safety regulation. The regulation governs common renovation and repair activities. (Age-restricted properties with no children occupying them and properties that have been certified to be free of lead-based paint by a state inspector are exempt from the RRP regulation). Under the regulation, a trained and certified renovator must carry out lead work if the work disturbs more than six square feet of surface area for interior work or 20 square feet for exterior. In addition, residents must be notified and provided with a copy of an EPA pamphlet, Renovate Right: Important Lead Hazard Information for Families, Child Care Providers, and Schools. (This is a different pamphlet than the EPA's Protect Your Family pamphlet that owners are required to provide to residents at the time of lease signing.) There are also recordkeeping requirements imposed on owners or the third-party contractors they hire to undertake work covered by the regulations.

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Exclusions & Report Limitations

- Scope of work limitations was established by the Client to include items of interest and concern to the Client. TCG is only responsible for the specific scope of work agreed to. No other services are intended or implied.

- This inspection report has been prepared by TCG for the exclusive use of TCG and its client, and not for use by any other party. The investigation and sampling plan discussed in this report may not be appropriate for uses beyond its intended purpose and stated scope. Any use by a third party of any of the information contained in this report shall be at their own risk and shall constitute a release and an agreement to defend and indemnify TCG from any and all liability in connection therewith whether arising out of TCG's negligence or otherwise.

- The information contained in this report is limited to those areas and suspect asbestos materials found to be visually accessible through reasonable means. No demolition of building materials was conducted to determine the presence of hazardous materials in wall cavities, chases or other inaccessible areas. TCG cannot warrant that this building does not contain hazardous materials in locations that were inaccessible, hidden or unknown. However, a good faith effort was made to conduct a comprehensive survey within the limitations of the stated scope of services. This report presents a complete record of all significant findings, evaluations and sample results.

- If suspect hazardous materials are discovered during planned demolition or renovation operations, all general work activities which could impact the discovered suspect hazards should cease until an assessment can be made.

- TCG's evaluations do not attempt to forecast or anticipate planned or unforeseen events which may negatively impact the condition of hazardous materials. All conclusions and recommendations presented herein are based on visible conditions present at the time of inspection. Changes in material condition due to deterioration, unforeseen accidents, or planned events such as renovation or demolition may render the recommendations and conclusions presented in this report obsolete.

- All quantification of hazardous materials is approximate and should not be relied upon for bidding purposes. This report is not represented as, nor intended to be, an asbestos-abatement scope of work or project specification.

- TCG's work was limited to an asbestos and lead survey. The potential for environmental conditions other than the presence of asbestos/lead is possible. Other potential hazards that could potentially impact the project include but are not limited to:

  - Mold growth
  - PCB-containing equipment
  - Mercury containing equipment
  - Chemical supplies

- Reasonable efforts were made to examine below **carpeted areas and resilient floor coverings** to determine and quantify the presence of suspect hazardous materials. TCG accepts no liability for additional materials or under-reporting of hazardous materials, which exist below floor coverings.

- **Glass fiber insulated mechanical systems** were inspected as completely as possibly without destroying the integrity of the glass fiber insulation. The condition and presence or absence of hazardous materials associated with mechanical systems is assumed to be consistent with those areas exposed and examined during our inspection. However, TCG does not guarantee that this is the case.

- TCG does not represent this **limited survey** as a comprehensive inspection or evaluation. TCG recommends that an expanded, comprehensive asbestos survey be conducted at this site if renovation or demolition activities are expected to impact any building materials other then those specifically addressed in this report.

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Survey Methodology

Asbestos

Inspection & Sample Collection

A survey of the subject site was conducted to identify and catalog visibly accessible suspect asbestos materials and to develop a sampling strategy for characterizing ACM. Following the initial inspection, samples were collected of suspect asbestos materials from each homogenous sample area. Samples were collected by misting small sample areas with water, then cutting or scraping the sample from the substrate with an appropriate sampling tool. Whenever possible, samples were collected from areas previously damaged or deteriorating. No building systems, components, or structures were demolished to obtain samples of potentially hidden ACM.

Each suspect bulk sample was sealed in its own Zip-lock plastic container and labeled with a unique identification number. Sampling tools were individually cleaned before and after each sample was collected to avoid sample cross contamination. Decontamination was accomplished using single-use, pre-moistened cloths.

Sample information was recorded on TCG's chain-of-custody form. This form accompanied the samples to a laboratory possessing accreditation from the National Voluntary Laboratory Accreditation Program (NVLAP). Samples were submitted to Forensic Analytical Services, Inc. of Hayward, California.

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Sample Analysis

Bulk sample analysis was conducted in accordance with the EPA interim method for determination of asbestos in bulk materials. Samples were first examined by a stereoscopic microscope for determination of homogeneity and preliminary evaluation of composition and presence of fibers. Fibers observed during this examination were then mounted in various refractive index oils and examined in polarized light. During this examination, all minerals and/or man-made materials were identified and the percentages of each were estimated and/or counted.

Evaluation of Asbestos-Containing Materials

In evaluating each asbestos material, the adhesion of the asbestos material to the underlying substrate, deterioration, and damage from vandalism or any other cause was assessed. Evidence of debris on horizontal surfaces, hanging material, dislodged chunks, scraping, indentations, cracking, etc. would be indicators of poor material condition.

Accidental or deliberate physical contact with asbestos materials can result in damage. Inspectors looked for any evidence that asbestos-containing materials had been disturbed. Indicators such as: finger marks in the material, graffiti, pieces dislodged or missing, scraping marks from movable equipment, or furniture, or an accumulation of suspect asbestos dust or debris on floors, shelves, or other horizontal surfaces indicate poor material condition.

Asbestos-containing materials may deteriorate as a result of either the quality of the installation or environmental factors, which affect the cohesive strength of the asbestos-containing material or the strength of the adhesion to the substrate. Deterioration can result in an accumulation of dust on the surface of the asbestos-containing material, delamination of the material, or an adhesive failure of the material where it pulls away from the substrate and either hangs loosely or falls to the floor and exposes the substrate. Inspectors touch the asbestos-containing material to determine if dust is released when the material is lightly brushed or rubbed.

Lead

Inspection & Sample Collection

Licensed lead-based paint inspectors using the following seven procedures conduct lead surveys:

- List all testing combinations, including those that are painted, stained, shellacked, varnished, coated, or wallpaper which covers painted surfaces.
- Perform XRF calibration checks readings before and after the survey to verify unit performance.
- Select testing combinations and collected representative XRF readings of each testing combination. Note: a different visible color does not by itself result in a separate testing combination.
- Where indicated, collect representative paint-chip samples for laboratory analysis of testing combinations that indicate no lead detected.
- Classify XRF and paint-chip results.
- Evaluate the work and results to ensure the quality of the paint inspection. Document all findings in a written report.

Paint-Chip Analysis

Bulk samples were collected for the purpose of identifying lead content and were analyzed by atomic absorption spectroscopy (AAS). AAS is an analytical technique that provides precise determination of specific inorganic metal including lead. Atomic absorption refers specifically to the reaction of metal atoms to heat. A small portion of the sample is pipetted into a tube that is electrically heated to temperatures exceeding 2500 degrees centigrade. When lead atoms are

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exposed to very high heat or are atomized in other ways, they absorb light at a specific wavelength and the absorption of light is directly proportional to the concentration of atoms in the solution.

Evaluation of Lead-Containing Materials

To assess paint condition, technicians look for damaged paint and observe the extent of any paint deterioration by rating the paint condition as "intact," "fair," or "poor." Poor condition is typically characterized by coatings that are blistering, flaking, chalking, alligatoring, peeling, etc.

An attempt is made to determine whether the deterioration is due to a moisture problem or some other existing building deficiency. Poor surfaces are considered to be a hazard. Fair and intact surfaces should be monitored to ensure that they remain in a nonhazardous condition.

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APPENDIX 1

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ProTech
Consulting & Engineering
1208 Main Street, Redwood City, CA 94063
Phone: (650) 569-4020 Fax: (650) 569-4023
info@protech-cal.com
Environmental Services

Page 1 of 1
Job # 144- MA13
P.O. # 220-144-10

General Information

Date: 02-20-13
Job ID: Warm Springs Restaurant Rec Room Fremont
Collected By: [illegible]
Lab: FASI

Analysis Requested

- ☐ PCM NIOSH 7400
- ☐ TEM
  - ○ AHERA
  - ○ Level 2
  - ○ Bulk Quantitative
  - ○ Bulk Qualitative
- ☒ PLM BULK - EPA/600/R/116
- ☐ Lead
  - ○ AA
  - ○ TTLC
  - ○ STLC
  - ○ TCLP
- ☐ Mold
- ☐ Other

Turn Around Time

- ☐ Rush
- ☐ 12 hours
- ☒ 24 hours
- ☐ 48 hours
- ☐ 3-5 days
- ☐

Special Instructions

☐ Prior Positive

Filter Type: ☐ MCE, 0.8 µm, 25mm ☐ MCE, 0.45µm, 25mm ☐ MCE, 0.8µm, 37mm ☐ Other

Sample # / Date	Sample Type	Sample Protocol	Location / Activity / Material Description	Time On/Off	LPM	Total Min. / Total Vol / Fibers/Fields	Results
# 01	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.	S.U.	on off pump#	on end Ave Roto#		
# 02-03	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.	12x12 VFT w/m	on off pump#	on end Ave Roto#		
# 04-05	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.	W.G.	on off pump#	on end Ave Roto#		
# 06-07	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.	A.S.R.	on off pump#	on end Ave Roto#		
# 08	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.	CIK	on off pump#	on end Ave Roto#		
# 09-10	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.	S.R.F.	on off pump#	on end Ave Roto#		
#	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.		on off pump#	on end Ave Roto#		
#	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.		on off pump#	on end Ave Roto#		
#	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.		on off pump#	on end Ave Roto#		

CHAIN OF CUSTODY

Relinquished By:	Date/Time	Received By:	Date/Time
[illegible]		[illegible]	2-20-13 @ 2pm

WHITE - RETAIN WITH SAMPLES CANARY - FILE COPY

CITY COUNCIL REFERENCE ONLY

Forensic Analytical Laboratories

Final Report

Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Protech Consulting & Engineers Inc.
Project Manager

1208 Main St.
Redwood City, CA 94063

Client ID: 1454
Report Number: B173756
Date Received: 02/20/13
Date Analyzed: 02/20/13
Date Printed: 02/21/13
First Reported: 02/21/13

Job ID/Site: 144-MA13 - Warm Springs Restaurant, Rec room, Fremont

Date(s) Collected: 02/20/2013

FALI Job ID: 1454
Total Samples Submitted: 10
Total Samples Analyzed: 10

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
01	11347666						
Layer: Black Coating		Chrysotile	**2 %**				
Total Composite Values of Fibrous Components:		**Asbestos (2%)**					
02	11347667						
Layer: Brown Tile			**ND**				
Layer: Yellow Mastic			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
03	11347668						
Layer: Brown Tile			**ND**				
Layer: Yellow Mastic			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
04	11347669						
Layer: Grey Non-Fibrous Material			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
05	11347670						
Layer: Grey Non-Fibrous Material			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
06	11347671						
Layer: Black Roof Shingle			**ND**				
Layer: Black Felt			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (55 %) Fibrous Glass (10 %)							
07	11347672						
Layer: Black Roof Shingle			**ND**				
Layer: Black Felt			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (55 %) Fibrous Glass (10 %)							

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3777 Depot Road, Suite 409, Hayward, CA 94545 / Telephone: (510) 887-8828 (800) 827-FASI / Fax: (510) 887-4218

Report Number: B173756
Client Name: Protech Consulting & Engineers Inc. **Date Printed:** 02/21/13

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
08	11347673						
Layer: White Non-Fibrous Material			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
09	11347674						
Layer: Black Felt			**ND**				
Total Composite Values of Fibrous Components: Cellulose (90 %)		**Asbestos (ND)**					
10	11347675						
Layer: Black Felt			**ND**				
Total Composite Values of Fibrous Components: Cellulose (90 %)		**Asbestos (ND)**					

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Tad Thrower

Tad Thrower, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

Analytical results and reports are generated by Forensic Analytical Laboratories Inc. (FALI) at the request of and for the exclusive use of the person or entity (client) named on such report. Results, reports or copies of same will not be released by FALI to any third party without prior written request from client. This report applies only to the sample(s) tested. Supporting laboratory documentation is available upon request. This report must not be reproduced except in full, unless approved by FALI. The client is solely responsible for the use and interpretation of test results and reports requested from FALI. Forensic Analytical Laboratories Inc. is not able to assess the degree of hazard resulting from materials analyzed. FALI reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified. All samples were received in acceptable condition unless otherwise noted.

3777 Depot Road, Suite 409, Hayward, CA 94545 / Telephone: (510) 887-8828 (800) 827-FASI / Fax: (510) 887-4218

APPENDIX 2

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LEGEND

HOW TO READ THE REPORT

Wall A, is the front wall of the building.
Walls B, C and D go clockwise around the building or room

REPORTS

Summary-- Gives only those readings at or above the action level of 1.0mg/cm2.

Detailed Report—Gives all reading by room and component.
Readings are not in numerical order. This report also gives comments

PAINT CONDITION

I=Intact

F=Fair

P=Poor

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Comments

There were 47 readings taken, including calibrations, using the RMD XRF instrument. 2 of the readings registered at or above the action level of 1.0mg/cm2. A contractor practicing Lead Safe Practices should do any repairs or repainting of the actionable areas.

" A copy of this summary report must be provided to new lessees and purchasers of this property under Federal Law (24 CFR part 35 and 40 CFR part 745) before they become obligated under lease or sales contract. The complete report must also be provided to new purchasers and it must be made available to new tenants. Landlords and sellers are also required to distribute an educational pamphlet and include standard warning language in their leases or sales contracts to ensure that parents have the information they need to protect their children from lead-based paint hazards."

CITY COUNCIL REFERENCE ONLY

Emanuel Dounias
DPH 13095

February 20, 2013
Date

LEAD PAINT INSPECTION REPORT

REPORT NUMBER: S#01369 - 02/20/13 15:17

INSPECTION FOR: The Consulting Group
394 Cecilia Way
Tiburon, CA

PERFORMED AT: Warm Springs Restroom & Meeting Room
Fremont, CA

INSPECTION DATE: 02/20/13

INSTRUMENT TYPE: R M D
MODEL LPA-1
XRF TYPE ANALYZER
Serial Number: 01369

ACTION LEVEL: 1.1 mg/cm**2

OPERATOR LICENSE: California General

STATEMENT: Lead paint survey as agreed.
No representations are made for any areas not tested.

SIGNED _____ DATE _____

ProTech Consulting & Engineering
1208 Main Street
Redwood City, Ca. 94063
Phone: 650-569-4020
Fax: 650-569-4023

CITY COUNCIL REFERENCE ONLY

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION FOR: The Consulting Group

Inspection Date: 02/20/13
Report Date: 2/20/2013
Abatement Level: 1.1
Report No. S#01369 - 02/20/13 15:17
Total Readings: 47
Job Started: 02/20/13 15:17
Job Finished: 02/20/13 16:11

Warm Springs Restroom & Meeting Room
Fremont, CA

Read No.	Rm	Room Name	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm▒)	Mode
1		CALIBRATION								0.8	TC
2		CALIBRATION								0.7	TC
3		CALIBRATION								0.8	TC
4	001	Rec. Rm.	A	Wall	L	Rgt	I	Wood	White	0.1	QM
5	001	Rec. Rm.	B	Wall	L	Ctr	I	Wood	White	0.1	QM
6	001	Rec. Rm.	C	Wall	L	Ctr	I	Wood	White	-0.1	QM
7	001	Rec. Rm.	D	Wall	L	Ctr	I	Wood	White	0.0	QM
8	001	Rec. Rm.	A	Ceiling			I	Wood	Brown	-0.1	QM
9	001	Rec. Rm.	A	Window	Ctr	Rgt casing	I	Wood	Brown	0.1	QM
10	001	Rec. Rm.	C	Window	Ctr	Rgt casing	I	Wood	Brown	0.0	QM
11	001	Rec. Rm.	D	Door	Lft	U Ctr	I	Wood	Orange	0.1	QM
12	001	Rec. Rm.	B	Door	Ctr	U Ctr	I	Wood	Orange	-0.1	QM
13	002	RestRm.	A	Wall	L	Ctr	I	Wood	Tan	-0.3	QM
14	002	RestRm.	B	Wall	L	Ctr	I	Wood	Tan	-0.2	QM
15	002	RestRm.	A	Ceiling			I	Wood	Tan	-0.1	QM
16	002	RestRm.	D	Wall	L	Lft	I	Wood	Tan	-0.1	QM
17	002	RestRm.	D	Door	Rgt	U Ctr	I	Wood	Tan	0.2	QM
18	002	RestRm.	C	Wall	L	Ctr	I	Metal	Tan	-0.2	QM
19	002	RestRm.	C	Wall	U	Ctr	I	Metal	Tan	0.1	QM
20	001	Ext. Rec.	A	Wall	L	Ctr	I	Wood	Tan	0.2	QM
21	001	Ext. Rec.	D	Wall	L	Lft	I	Wood	Tan	-0.2	QM
22	001	Ext. Rec.	C	Wall	L	Ctr	I	Wood	Tan	0.0	QM
23	001	Ext. Rec.	B	Wall	L	Lft	I	Wood	Tan	-0.1	QM
24	001	Ext. Rec.	B	Wall	L	Rgt	I	Wood	Green	0.0	QM
25	001	Ext. Rec.	A	Fascia			I	Wood	Green	-0.1	QM
26	001	Ext. Rec.	A	Wall	L	Lft	I	Wood	Green	0.0	QM
27	001	Ext. Rec.	A	Window	Ctr	Sill	I	Wood	Green	0.0	QM
28	001	Ext. Rec.	D	Window	Ctr	Sill	I	Wood	Green	-0.1	QM
29	001	Ext. Rec.	D	Window	Ctr	Sill	I	Wood	Green	-0.1	QM
30	001	Ext. Rec.	D	Window	Ctr	Sash	I	Metal	Tan	2.5	QM
31	001	Ext. Rec.	A	Window	Ctr	Sash	I	Metal	Tan	3.2	QM
32	001	Ext. Rec.	B	Lattice	Ctr		P	Wood	Green	-0.1	QM
33	001	Ext. Rec.	B	Lattice	Ctr		P	Wood	Green	-0.1	QM
34	002	Ext. Restrm	A	Wall	L	Ctr	I	Wood	Tan	-0.2	QM
35	002	Ext. Restrm	B	Wall	L	Ctr	P	Wood	Tan	0.2	QM
36	002	Ext. Restrm	C	Wall	L	Ctr	I	Wood	Tan	-0.2	QM
37	002	Ext. Restrm	D	Wall	L	Ctr	I	Wood	Tan	-0.1	QM
38	002	Ext. Restrm	D	Soffit			I	Wood	Tan	-0.1	QM
39	002	Ext. Restrm	A	Soffit			I	Wood	Tan	-0.2	QM
40	002	Ext. Restrm	D	Door	Ctr	U Ctr	I	Wood	Tan	0.1	QM
41	002	Ext. Restrm	D	Door	Ctr	Lft casing	I	Wood	Green	-0.1	QM
42	002	Ext. Restrm	D	Corner board	Rgt		P	Wood	Green	0.1	QM
43	002	Ext. Restrm	B	Corner board	Lft		I	Wood	Green	-0.2	QM
44	002	Ext. Restrm	B	Fascia			I	Wood	Green	0.2	QM
45		CALIBRATION								0.9	TC
46		CALIBRATION								0.9	TC
47		CALIBRATION								0.8	TC

---- End of Readings ----

CITY COUNCIL REFERENCE ONLY

SUMMARY REPORT OF LEAD PAINT INSPECTION FOR: The Consulting Group

Inspection Date: 02/20/13
Report Date: 2/20/2013
Abatement Level: 1.1
Report No. S#01369 - 02/20/13 15:17
Total Readings: 47 Actionable: 2
Job Started: 02/20/13 15:17
Job Finished: 02/20/13 16:11

Warm Springs Restroom & Meeting Room
Fremont, CA

Read No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm▒)	Mode
Exterior Room 001 Ext. Rec.									
031	A	Window	Ctr	Sash	I	Metal	Tan	3.2	QM
030	D	Window	Ctr	Sash	I	Metal	Tan	2.5	QM

---- End of Readings ----

DETAILED REPORT OF LEAD PAINT INSPECTION FOR: The Consulting Group

Inspection Date: 02/20/13
Report Date: 2/20/2013
Abatement Level: 1.1
Report No. S#01369 - 02/20/13 15:17
Total Readings: 47
Job Started: 02/20/13 15:17
Job Finished: 02/20/13 16:11

Warm Springs Restroom & Meeting Room
Fremont, CA

Read No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm▒)	Mode
Exterior Room 001 Ext. Rec.									
026	A	Wall	L Lft		I	Wood	Green	0.0	QM
020	A	Wall	L Ctr		I	Wood	Tan	0.2	QM
025	A	Fascia			I	Wood	Green	-0.1	QM
031	A	Window	Ctr	Sash	I	Metal	Tan	3.2	QM
027	A	Window	Ctr	Sill	I	Wood	Green	0.0	QM
023	B	Wall	L Lft		I	Wood	Tan	-0.1	QM
024	B	Wall	L Rgt		I	Wood	Green	0.0	QM
032	B	Lattice	Ctr		P	Wood	Green	-0.1	QM
033	B	Lattice	Ctr		P	Wood	Green	-0.1	QM
022	C	Wall	L Ctr		I	Wood	Tan	0.0	QM
021	D	Wall	L Lft		I	Wood	Tan	-0.2	QM
030	D	Window	Ctr	Sash	I	Metal	Tan	2.5	QM
028	D	Window	Ctr	Sill	I	Wood	Green	-0.1	QM
029	D	Window	Ctr	Sill	I	Wood	Green	-0.1	QM
Exterior Room 002 Ext. Restrm									
034	A	Wall	L Ctr		I	Wood	Tan	-0.2	QM
039	A	Soffit			I	Wood	Tan	-0.2	QM
035	B	Wall	L Ctr		P	Wood	Tan	0.2	QM
043	B	Corner board	Lft		I	Wood	Green	-0.2	QM
044	B	Fascia			I	Wood	Green	0.2	QM
036	C	Wall	L Ctr		I	Wood	Tan	-0.2	QM
037	D	Wall	L Ctr		I	Wood	Tan	-0.1	QM
042	D	Corner board	Rgt		P	Wood	Green	0.1	QM
038	D	Soffit			I	Wood	Tan	-0.1	QM
041	D	Door	Ctr	Lft casing	I	Wood	Green	-0.1	QM
040	D	Door	Ctr	U Ctr	I	Wood	Tan	0.1	QM

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Interior Room 001 Rec. Rm.

004	A	Wall	L	Rgt	I	Wood	White	0.1	QM
008	A	Ceiling			I	Wood	Brown	-0.1	QM
009	A	Window		Ctr	Rgt casing	I	Wood	Brown	0.1	QM
005	B	Wall	L	Ctr		I	Wood	White	0.1	QM
012	B	Door		Ctr	U Ctr	I	Wood	Orange	-0.1	QM
006	C	Wall	L	Ctr		I	Wood	White	-0.1	QM
010	C	Window		Ctr	Rgt casing	I	Wood	Brown	0.0	QM
007	D	Wall	L	Ctr		I	Wood	White	0.0	QM
011	D	Door		Lft	U Ctr	I	Wood	Orange	0.1	QM

Interior Room 002 RestRm.

013	A	Wall	L	Ctr	I	Wood	Tan	-0.3	QM
015	A	Ceiling			I	Wood	Tan	-0.1	QM
014	B	Wall	L	Ctr	I	Wood	Tan	-0.2	QM
018	C	Wall	L	Ctr	I	Metal	Tan	-0.2	QM
019	C	Wall	U	Ctr	I	Metal	Tan	0.1	QM
016	D	Wall	L	Lft	I	Wood	Tan	-0.1	QM
017	D	Door		Rgt	U Ctr	I	Wood	Tan	0.2	QM

Calibration Readings

001	0.8	TC
002	0.7	TC
003	0.8	TC
045	0.9	TC
046	0.9	TC
047	0.8	TC

---- End of Readings ----

CITY COUNCIL REFERENCE ONLY

DISTRIBUTION REPORT OF LEAD PAINT INSPECTION FOR: The Consulting Group

Inspection Date: 02/20/13
Report Date: 2/20/2013
Abatement Level: 1.1
Report No. S#01369 - 02/20/13 15:17
Total Reading Sets: 41
Job Started: 02/20/13 15:17
Job Finished: 02/20/13 16:11

Warm Springs Restroom & Meeting Room
Fremont, CA

Structure	Structure Distribution Total	Positive		Negative		Inconclusive	
Ceiling	2	0	<0%>	2	<100%>	0	<0%>
Corner board	2	0	<0%>	2	<100%>	0	<0%>
Door Lft casing	1	0	<0%>	1	<100%>	0	<0%>
Door U Ctr	4	0	<0%>	4	<100%>	0	<0%>
Fascia	2	0	<0%>	2	<100%>	0	<0%>
Lattice	2	0	<0%>	2	<100%>	0	<0%>
Soffit	2	0	<0%>	2	<100%>	0	<0%>
Wall	19	0	<0%>	19	<100%>	0	<0%>
Window Rgt casing	2	0	<0%>	2	<100%>	0	<0%>
Window Sash	2	2	<100%>	0	<0%>	0	<0%>
Window Sill	3	0	<0%>	3	<100%>	0	<0%>
Inspection Totals:	41	2	< 5%>	39	< 95%>	0	< 0%>

APPENDIX 3

CITY COUNCIL REFERENCE ONLY

ProTech
Consulting & Engineering
1208 Main Street, Redwood City, CA 94063
Phone: (650) 569-4020 Fax: (650) 569-4023
info@protech-cal.com
Environmental Services

Page 1 of 1
Job # 144-MA13
P.O. # 220-144-04

General Information

Date: 02-20-13
Job ID: Warm Springs Restroom & Rec Ctr. Fremont
Collected By: EO
Lab: FASI

Analysis Requested

- ☐ PCM NIOSH 7400
- ☐ TEM
  - ○ AHERA
  - ○ Level 2
  - ○ Bulk Quantitative
  - ○ Bulk Qualitative
- ☐ PLM BULK - EPA/600/R/116
- ☒ Lead
  - ☒ AA
  - ☒ TTLC
  - ○ STLC
  - ○ TCLP
- ☐ Mold
- ☐ Other

Turn Around Time

- ☐ Rush
- ☐ 12 hours
- ☒ 24 hours
- ☐ 48 hours
- ☐ 3-5 days
- ☐

Special Instructions

☐ Prior Positive

Filter Type: ☐ MCE, 0.8 µm, 25mm ☐ MCE, 0.45µm, 25mm ☐ MCE, 0.8µm, 37mm ☐ Other

Sample # / Date	Sample Type	Sample Protocol	Location / Activity / Material Description	Time On/Off	LPM	Total Min. / Total Vol. / Fibers/Fields	Results
# LP-01	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.	Int. white wood paint	on / off / pump#	on / end / Ave / Roto#		
# LP-02	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.	Int. Brown wood paint	on / off / pump#	on / end / Ave / Roto#		
# LP-03	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.	Ext. Tan wood paint	on / off / pump#	on / end / Ave / Roto#		
# LP-04	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.	Ext. Green wood paint	on / off / pump#	on / end / Ave / Roto#		
#	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.		on / off / pump#	on / end / Ave / Roto#		
#	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.		on / off / pump#	on / end / Ave / Roto#		
#	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.		on / off / pump#	on / end / Ave / Roto#		
#	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.		on / off / pump#	on / end / Ave / Roto#		
#	☐ Post ☐ Area ☐ Background ☐ Personal ☐ Blank ☐ Bulk	☐ Amb. ☐ ALS ☐ Agg.		on / off / pump#	on / end / Ave / Roto#		

CHAIN OF CUSTODY

Relinquished By:	Date/Time	Received By:	Date/Time
EO		Dell Leon DLO	2-20-13 2PM

WHITE - RETAIN WITH SAMPLES CANARY - FILE COPY

CITY COUNCIL REFERENCE ONLY

Forensic Analytical Laboratories

Final Report

Metals Analysis of Paints

Protech Consulting & Engineers Inc.
Project Manager

1208 Main St.
Redwood City, CA 94063

Client ID: 1454
Report Number: M136454
Date Received: 02/20/13
Date Analyzed: 02/21/13
Date Printed: 02/21/13
First Reported: 02/21/13

Job ID / Site: 144-MA13, 220-144-04, Warm Springs Restroom & Rec Ctr. Fremont
Date(s) Collected: 02/20/13

FALI Job ID: 1454
Total Samples Submitted: 4
Total Samples Analyzed: 4

Sample Number	Lab Number	Analyte	Result	Result Units	Reporting Limit*	Method Reference
LP-01	30456965	Pb	0.009	wt%	0.006	EPA 3050B/7420
LP-02	30456966	Pb	< 0.02	wt%	0.02	EPA 3050B/7420
Comment:	Insufficient sample size for repeatable analysis.					
LP-03	30456967	Pb	0.008	wt%	0.006	EPA 3050B/7420
LP-04	30456968	Pb	< 0.006	wt%	0.006	EPA 3050B/7420

CITY COUNCIL REFERENCE ONLY

* The Reporting Limit represents the lowest amount of analyte that the laboratory can confidently detect in the sample, and is not a regulatory level. The Units for the Reporting Limit are the same as the Units for the Final Results.

Daniele Siu

Daniele Siu, Laboratory Supervisor, Hayward Laboratory

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APPENDIX E

SOIL ENGINEERING STUDY

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SOIL ENGINEERING STUDY
MEETING ROOM AND
BATHROOM REPLACEMENT
WARM SPRINGS COMMUNITY PARK
FREMONT, CALIFORNIA

CITY COUNCIL REFERENCE ONLY

July 30, 2012

Prepared for

City of Fremont Community Develoment

Prepared by

Earth Systems Pacific
780 Montague Expressway, Suite 205
San Jose, CA 95131

Earth Systems Pacific

780 Montague Expwy., Suite 205
San Jose, California 95131

(408) 934-9302 • Fax (408) 946-4569
Email: esp@earthsys.com

July 30, 2012

File No. SH-11811-SA

City of Fremont
Community Services Department
P.O. Box 5006
Fremont, CA 94537-5006

Attention: Mr. Mark Menucci, Associate Landscape Architect

PROJECT: **Bathroom and Meeting Room Replacement**
Warm Springs Community Park
47300 Fernald Street
Fremont, California

SUBJECT: **Soil Engineering Study**

REFERENCE: Cost Estimate for Soil Engineer Study, Bathroom and Meeting Room Replacement, Warm Springs Community Park, 47300 Fernald Street, Fremont, California, by Earth Systems Pacific, dated June 7, 2012.

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Dear Mr. Menucci:

In accordance with your authorization of the above referenced proposal, this soil engineering study has been prepared for the proposed bathroom and meeting room replacement project at Warm Springs Community Park in Fremont, California.

We appreciate the opportunity to have provided services for this project and look forward to working with you again in the future. Please do not hesitate to contact this office if there are any questions concerning this report.

Sincerely,

Earth Systems Pacific

Christopher M. Cecile
Project Geologist

Bill E. Zehrbach
Senior Engineer
Geotechnical Engineer 926

REGISTERED PROFESSIONAL ENGINEER
BILL E. ZEHRBACH
GE 926
EXP. 93013
GEOTECHNICAL
STATE OF CALIFORNIA

7/30/12

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Figure 1 – Site Location Map
Figure 2 – Exploratory Boring Location Map

APPENDIX A

Boring Logs (2)

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Laboratory Test Results

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1.0 INTRODUCTION

1.1 Site Setting

The subject site is centrally located in Warm Springs Community Park in Fremont, California (Figure 1). The approximate center of the site is located at 37.4857°N latitude and 121.9219°W longitude on the United States Geological Survey's Milpitas 7.5-Minute Quadrangle. The site is accessed via Fernald Street off of Warm Springs Boulevard from the Mission Boulevard exit of either I-680 or I-880 in Fremont, California.

1.2 Site Description

The site of the proposed bathroom is currently occupied by an existing one-story bathroom structure surrounded by landscaping. The site of the new meeting room is a relatively level turf area north of the bathroom. The surrounding area is landscaping and playfields with a concrete walkway to the west and trees used to separate the different playfield areas in the vicinity of the site.

1.3 Planned Development

ESP understands that the subject project will involve the demolition of the existing bathroom and meeting rooms. A new bathroom will be constructed in the same location as the present bathroom building, and a new meeting room will be constructed to the north of the new bathroom. Both buildings will reportedly be of pre-fabricated CMU construction.

As plans for the project are preliminary at the time of this report, the recommendations contained herein should be reviewed and revised as necessary by the geotechnical engineer once detailed plans for the project become available.

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1.4 Scope of Services

The scope of work for the soil engineering study included a general site reconnaissance, subsurface exploration, laboratory testing of selected samples, engineering evaluation of the data collected and preparation of this report. The analysis and subsequent recommendations were based on our understanding of the proposed development at the subject site.

The report and recommendations are intended to comply with the considerations of Section 1803 of the California Building Code (CBC), 2010 Edition, and common geotechnical engineering practice in this area at this time under similar conditions. The tests were performed in general

conformance with the standards noted, as modified by common geotechnical practice in this area at this time under similar conditions.

Preliminary geotechnical recommendations for site preparation and grading, foundations, slabs-on-grade and exterior flatwork, utility trenches, pavement sections, site drainage and finish improvements, and geotechnical observation and testing are presented to guide the development of project plans and specifications. It is our intent that this report be used by the client to form the geotechnical basis of the design of the project as described herein, and in the preparation of plans and specifications.

Detailed evaluation of the site geology and potential geologic hazards, and analyses of the soil for mold or other microbial content, asbestos, percolation rates, corrosion potential, radioisotopes, hydrocarbons, or other chemical properties are beyond the scope of this report. This report also does not address issues in the domain of contractors such as, but not limited to, site safety, loss of volume due to stripping of the site, shrinkage of soils during compaction, excavatability, shoring, temporary slope angles, and construction means and methods. Ancillary features such as swimming pools, temporary access roads, fences, light poles, and nonstructural fills are not within our scope and are also not addressed.

To verify that pertinent issues have been addressed and to aid in conformance with the intent of this report, it is requested that final grading and foundation plans be submitted to this office for review. In the event that there are any changes in the nature, design, or locations of improvements, or if any assumptions used in the preparation of this report prove to be incorrect, the conclusions and recommendations contained herein should not be considered valid unless the changes are reviewed and the conclusions of this report are verified or modified in writing by the geotechnical engineer. The criteria presented in this report are considered preliminary until such time as they are verified or modified in writing by the geotechnical engineer in the field during construction.

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2.0 GEOLOGIC REVIEW

The USDA (2012) has mapped the soil at the site as the Danville silty clay loam (DaB). DaB is described as a silty clay loam forming on the footslope of alluvial fans and fan terraces and is derived from alluvium. The unit is described as moderately plastic lean clay (CL) with a plasticity index of 20 and a liquid limit of 41. DaB is described as well drained; the published

saturated hydraulic conductivity of the unit is 0.06 to 0.20 in/hr. The Danville silty clay loam has a published pH of 6.7 and an electroconductivity of 1.0 mmhos/cm.

The subject site sits on a relatively flat, alluvial blanket below the Mount Hamilton-Mount Diablo range. Wentworth et al (1999) mapped the site as underlain by Pleistocene alluvial fan deposits. The water table has been historically recorded to be encountered approximately 30 to 40 feet below the ground surface, depending on a variety of factors including the time of year (CGS, 2001b).

The closest Type A seismic sources are the Hayward fault located approximately 0.2 miles (0.3 km) to the northeast, the Calaveras fault located approximately 5.0 miles (8.0 km) to the northeast, and the San Andreas fault located approximately 17.7 miles (28.5 km) west of the site. The closest Type B seismic sources include the Monte Vista-Shannon located approximately 14.7 miles (23.7 km) north, and the Mount Diablo fault fault located approximately 17.7 miles (28.5 km) southwest of the site. (WGCEP, 2007).

The subject site is not within a State Earthquake Fault Zone (CGS, 1982), or within a State of California Landslide Hazard Zone (CGS, 2001a). The site is not located within a State-defined Liquefaction Hazard Zone (CGS, 2001a).

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3.0 FIELD INVESTIGATION AND LABORATORY TESTING

3.1 Subsurface Exploration

The subsurface exploration consisted of two exploratory borings drilled at the site on July 5, 2012. The exploratory borings were drilled under the direction of an ESP geologist at the approximate locations shown on the Boring Location Map (Figure 2). The borings were sampled to depths of 15 feet below the ground surface. The soil was sampled using a standard truck-mounted drill rig equipped with a 140 pound drop hammer. The hammer drove a 3 inch (outside diameter) Modified California sampler 18 inches at a time as the borings were advanced. The penetration resistance is described on the boring logs as the number of blows per foot of penetration.

Soils encountered in the borings were categorized and logged in general accordance with the Unified Soil Classification System. Copies of the boring logs are included in Appendix A.

3.2 Subsurface Profile

The native soil at the site consists of approximately 5.5 feet of very stiff dark gray lean clay (CL) overlying stiff to hard brown lean clay (CL) to the maximum depth explored. Free subsurface water was not encountered within the maximum 15 foot depth of exploration. It should be noted, however, that fluctuations in the level of subsurface water can occur due to variations in rainfall, temperature, and other factors, and groundwater levels should not be considered constant. Historic groundwater level has been reported by the CGS at a depth between 30 to 40 feet below the ground surface. (CGS, 2001b).

3.3 Laboratory Testing

As the borings were drilled, soil samples were obtained using a tube-lined barrel sampler (ASTM D 3550-01 (2007) with shoe similar to D 2937-04). Standard penetration tests were also performed at selected intervals (ASTM D 1586-08a). Selected tube samples were tested for moisture content and dry density (ASTM D 2216-05 and D 2937-04), one tube samples for plasticity index (ASTM D 4318-10), and one tube sample was tested for shear strength (ASTM D 3080-04). Copies of the laboratory test results are included in Appendix B.

4.0 DATA ANALYSIS

4.1 Subsurface Soil Classification

Based on the data in the boring logs (See Appendix A), the soils are assigned to Site Class D (Stiff Soil) as defined by Table 1613.5.2 of the 2010 CBC.

4.2 Seismic Design Parameters

The seismic parameters presented below comply with Chapter 16 of the California Building Code (2010 Edition). The values were determined utilizing the USGS Earthquake Hazards Program Earthquake Ground Motion Parameter Java Application and the International Building code provisions.

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Summary of Seismic Parameters - CBC 2010
(Site Coordinates 37.5551°N, 121.9620°W)

Mapped Short Term Spectral Response Parameter - S_S	1.801g
Mapped 1 Second Spectral Response Parameter - S_1	0.673g
Site Class:	D
Site Coefficient - F_a	1.0 ($S_s \geq 1.25$)
Site Coefficient - F_v	1.5 ($S_1 \geq 0.5$)

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5.0 CONCLUSIONS

5.1 Site Suitability

The subject site is suitable for the proposed bathroom and meeting room replacement project from a geotechnical engineering standpoint provided the recommendations included in this report are followed.

5.2 Site Preparation and Grading

Demolition of the existing structures is anticipated to disturb the subgrade. Prior to building pad construction, the area extending 5 feet beyond the proposed pad areas should be sub-excavated a minimum of 18 inches below the existing grade. The geotechnical engineer should observe the bottom of the excavation in order to determine the need for additional sub-excavation prior to replacement of the sub-excavated material. Additional anticipated grading work for the site will include placement of new utility lines, and grading work related to new pavements. Grading operations are discussed in detail in the Recommendations section of this report.

5.3 Soil Expansion Potential

The near-surface soils have a Plasticity Index of 20 indicating a moderate expansion potential. Soils should be moisture conditioned above optimum in order to mitigate potential adverse effects due to shrinkage or swelling of clay soils. Soils should be periodically moistened throughout grading operations in order to maintain moisture conditions slightly above optimum.

5.4 Foundations

The proposed bathroom and meeting room buildings may be supported on conventional strip and spread footings.

5.5 Settlement

Total settlement is intended to not exceed 1 inch with differential settlement between foundation elements on the order of ½ inch or less.

5.6 Groundwater

Groundwater was not encountered during subsurface exploration to depths of 15 feet below the existing ground surface. Historical water is depicted as 30 to 40 feet below the ground surface at the site. We do not anticipate groundwater being an issue at the site.

5.7 Seismicity

The San Francisco Bay area is recognized by geologists and seismologists as one of the most seismically active regions in the United States. The significant earthquakes in this area are generally associated with crustal movement along well-defined, active fault zones which regionally trend in a northwesterly direction. Although research on earthquake prediction has greatly increased in recent years, seismologists cannot predict when and where an earthquake will occur. Nevertheless, on the basis of current technology, it is reasonable to assume that the proposed light structures will be subjected to at least one moderate to severe earthquake during their lifetime. During such an earthquake, the danger from fault offset on the site is slight, but strong shaking of the site is likely to occur and, therefore, the project should be designed in accordance with the seismic design provisions of the latest California Building Code. It should be understood that the California Building Code seismic design parameters are not intended to prevent structural damage during an earthquake, but to reduce damage and minimize loss of life.

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6.0 RECOMMENDATIONS

6.1 Site Preparation and Grading

General Site Preparation

6.1.1 Site clearing, placement of fill, and grading operations at the site should be conducted in accordance with the recommendations provided in this report. Compaction recommendations for site grading work can be found later in this section.

6.1.2 Existing utilities, where known, should be located on the grading plans, to assist the geotechnical engineer during grading operations. Existing utility lines that will not be serving the proposed improvements should be either removed or properly abandoned. The necessity of removing abandoned underground utility lines should be determined by the geotechnical engineer during site grading.

6.1.3 Surface vegetation (weeds, shrubs, etc.), and organically contaminated topsoil must be removed from areas to be graded. The depth of surface organic stripping will probably vary and should be determined by the geotechnical engineer during grading operations. Organically contaminated soils may either be stockpiled and later used as topsoil in landscaping areas or removed from the site.

6.1.4 Trees that are to be removed from the site should have their main root systems removed. In addition, tree roots larger than 1 inch in diameter should be chased out and removed. The depression from the removal of the tree root system should be reviewed by the geotechnical engineer to determine the need of additional excavation work. Once approved, the bottom of the depression should be scarified and cross-scarified 8 inches in depth, moisture conditioned, and recompacted. The depressions should then be backfilled with approved, compacted, moisture conditioned structural fill, as recommended in other sections of this report.

6.1.5 It is likely that demolition of the existing bathroom structure at the site will disturb the ground. Therefore we recommend that the upper 18 inches of existing ground in the proposed building areas be sub-excavated in order to mitigate the presence of disturbed soil at the site; the resulting excavation should be reviewed by the geotechnical engineer prior to proceeding with filling at the site. The lateral extent of the sub-excavation should extend at least 5 feet beyond the proposed building footprint and appurtenant concrete flatwork. If disturbed soil, remnants of foundations, or debris are encountered after the removal of the upper 18 inches, additional sub-excavation should be performed until identified undocumented fill, loose disturbed soil, or debris are removed from the building footprint. Once clean undisturbed soil is encountered, the bottom of the excavation should be scarified and cross-scarified 8 inches in depth, moisture conditioned, and recompacted. The depressions should then be backfilled with approved, compacted, moisture conditioned structural fill, as recommended in other sections of this report.

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6.1.6 Over-excavated material can be re-used as fill provided it is cleared of excessive quantities of organics or other potentially deleterious materials. Tree roots larger than 1 inch in diameter should be removed from the fill material. The fill should be placed in moisture conditioned lifts not exceeding 8 inches in non-compacted thickness.

6.1.7 Site clearing and backfilling operations should be conducted under the field observation of the geotechnical engineer.

6.1.8 The geotechnical engineer should be notified at least 48 hours prior to commencement of grading operations.

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Compaction Recommendations

6.1.9 In general, prior to placement of fill on the site, the underlying soil should be scarified at least 8-inches, moisture conditioned and recompacted to the recommended relative compaction present below, unless noted otherwise. This scarification operation should be performed at locations designated for proposed structural fill, concrete slabs-on-grade, foundations and asphalt pavement areas.

6.1.10 Recompacted native soils and structural fill should be compacted to a minimum relative compaction of 90 percent of maximum dry density at a moisture content at least 2 percentage points above optimum. Pavement subgrade should be compacted to a minimum 92 percent of maximum dry density at a moisture content above optimum. Aggregate base should be compacted to at least 95 percent of maximum density.

6.1.11 Due to the fine-grained nature of the upper soils, and depending on moisture conditions at the time of construction, there is a potential for the soils to become unstable during grading. Unstable soils hinder compactive effort and are inappropriate for placement of additional fill. Alternatives to correct instability include aeration to dry the soils, lime treatment, over-excavation and recompaction, and the use of gravel or geotextiles as stabilizing measures. Recommendations for stabilization should be provided by a representative of Earth Systems Pacific, as needed, during construction.

Fill Recommendations

6.1.12 General structural fill is defined herein as a native or import fill material which, when properly compacted, will support foundations, building slabs, pavements, and other fills. The on-site native soils that are free of debris, organics and other deleterious material, may be used as general structural fill.

6.1.13 Due to the moderate expansion potential of the surficial soils found on the site, imported soil (if needed) should be non-expansive import material. To qualify as non-expansive import material, the soil should meet the following criteria:

a. Be coarse grained and have a plasticity index of less than 15 and/or an expansion index less than 20;

b. Be free of organics, debris or other deleterious material;

c. Have a maximum rock size of 3 inches; and

d. Contain sufficient clay binder to allow for stable foundation and utility trench excavations.

6.1.14 As previously mentioned, the previously over-excavated material (from the building pad area) can be re-used as fill provided that it is cleared of excessive quantities of organics or other potentially deleterious materials.

6.1.15 Proposed imported soils should be submitted at least three days before being transported to the site for evaluation by the geotechnical engineer. During importation to the site the material should be further reviewed on an intermittent basis.

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6.2 Foundations

6.2.1 The proposed structures may be supported by conventional spread or strip footings.

6.2.2 The footings should be founded a minimum of 18 inches below the lowest adjacent soil grade for both interior and exterior foundations. Footings should be designed using a maximum allowable bearing capacity of 2,000 psf dead plus live load for both spread and strip footings. This value may be increased by one-third when transient loads such as wind or seismicity are included.

6.2.3 Minimum widths of continuous footings should be 12 inches. Isolated spread footings should be a minimum of 18 inches wide. The footings should be reinforced as directed by the architect/engineer.

6.2.4 Resistance to lateral loads should be calculated based on a passive equivalent fluid pressure of 200 pcf and a friction factor of 0.25. Passive and frictional resistance can be combined in the calculations. These values are based on the assumption that backfill adjacent to foundations is properly compacted. The upper 12 inches of embedment should be neglected in calculating lateral passive resistance.

6.2.5 Footing excavations should be observed by a representative of Earth Systems Pacific prior to placement of formwork or reinforcement. Loose soil found in the bottom of the footings should be removed.

6.2.6 The footing excavations should be moisture conditioned over optimum to close any desiccation cracks prior to the placement of concrete, as recommended by the geotechnical engineer in the field. The geotechnical engineer should observe the foundation excavations prior to forming or placement of reinforcing steel to verify the adequacy of the conditioning or recommend additional moisture conditioning, if deemed necessary..

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6.3 Exterior Slab-On-Grade Construction

6.3.1 Exterior flatwork should have minimum thicknesses of 4 full inches and should be reinforced as directed by the architect/engineer.

6.3.2 For exterior non-traffic bearing concrete slabs-on-grade such as sidewalks and patios, the flatwork should be underlain by a minimum 4-inch layer of compacted, nonexpansive material such as aggregate base. A greater thickness of nonexpansive material would enhance flatwork performance. Prior to placement of the nonexpansive material, the soil in the flatwork area should be above optimum moisture content, and no desiccation cracks should be present.

6.3.3 Assuming that movement (i.e., ¼-inch or more) of exterior flatwork is acceptable, the flatwork should be designed to be independent of the building foundations. The flatwork should not be doweled to foundations, and a separator should be placed between the two.

6.3.4 To reduce shrinkage cracks in concrete, the concrete aggregates should be of appropriate size and proportion, the water/cement ratio should be low, the concrete should be properly placed and finished, contraction joints should be installed, and the concrete should be properly cured. Concrete materials, placement and curing specifications should be at the direction of the architect/engineer.

6.4 Utility Trenches

6.4.1. It is assumed that utility pipes will be properly bedded and shaded at least 6 inches over the top of the pipe with an approved, imported, granular material. For purposes of this discussion, trench backfill is defined as that portion of the backfill material placed above the import shading material. It is further assumed that the trenches will not exceed about 10 feet in depth.

6.4.2. A select, noncorrosive, granular, easily compacted material should be used as bedding and shading immediately around utility pipes. The site soils may be used for trench backfill above the select material. If obtaining compaction is difficult with the site soils, use of a more easily compacted sand may be desirable. The upper foot of backfill should consist of native material to reduce the potential for seepage of water into the backfill except under slabs and pavements

6.4.3. Trench backfill should be compacted to a minimum of 90 percent of maximum dry density. The existing native soils may be used for trench backfill if properly prepared and compacted. Jetting to compact utility trench backfill should not be allowed. Jetting of shading material around corrugated pipes and multiple conduit joint utility pipes may be considered.

6.4.4. Import sand or pea gravel may also be used as trench backfill, if so desired. The pea gravel should be clean, washed and rounded, and will require mechanical compaction with vibratory plates. Existing native soil and import materials, such as sand or quarry fines, will also require mechanical compaction, and may require moisture conditioning prior to compaction operations.

6.4.5. Where utility trenches extend under perimeter foundations, the trenches should be backfilled entirely with native soil compacted to a minimum of 90 percent of maximum dry density. The zone of native soil should extend to a minimum distance of 2 feet on both

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sides of the foundation. If utility pipes pass through sleeves cast into the perimeter foundations, the annulus between the pipes and sleeves should be sealed.

6.4.6. In landscape areas, at least the final 24 inches of backfill should be compacted, approved fill soil, to reduce the potential for surface rain or irrigation water from rapidly penetrating down into the trench. Under pavement areas the top 12 inches should be compacted, approved fill soil.

6.4.7. Where trenches pass from landscape areas to pavement areas, at least a three foot length of trench, centered on the curb line, should be backfilled with native soil to reduce the potential for lateral migration of water from the planter to the pavement area.

6.5 Site Drainage and Finish Improvements

6.5.1. Unpaved ground surfaces should be finish graded to direct surface runoff away from building foundation improvements at a minimum 5 percent grade for a minimum distance of 10 feet. If this is not practicable due to the terrain or other site features, swales with improved surfaces should be provided to divert drainage away from improvements. The landscaping should be planned and installed to maintain proper surface drainage conditions.

6.5.2. Runoff from driveways, roof gutters, downspouts, planter drains and other improvements should discharge in a non-erosive manner away from foundations, pavements, and other improvements.

6.5.3. Stabilization of surface soils, particularly those disturbed during construction, by vegetation or other means during and following construction is essential to protect the site from erosion damage. Care should be taken to establish and maintain vegetation.

6.5.4. Raised planter beds adjacent to foundations should be provided with sealed sides and bottoms so that irrigation water is not allowed to penetrate the subsurface beneath foundations. Outlets should be provided in the planters to direct accumulated irrigation and rain water away from foundations.

6.5.5. Open areas adjacent to exterior flatwork should be irrigated or otherwise maintained so that relatively constant moisture conditions are created throughout the year. Irrigation

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systems should be controlled to the minimum levels that will sustain the vegetation without saturating the soil.

6.6 Geotechnical Observation and Testing

6.6.1. It must be recognized that the recommendations contained in this report are based on a limited number of borings performed by Earth Systems Pacific and others, and rely on continuity of the subsurface conditions encountered.

6.6.2. It is assumed that the geotechnical engineer will be retained to provide consultation during the design phase, to interpret this report during construction, and to provide construction monitoring in the form of testing and observation.

6.6.3. Unless otherwise stated, the terms "compacted" and "recompacted" refer to soils placed in level lifts not exceeding 8 inches in loose thickness and compacted to a minimum of 90 percent of maximum dry density. The standard tests used to define maximum dry density and field density should be ASTM D 1557-09 and ASTM D 6938-10, respectively, or other methods acceptable to the geotechnical engineer and jurisdiction.

6.6.4. "Moisture conditioning" refers to adjusting the soil moisture to at least 2 percentage points above optimum moisture, or as recommended in this report, prior to application of compactive effort. If the soils are overly moist so that they become unstable, or if the recommended compaction cannot be readily achieved, drying the soil to optimum moisture content or just above may be necessary. Placement of gravel layers, geotextiles, or lime treatment may also be necessary to help stabilize unstable soils. The geotechnical engineer should be contacted for recommendations for mitigating unstable soils.

6.6.5. At a minimum, the following should be provided by the geotechnical engineer:

- Review of grading and foundation plans and details as they near completion
- Professional observation during site preparation, grading, and foundation excavation
- Oversight of soil compaction testing during grading
- Oversight of soils special inspection during grading

6.6.6. Special inspection of grading should be provided as per Section 1704.7 and Table 1704.7 of the CBC; the soils special inspector should be under the direction of the geotechnical

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engineer. The amount of coverage to be provided will be determined during the grading operations. The following operations should be subject to soils special inspection:

- Stripping and clearing of vegetation and deleterious materials
- Observation of the over-excavation of wet, loose, or disturbed soils and undocumented fills
- Scarification, moisture conditioning and recompaction
- Fill placement and compaction
- Proposed imported materials
- Foundation excavations
- Compaction and proof rolling pavement subgrade and aggregate base
- Utility trench backfill compaction
- Retaining wall backfill compaction

6.6.7. It will be necessary to develop a program of quality control prior to beginning grading. It is the responsibility of the owner, contractor, or project manager to determine additional inspection items required by the architect/engineer or the governing jurisdiction.

6.6.8. A preconstruction conference among a representative of the owner, the geotechnical engineer, soils special inspector, the architect/engineer, and contractors is recommended to discuss planned construction procedures and quality control requirements. Earth Systems Pacific should be notified at least 48 hours prior to beginning grading operations.

6.6.9. If Earth Systems Pacific is not retained to provide construction observation and testing services, it will not be responsible for the interpretation of the information by others or any consequences arising there from.

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7.0 CLOSURE

This report is valid for conditions as they exist at this time for the type of project described herein. Our intent was to perform this study in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the locality of this project under similar conditions. No representation, warranty, or guarantee is either expressed or implied. This report is intended for the exclusive use by the client as discussed in the Scope of Services section. Application beyond the stated intent is strictly at the user's risk.

If changes with respect to the project type or location become necessary, if items not addressed in this report are incorporated into plans, or if any of the assumptions stated in this report are not correct, Earth Systems Pacific should be notified for modifications to this report. Items not specifically addressed in this report should comply with the California Building Code and the requirements of the governing jurisdiction.

As detailed plans for the proposed bathroom/meeting room replacement project were not available at the time of this report, the recommendations contained herein should be reviewed and revised as necessary by the geotechnical engineer once final plans for the proposed improvements become available.

The recommendations of this report are based upon the geologic and geotechnical conditions encountered during this study and previous studies by others, and may be augmented by additional requirements of the architect/engineer, or by additional recommendations provided by Earth Systems Pacific based on conditions exposed at the time of construction.

This document, the data, conclusions, and recommendations contained herein are the property of Earth Systems Pacific. This report should be used in its entirety, with no individual sections reproduced or used out of context. Copies may be made only by Earth Systems Pacific, the client, and his authorized agents for use exclusively on the subject project. Any other use is subject to federal copyright laws and the written approval of Earth Systems Pacific.

Thank you for this opportunity to have been of service. Please feel free to contact this office at your convenience if you have any questions regarding this report.

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FIGURES

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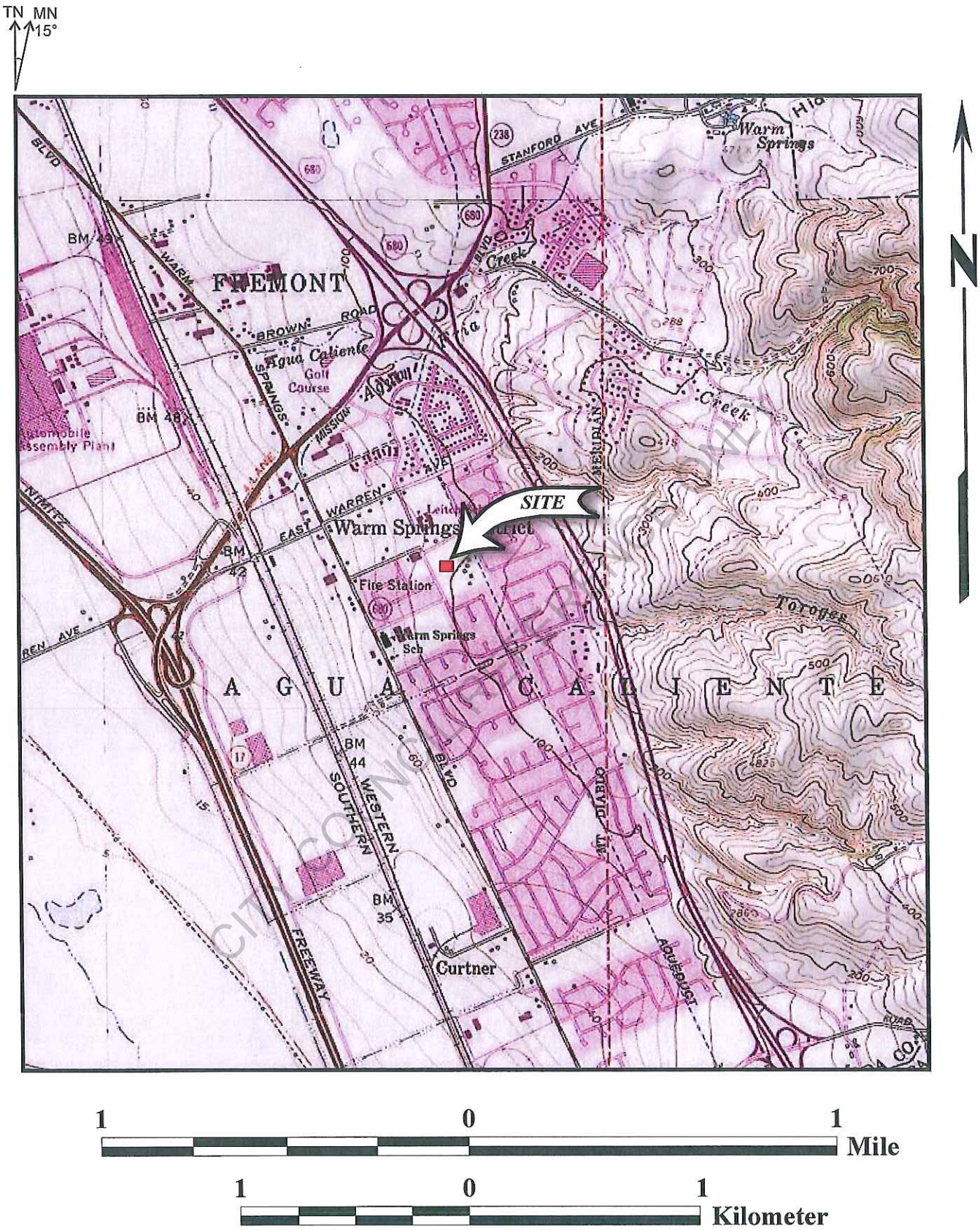
Figure 1

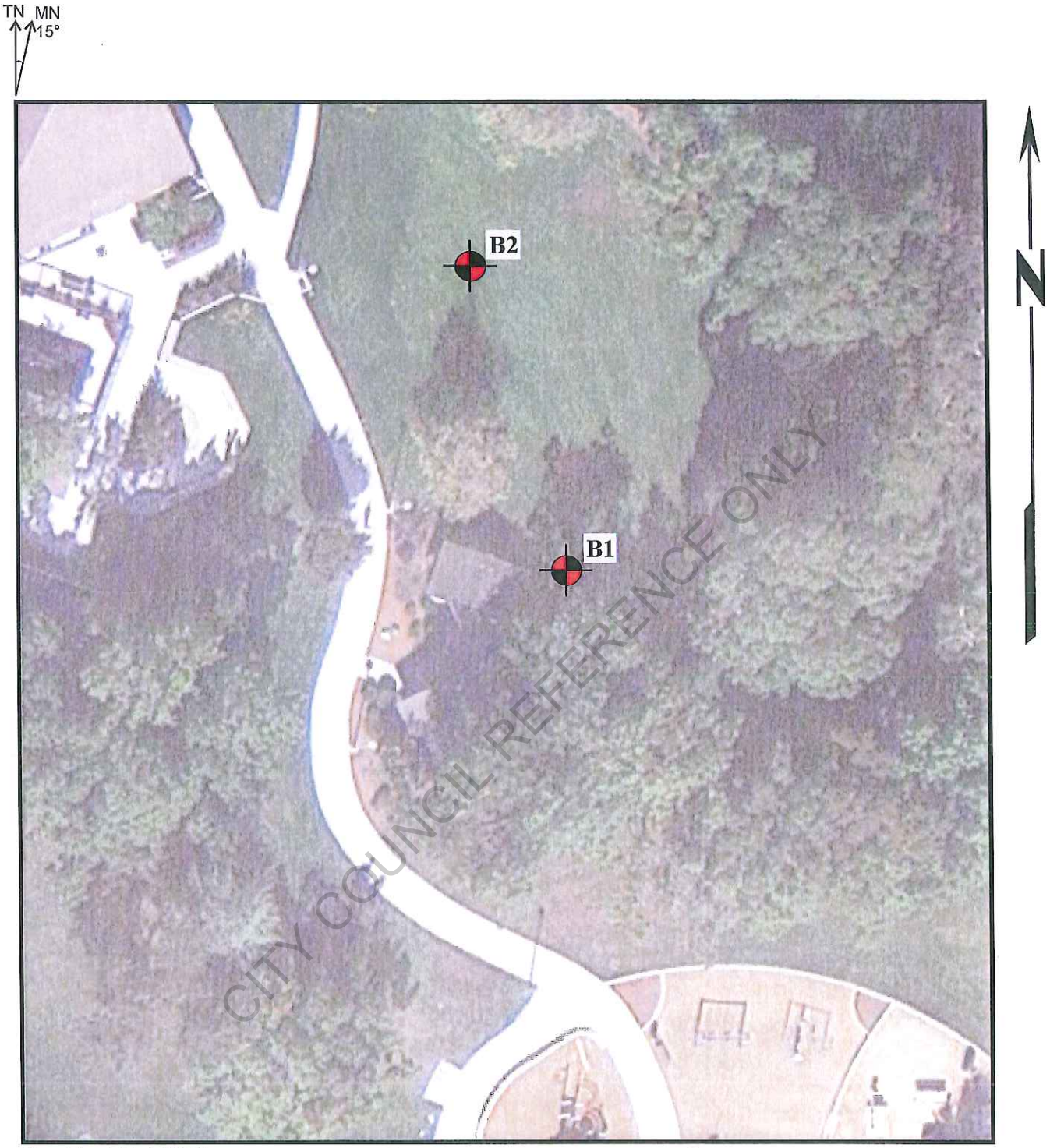


1 0 1 Mile

1 0 1 Kilometer

Earth Systems Pacific	Bathroom & Meeting Room Replacement Warm Springs Community Park Fremont, California	Site Location Map SH-11811-SA

Figure 2



Base: Google Earth (2012)

40 0 40

Approximate Scale in Feet

B2 **Approximate Boring Location**

Earth Systems Pacific	**Bathroom & Meeting Room Replacement** **Warm Springs Community Park** **Fremont, California**	**Boring Location Map** **SH-11811-SA**

APPENDIX A

Boring Logs

CITY COUNCIL REFERENCE ONLY

Earth Systems Pacific

LOGGED BY: C. Cecile
DRILL RIG: B-61
AUGER TYPE: 8" Hollow Stem

Boring No. 1
PAGE 1 OF 1
JOB NO.: SH-11811-SA
DATE: 07/5/12

Warm Springs Community Park
Bathroom and Meeting Room Replacement
47300 Fernald Street
Fremont, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 12 IN.	POCKET PEN (t.s.f)
0	CL		Dark gray lean CLAY, moist, very stiff							
1										
2										
3				1.0–2.5	1–1	■	106.8	18.3	32	
4										
5			–hard, becoming slightly silty, trace gravel PI=15, LL=30	3.5–5.0	1–2	■	112.3	16.1	38	4.5
6	CL		Brown lean CLAY, moist, hard, silty							
7										
8										
9										
10				8.5–10.0	1–3	●	12.3		30	>4.5
11										
12										
13										
14			–very stiff							
15				13.5–15.0	1–4	●	11.6		26	
			End of Boring @ 15.0' No Groundwater was encountered							
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										

LEGEND: ■ 2.5" Mod Cal Sample ○ Bulk Sample ▭ 2.0" Mod Cal Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

CITY COUNCIL REFERENCE ONLY

Earth Systems Pacific

Boring No. 2

LOGGED BY: C. Cecile
DRILL RIG: B-61
AUGER TYPE: 8" Hollow Stem

PAGE 1 OF 1
JOB NO.: SH-11811-SA
DATE: 07/5/12

Warm Springs Community Park
Bathroom and Meeting Room Replacement
47300 Fernald Street
Fremont, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 12 IN.	POCKET PEN (t.s.f)
0	CL		Dark gray lean CLAY, moist, very stiff C=1,200psf, ø=11°	0.0–5.0		○				
1										
2										
3				1.0–2.5	2–1	▬	111.1	15.9	21	1.75
4										
5				3.5–5.0	2–2	▬	90.5	27.0	22	2.0
6	CL		Brown lean CLAY, moist, stiff							
7										
8										
9										
10				8.5–10.0	2–3	●	16.8		15	1.25
11										
12										
13										
14										
15				13.5–15.0	2–4	●	17.7		12	1.5
			End of Boring @ 15.0' No Groundwater was encountered							
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										

LEGEND: ▬ 2.5" Mod Cal Sample ○ Bulk Sample ▭ 2.0" Mod Cal Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

CITY COUNCIL REFERENCE ONLY

APPENDIX B

Laboratory Test Results

CITY COUNCIL REFERENCE ONLY

Warm Springs Community Park Bathroom

SH-11811-SA
July, 2012

BULK DENSITY & MOISTURE TEST RESULTS

ASTM D 2937-10 (modified for ring liners)

SAMPLE NO.	DEPTH feet	MOISTURE CONTENT, %	WET DENSITY, pcf	DRY DENSITY, pcf
B1-1	2.0 - 2.5	18.3	126.3	106.8
B1-2	4.5 - 5.0	16.1	130.4	112.3
B1-3	9.5 - 10.0	12.3	---	---
B1-4	14.5 - 15.0	11.6	---	---
B2-1	2.0 - 2.5	15.9	128.8	111.1
B2-2	4.5 - 5.0	27.0	114.9	90.5
B2-3	9.5 - 10.0	16.8	---	---
B2-4	14.5 - 15.0	17.7	---	---

PLASTICITY INDEX TEST RESULTS

ASTM D 4318-10

SAMPLE NO.	DEPTH feet	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
B1-2	4.5-5.0	30	15	15

CITY COUNCIL REFERENCE ONLY

Warm Springs Community Park Bathroom SH-11811-SA

DIRECT SHEAR

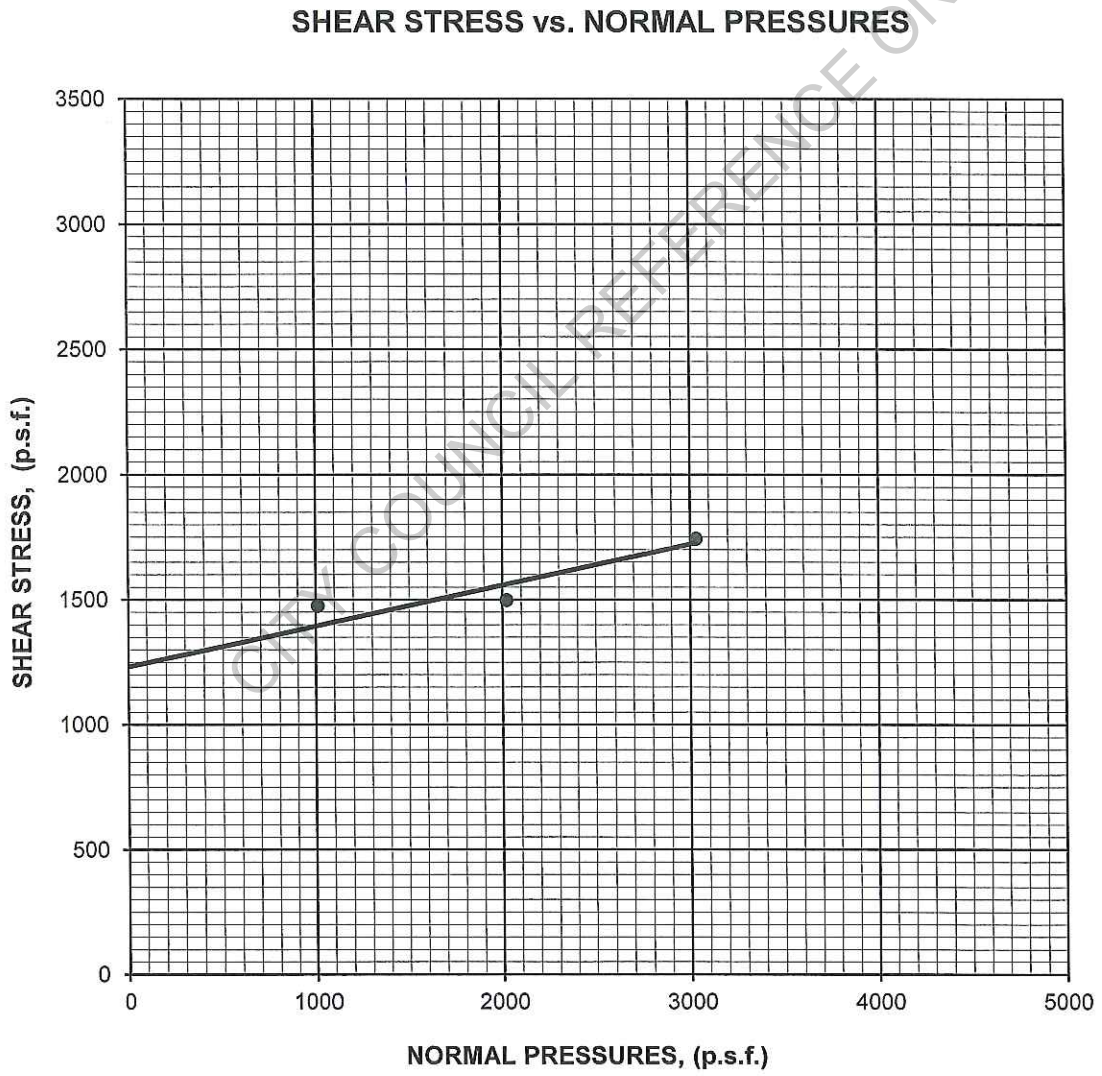
ASTM D 3080/D3080M-11

July, 2012

B2-1
Dark brown lean CLAY (CL)

INITIAL AVG DRY DENSITY: 111.1 pcf
INITIAL AVG MOISTURE CONTENT: 15.9 %
PEAK SHEAR ANGLE (Ø): 11°
COHESION (C): 1200 psf

CITY COUNCIL REFERENCE ONLY



Warm Springs Community Park Bathroom SH-11811-SA

DIRECT SHEAR continued

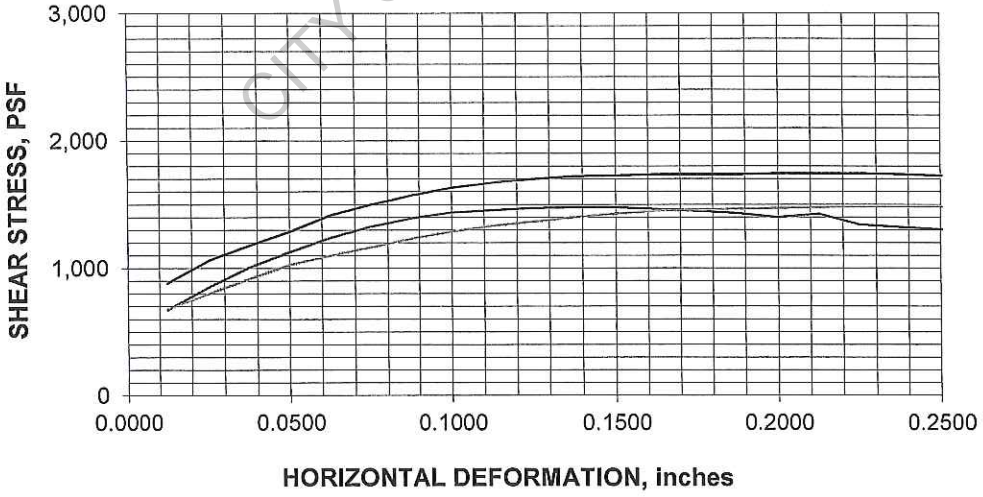
ASTM D 3080/D3080M-11

July, 2012

B2-1

Dark brown lean CLAY (CL)

0 SPECIFIC GRAVITY: 2.65 (assumed)

SAMPLE NO.:	1	2	3	AVERAGE
INITIAL				
WATER CONTENT, %	14.1	15.9	17.8	15.9
DRY DENSITY, pcf	112.7	111.1	109.5	111.1
SATURATION, %	80.0	86.4	92.5	86.3
VOID RATIO	0.467	0.488	0.510	0.488
DIAMETER, inches	2.37	2.37	2.37	
HEIGHT, inches	1.000	1.000	1.000	
AT TEST				
WATER CONTENT, %	17.7	19.4	20.4	19.1
DRY DENSITY, pcf	115.6	122.7	123.7	120.6
SATURATION, %	100.0	100.0	100.0	100.0
VOID RATIO	0.430	0.348	0.337	0.372
HEIGHT, inches	0.987	0.952	0.941	

CITY COUNCIL REFERENCE ONLY