

DESIGN-BUILD CONSTRUCTION AGREEMENT
(PROJECT: West Side Tanks and Pump Station Operations Crew Facility)

This Design-Build Construction Agreement ("Agreement") is made and entered into this ____ day of _____, 20____, by and between the City of Roseville, a municipal corporation ("CITY") and Diede Construction, Inc., a California corporation ("CONTRACTOR").

RECITALS

WHEREAS, CITY has issued Request for Proposals #08-089 pursuant to which CITY solicited proposals from design-build contractors to construct the West Side Tanks and Pump Station Operations Crew Facility project ("Project"); and

WHEREAS, CONTRACTOR has submitted a Proposal, dated June 10, 2021 attached hereto and made a part hereof as Exhibit F, and CITY has selected CONTRACTOR to provide design and construction services as set forth in this Agreement; and

WHEREAS, CONTRACTOR is ready, willing and able to perform the aforementioned services required in accordance with the terms and conditions of this Agreement; and

NOW, THEREFORE, CITY and CONTRACTOR agree as follows:

ARTICLE 1

DEFINITIONS

1.1 "Applicable Laws" means all laws, codes, ordinances, rules and regulations of governmental authorities having jurisdiction over the Site and/or the Work.

1.2 "Application for Payment" means the document prepared by CONTRACTOR and submitted to CITY showing CONTRACTOR's entitlement to progress payments, the requirements of which are more fully described in Section 5.3 hereof.

1.3 "Architect/Engineer" means a licensed professional(s) (and/or entity(ies)) retained by CONTRACTOR, with the approval of CITY, who provides architectural, design and/or engineering services as may be required by the Work. The Architect/Engineer shall be registered in the State of California and the architect and/or engineer of record for the Work pursuant to their design responsibilities. The Architect/Engineer shall be the Architect/Engineer(s) stated in the Proposal, unless substituted by CONTRACTOR based upon CITY's written pre-approval.

1.4 "Authorized Representatives" means the Design-Build Team and those individuals appointed by CITY and CONTRACTOR from time to time in accordance with the provisions of Section 3.1.1.

1.5 "Business Day" means any day when the office of the City Clerk of the City of Roseville is open for business.

1.6 "Certificate of Substantial Completion" means a certificate prepared by CONTRACTOR in accordance with Section 5.12 and forwarded to CITY.

1.7 "Certificate of Final Completion" means a certificate prepared by CONTRACTOR and forwarded to CITY stating that the Project is finally complete and that CONTRACTOR is entitled to Final Payment in accordance with Article 5 hereof.

1.8 "Change Directive" means a written order signed by CITY directing a change in the Work. A Change Directive shall state a proposed basis for adjustment, if any, in the GMP or Schedule. CITY may order changes in the Work within the general scope of the Contract, and a Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

1.9 "Change Order" means a written order signed by CONTRACTOR and CITY authorizing a change in the Work, which also may adjust the GMP and/or the Schedule, and which shall constitute a Modification. The GMP and/or Schedule may be changed only by Change Order.

1.10 "Change Proposal" means a proposal for a Change Order submitted by CONTRACTOR to CITY, either at the request of CITY, or at CONTRACTOR's own initiative.

1.11 "Construction Allowance Items" [reserved]

1.12 "Construction Documents" means the plans and specifications prepared by the Design-Build Team for the Project, approved by CITY, and incorporated into this Agreement by reference after such approval, to be used to construct the Project. The Construction Documents shall set forth in detail all items necessary to complete the construction of the Project in accordance with the Contract Documents (subject to their completion following commencement of the Construction Phase). All amendments and modifications to the Plans and Specifications must be approved by CITY prior to incorporation into this Agreement. CONTRACTOR's attention is hereby directed to the confidentiality requirements of Section 2.2.

1.13 "Construction Notice to Proceed" means the notice given by CITY to CONTRACTOR stating that the Site is available to CONTRACTOR and directing CONTRACTOR to commence construction of the Project in accordance with Section 4.2.1.

1.14 "Construction Phase" means the period beginning with the issuance of the Construction Notice to Proceed and ending on the date of Final Completion of the Project.

1.15 "Construction Work" means that portion of the Work consisting of the provision of labor, materials, equipment and services in connection with the construction of the Project as set forth in the Contract Documents.

1.16 "Contingency Costs" means those items of Cost of the Work attributable to a contingency for which CITY is responsible and which are payable by CITY to CONTRACTOR pursuant to a Change Order as provided in Article 6.

1.17 "Contract Documents" means this 1) Agreement, 2) its Exhibits, and 3) the Construction Documents, all of which, together with this Agreement, form the entire integrated agreement between CITY and CONTRACTOR. In the event of a conflict between any of these documents, this Agreement controls, followed by its Exhibits.

1.18 "Contract" or "Agreement" means this Design-Build Construction Agreement, its exhibits, and all amendments and/or modifications hereto executed by the parties.

1.19 "Contract Time" means the period of time, including authorized adjustments, allotted in the Schedule for the Final Completion of the Work.

1.20 "CONTRACTOR" means the individual or entity identified in the preamble to this Agreement.

1.21 "CONTRACTOR Event of Default" shall have the meaning set forth in Section 12.1 hereof.

1.22 "Cost of the Work" consists of those items of Work, which are paid for by CITY to CONTRACTOR, and consist of those categories of costs set forth as allowable on Exhibit A.

1.23 "CPM" means a critical path method schedule in the form of precedents, networks and time sequences.

1.24 "Day" or "Days" means calendar days.

1.25 "Delay Costs" means those items of Cost of the Work attributable to an Excusable Delay for which CITY is responsible and which are payable by CITY to CONTRACTOR pursuant to a Change Order as provided in Article 6.

1.26 "Design-Build Team" includes the following: Architect/Engineer; CONTRACTOR; and/or others as coordinated by CONTRACTOR and CITY.

1.27 "Design Development Documents" means the drawings, specifications and other documents prepared by the Design-Build Team for CITY's review and approval prior to the preparation of the Construction Documents. The Design Development Documents shall illustrate the scale and relationship of Project components, outline the nature and structural exterior and three dimensional scale of the Project and shall fix and describe in detail the configuration and character of the Project concerning all items of the Project necessary for the complete and final preparation of the Construction Documents in accordance with the requirements of the Contract Documents, including architectural and electrical systems, materials and such other elements as may be appropriate. CONTRACTOR's attention is hereby directed to the confidentiality requirements of Section 2.2.

1.28 "Design Materials" means any and all documents, shop drawings, electronic information, data, plans, drawings, sketches, illustrations, specifications, descriptions, models and other information developed, prepared, furnished, delivered or required to be delivered by CONTRACTOR to CITY under the Contract Documents or developed or prepared by CONTRACTOR specifically to discharge its duties under the Contract Documents. CONTRACTOR's attention is hereby directed to the confidentiality requirements of Section 2.2.

1.29 "Design Work" means that portion of the Work consisting of the design services required to be provided in connection with the design of the Project as set forth in the Contract Documents, which shall be performed consistent with the standards of professional care set forth herein.

1.30 "Excusable Delay" shall have the meaning set forth in Section 4.4.2 hereof.

1.31 "Fee", if applicable, means the fee payable to CONTRACTOR pursuant to this Contract and as part of the GMP, if shown on Exhibit A attached hereto.

1.32 "Final Completion" means the point at which the Work has been completed in accordance with the terms and conditions of the Contract Documents, including completion of all Punch list items.

1.33 "Force Majeure" means labor dispute (excluding labor shortage), fire, unusual delay in transportation or delivery, unavoidable casualty, flood (assuming CONTRACTOR has taken reasonable precautions), earthquake, epidemic, civil disturbance, war, freight embargo, riot, sabotage (by persons other than CONTRACTOR or Subcontractors), material shortage or any other similar act or condition, in each case only to the extent the event in question is beyond the reasonable control of and without the fault or negligence of CONTRACTOR.

1.34 "Governmental Approvals" means those CITY approvals necessary for the completion of the Project, including, but not limited to, modification of existing zoning, vacation of certain streets and/or alleys, and modifications to or variances from applicable building or zoning regulations.

1.35 "Guaranteed Maximum Price" or "GMP" means the amount set forth on Exhibit A hereto, which may be increased or decreased in accordance with the provisions of the Contract Documents.

1.36 "Hazardous Materials" means those items identified on Exhibit C hereto.

1.37 "Indemnified Parties" includes, but is not limited to, CITY, its agents, officers, employees, and volunteers.

1.38 "Liquidated Damages" means the damages payable by CONTRACTOR to CITY in the event CONTRACTOR does not achieve Final Completion of the Project by the date required on the Schedule, as adjusted, as more fully described in Section 4.6 hereof.

1.39 "Modification" means an amendment to this Agreement executed by the parties after the date hereof.

1.40 "Party" shall mean CITY or CONTRACTOR individually, and **"Parties"** shall mean CITY and CONTRACTOR collectively.

1.41 "Payment and Performance Bonds" means the payment bond and performance bond issued by an admitted Surety covering the faithful performance and completion of the Construction Work, including payment for all materials and labor furnished or supplied in connection with the Construction Work, by CONTRACTOR. Such bonds shall be in the form described in Exhibit E.

1.42 "Project" means the design and construction of the project described in the Recitals, together with all on-site infrastructure, site improvements and appurtenances to be designed, if any, constructed and installed in connection therewith, as more fully set forth and described in the Contract Documents and as required thereby or reasonably inferred therefrom.

1.43 "Project Manager" means the person assigned by the director of the CITY administering department to monitor the Project and Work.

1.44 "Punch List" means those minor items of Work to be completed after Substantial Completion and prior to Final Completion, which do not prevent the Project from being used for the purpose for which it is intended and which will not prevent beneficial occupancy or use.

1.45 "Retention" means the amount withheld from progress payments from CITY to CONTRACTOR from time to time, as more fully described in Article 5 hereof.

1.46 "Schedule" means the schedule pursuant to the Proposal and/or other Contract Documents to which CONTRACTOR has agreed to complete the Work. The Schedule shall be adjusted pursuant to the provisions of the Contract Documents. In the event the Schedule is not contained within the Proposal, then CONTRACTOR shall provide to CITY, within fifteen (15) days of issuance of a notice to proceed by CITY, with a complete milestone schedule identifying, among other things, critical paths (if any) and total calendar days until Substantial and Final Completion. In the event the Schedule is contained in the Proposal, the start of the Schedule shall be adjusted by the CONTRACTOR to reflect the date of the Notice To Proceed.

1.47 "Scheduled Date of Substantial Completion" means the date CONTRACTOR has agreed to achieve Substantial Completion of the Project in accordance with the Schedule, as adjusted.

1.48 "Scope Change Costs" means those items of Cost of the Work attributable to changes in scope of the Work and payable by CITY to CONTRACTOR pursuant to a Change Order, as provided in Article 6.

1.49 "Separate Contractors" means those individuals or entities (including, but not limited to, concessionaires) who have entered into arrangements with CITY for the provision of labor, materials or other services in connection with the Project.

1.50 "Site" is the real property on which the Project will be located.

1.51 "Subcontract" means an agreement between CONTRACTOR and another person or entity engaged to perform a portion of the Work.

1.52 "Subcontractor" means an individual or entity who has entered into an agreement with CONTRACTOR or another Subcontractor for the provision of labor, materials or other services required to be performed by CONTRACTOR under the Contract Documents.

1.53 "Substantial Completion" means the stage in the progress of the Work when the Work or a designated portion thereof is sufficiently complete in accordance with the Contract Documents so that CITY may use the Project for its intended purpose.

1.54 "Surety" means one or more issuers of the Payment and Performance Bonds, each of which shall be admitted and licensed to do business in the State of California.

1.55 "Unexcusable Delay" shall have the meaning set forth in Section 4.4.

1.56 "Work" or "Scope of Work" means the Project, inclusive of all labor, materials and services required to be performed or provided by CONTRACTOR officers, employees, agents, Subcontractors or Suppliers pursuant to the provisions of this Agreement and its Exhibits (including, the entirety of Exhibit F).

ARTICLE 2 SCOPE OF WORK / PROJECT REQUIREMENTS

2.1 Performance of Work. CONTRACTOR shall perform the Work in accordance with this Agreement. CONTRACTOR covenants and agrees that it shall be responsible for performing and completing, and for causing all Subcontractors (including Architect/Engineer) to perform and complete, the Work in accordance with the Contract Documents, standard professional and trade practices, and Applicable Laws. CONTRACTOR will retain an Architect/Engineer for design services required by the Work and the Architect/Engineer shall be the engineer of record. CONTRACTOR covenants that the Work and the materials provided thereunder shall be appropriate for the purposes stated in the Request for Proposal and Proposal. Although it is the responsibility of CONTRACTOR to conform the Work to Applicable Laws at all times, to the extent there is a change in one or more Applicable Laws after the date of execution of this Contract, and such change has the effect of increasing the cost or time of performance of the Work, such change may be the subject of a Change Order under the provisions of Article 6 hereof.

2.1.1. Noise and Night Work. CONTRACTOR shall comply with CITY's noise ordinance.

2.2 Professional Standard; Ownership of Documents.

2.2.1 Standards of Performance. The Work shall be performed by CONTRACTOR in accordance with the professional standards applicable to projects, buildings or work of complexity, quality and scope comparable to the Work and the Project. CONTRACTOR may make such additions or substitutions to personnel and responsibilities as it deems necessary or appropriate in order to carry out its responsibilities hereunder, provided such personnel shall be suitably qualified. Nothing in this Agreement shall be construed to create any contractual liability with CITY toward any Subcontractor.

2.2.2 Design Documents and Materials, and Confidentiality.

2.2.2.1 CITY shall have unlimited rights to copy and use in connection with the Project all Design Materials, including the right to use same on the Project at no additional cost to CITY, regardless of degree of completion, provided that said services performed have been fully paid for as required by the terms of this Agreement. CONTRACTOR and its Subcontractors shall keep all design documents confidential, and shall not disclose such documents except as may be required in performance of the Work or pursuant to legal process.

2.3 Local Conditions; Environmental Site Conditions.

2.3.1 Local Conditions. CONTRACTOR represents that it has taken steps reasonably necessary to ascertain the nature and location of the Work, and that it has investigated and satisfied itself as to the general and local conditions which are applicable to the Work such as (a) conditions bearing on transportation, disposal, handling and storage of materials; (b) the availability of labor, water, power and roads; (c) normal weather conditions; (d) observable physical conditions at the Site; (e) the surface conditions of the ground; and (f) the character of equipment and facilities needed prior to and during the performance of the Work. To the extent CONTRACTOR encounters subsurface or concealed conditions which differ materially from that actually known by CONTRACTOR on the date of this Agreement or from those ordinarily found to exist and generally recognized as inherent in the activities of the character provided in the Contract Documents; then CONTRACTOR shall give notice to CITY promptly before conditions are disturbed and in no event later than two (2) Days after the first observance of the conditions if a Change Order is contemplated by CONTRACTOR due to such condition. Such materially different conditions may entitle CONTRACTOR to an equitable adjustment in the GMP and/or Schedule pursuant to the Change Order provisions of this Agreement.

2.3.2 Hazardous Materials. The Parties' agreement as to the handling of Hazardous Materials discovered at the Site (and not brought there by CONTRACTOR or any Subcontractor) is set forth in Exhibit C hereto, and the only duties and responsibilities of CONTRACTOR in connection therewith are as therein specified, notwithstanding any other provision of this Agreement.

2.4 Design Development Documents and Construction Documents.

2.4.1 General. The Design-Build Team understands that all construction documents, working drawings and specifications ("Submittals") must be coordinated with, and approved by, CITY prior to construction. CONTRACTOR shall allow CITY a minimum of fourteen (14) days for review of Submittals and corrections made thereto. CONTRACTOR shall work with the Design-Build Team to prepare, for the approval of CITY, working drawings and specifications setting forth in detail the requirements for the construction of the Project in its entirety including the necessary bidding information. CITY's review of the Design Development Documents and the Construction Documents shall not relieve CONTRACTOR from its responsibilities under this Agreement, or be deemed to be an approval or waiver by CITY of any deviation from, or of CONTRACTOR's failure to comply with, any provision or requirement of the Contract Documents, unless such deviation or failure has been identified as such in writing in the document submitted for approval by CONTRACTOR and approved by CITY. CONTRACTOR shall comply with all CITY construction standards as deemed applicable by the CITY. CONTRACTOR shall provide CITY with a complete, accurate, full size, and current set of as-built drawings in a hard copy acceptable to City prior to Final Completion.

2.4.2 Reliance on Approvals. CONTRACTOR shall be entitled to rely on the approvals of CITY with respect to the Design Materials. If CITY revokes, modifies or otherwise changes in a material way its approval of a given system after such system has been designed and approved, or modifies the original Scope of Work in a material manner requiring modification to one or more systems which have been designed and approved, CONTRACTOR shall be entitled to a Change Order in accordance with the provisions of Article 6 hereof, provided that prior to such approval CONTRACTOR has made CITY aware of future design decisions which may be affected by such approval. No Change Order shall be issued to the extent such modification is due to the fault or neglect of CONTRACTOR.

2.4.3 Review of Contract Documents and Field Conditions. CONTRACTOR shall take field measurements and verify field conditions and shall carefully compare such field conditions and other information known to CONTRACTOR with the Contract Documents before commencing activities. CONTRACTOR shall perform the Work in accordance with the Contract Documents and submittals approved in accordance with the procedures set forth in this Agreement.

2.5 Legal Requirements. CONTRACTOR shall comply with Applicable Laws, and shall give applicable notices pertaining thereto. Except with respect to Governmental Approvals, CONTRACTOR shall prepare and file all documents required to obtain the necessary approvals of governmental authorities having jurisdiction over the Work and/or the Project and shall secure and pay for permits and governmental fees, licenses and inspections necessary for the proper execution of the Work and completion of the Project. Notwithstanding the foregoing, CITY has informed CONTRACTOR that fees in connection with building permits, street use permits, and similar permits relating to construction will be waived and are not to be included in the GMP. If and to the extent charges in the future for such permits are imposed in the future, such charges shall be paid by CITY, or shall be the subject of a Change Order to the Contract in accordance with the Change Order provisions of this Agreement.

2.6 Services and Facilities.

2.6.1 General. CONTRACTOR shall provide everything required for the orderly progress and proper execution and completion of the Work and the Project in accordance with the requirements of the Contract Documents, whether temporary or permanent and whether or not incorporated or to be incorporated into the Work, including, but not limited to, services, labor, materials, equipment, furnishings, tools, construction equipment and machinery, utilities, transportation and other facilities and services.

2.6.2 Supervision. CONTRACTOR shall supervise and direct the Work in accordance with its best skill and attention. CONTRACTOR shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures. CONTRACTOR shall be responsible to CITY for the acts and omissions of, and whenever this Contract refers to the negligence, fault or omission of CONTRACTOR, such term shall include the negligence, fault or omission of, CONTRACTOR's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work under an agreement with CONTRACTOR. CONTRACTOR shall not be relieved of obligations to perform the Work in accordance with the Contract Documents by tests, inspections or approvals required or performed by persons other than CONTRACTOR.

2.6.3 Coordination. CONTRACTOR shall coordinate construction requirements with governmental agencies, utilities, and all other parties either involved in infrastructure improvements or otherwise affected by the design and construction requirements.

2.6.3.1 Design-Build Development Coordination. CONTRACTOR understands and agrees that all Design Development Documents and time schedules prepared by Architect/Engineer must be coordinated with CONTRACTOR and CITY. CONTRACTOR shall participate and provide recommendations in the development of the drawings and other documents to fix and describe the size and character of the Project in its entirety as to structural, and electrical systems, materials and other essentials as may be necessary according to good engineering and architectural practice.

2.6.3.2 Construction Documents Coordination. [reserved]

2.6.4. Cooperation. CONTRACTOR shall cooperate with the Architect/Engineer, and CITY's financial, design and construction consultants and all other designated representatives during the design and construction of the Project.

2.6.5 Management. CONTRACTOR shall implement suitable management systems and work plans for the Project relative to Project safety, quality assurance and managing and controlling the Work.

2.6.6 Reports. CONTRACTOR shall prepare and submit to CITY monthly progress reports on the Work accomplished during the previous monthly period, which reports shall be prepared in a manner and in a format reasonably acceptable to CITY. Such reports shall be

furnished at the time of submission of each monthly Application for Payment. As part of such report, CONTRACTOR shall provide an updated Schedule, including CPM, if any, illustrating the progress that has been made, by reference to the initial CPM, and specifying whether the Work is on schedule or behind schedule and actions being taken to correct Schedule slippage. The monthly report shall also set forth CONTRACTOR's projected progress for the forthcoming month.

2.7 Warranty. CONTRACTOR warrants to CITY that any and all materials, equipment and furnishings incorporated in the Work will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective by CITY at its sole discretion.

CONTRACTOR shall warranty the Work for a period of one-year commencing upon recording of the notice of completion. If within this one-year warranty period any of the Work is found to be defective or not in accordance with the requirements of the Contract Documents, CONTRACTOR shall correct it promptly after receipt of written notice from CITY to do so. CITY shall give such notice promptly after discovery of the condition. CONTRACTOR shall bear the cost of correction.

CONTRACTOR's attention is directed to Section 9.3 below regarding Warranty Bond requirements.

2.8 Taxes. CONTRACTOR shall pay, as Cost of the Work, all existing and future applicable federal, state and local sales, consumer, use and similar taxes, whether direct or indirect, relating to, or incurred in connection with, the performance of the Work (excluding taxes based on CONTRACTOR's income). In the event CONTRACTOR is obligated to pay any new or increased taxes or duties adopted after the date hereof, the amount of such new or increased taxes shall increase the GMP pursuant to the Change Order provisions of this Contract. In the event CONTRACTOR receives the benefit of a tax exemption or tax reduction taking effect after the date hereof, the amount of such exemption or reduction shall decrease the GMP pursuant to the Change Order provisions of this Contract

2.9 Access by CITY. CONTRACTOR shall afford CITY and its authorized designees access to the Project Site at all times, subject to reasonable prior notice for access outside of normal business hours.

2.10 Use of Site. CITY shall be permitted beneficial use of the Work.

2.11 Patents, Trademarks, Copyrights. CONTRACTOR shall pay, as a Cost of the Work, all-applicable royalties and license fees on any matters arising in connection with the Work. CONTRACTOR shall defend all suits or claims for infringement of patent, trademark, and copyrights against the Indemnified Parties, and shall save the Indemnified Parties harmless from loss on account thereof for any and all matters arising in connection with the Work or the Project (such costs to be paid as Cost of the Work), except with respect to any particular design process

or the product of a particular manufacturer or manufacturers specified and required by CITY, other than pursuant to the recommendation or suggestion of CONTRACTOR or a subcontractor; provided however, if CONTRACTOR has reason to believe that the design, process or product so specified is an infringement of a patent, CONTRACTOR shall be responsible for any loss resulting unless CONTRACTOR has provided CITY with prompt written notice of CONTRACTOR's belief, and CITY has nevertheless elected to go forward with such design, process or product so specified.

2.12 Rubbish; Debris; Cleanup. During the performance of all on-site Work, CONTRACTOR shall at all times, as a Cost of the Work, keep the Site and adjacent streets, properties and sidewalks reasonably free from waste materials, debris and/or rubbish, and shall employ adequate dust control measures. If accumulation of such materials, debris, rubbish or dust constitutes a nuisance or safety hazard or is otherwise objectionable in the reasonable opinion of CITY, CONTRACTOR shall promptly remove them. Upon Substantial Completion of the Work, or any portion or component thereof, CONTRACTOR shall remove from the Site, or applicable portion thereof, all tools, construction equipment, machinery, surplus materials, waste materials and rubbish and shall leave the Site in a "broom clean" condition. If CONTRACTOR fails to clean up as provided in the Contract Documents, CITY may do so and the cost thereof shall be charged to CONTRACTOR as a Cost of the Work.

2.13 Permits, Fees and Notices. Unless otherwise provided in the Contract Documents, and subject to the provisions of Section 2.5 hereof, CONTRACTOR shall secure all permits, governmental fees, licenses and inspections necessary for the proper execution and completion of the Work. To the extent there is a change in the type or cost of any of such permits, fees, licenses or inspection occurring after execution of this Agreement, there shall be an equitable adjustment in the GMP and Schedule on account of such change in accordance with the Change Order provisions. CONTRACTOR shall comply with and give notices required by Applicable Laws.

2.14 Shop Drawings, Product Data, Samples and Other Submittals.

2.14.1 Documents and Samples at the Site. From and after commencement of the Construction Work, CONTRACTOR shall maintain at the site one record copy of the Construction Documents, and any and all amendments thereto, in good order and marked to record changes and selections made during the Construction Phase. In addition, CONTRACTOR shall maintain at the site approved shop drawings, product data, samples and similar required submittals. These shall be provided to CITY upon completion of the Work.

2.14.2 Shop Drawings, Product Data, Samples and Other Submittals.

2.14.2.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by CONTRACTOR, a Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

2.14.2.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by CONTRACTOR to illustrate materials or equipment for some portion of the Work.

2.14.2.3 Samples are physical examples, which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

2.14.2.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required the way CONTRACTOR proposes to conform the construction to the Construction Documents.

2.14.2.5 Submission of items listed in section 2.14.2.4. [reserved]

2.14.3 Responsibility. CONTRACTOR shall not be relieved of responsibility for the deviations from requirements of the Contract Documents by CITY's approval of Shop Drawings, Product Data, Samples or similar submittals unless CONTRACTOR has specifically informed CITY of such deviation at the time of the submittal and CITY has given written approval to the specific deviation. CONTRACTOR shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by CITY's approval thereof.

2.15 Tests and Inspections

2.15.1 Initial Tests and Inspections. Tests, inspections and approvals of portions of the Construction Work shall be made as required by the Contract Documents, Applicable Laws or normal construction practices and/or as directed by CITY. Unless otherwise provided, CONTRACTOR shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to CITY, or with the appropriate public authority. The costs of such tests, inspections and approvals shall be a cost paid by CONTRACTOR. CONTRACTOR shall give CITY timely notice of when and where tests and inspections are to be made so that CITY may observe such procedures. All costs of tests, inspections or approvals imposed upon CONTRACTOR by changes in Applicable Laws occurring after execution of this Agreement shall be an increase to the GMP in accordance with the Change Order provisions herein.

2.15.2 Additional Tests and Inspections. If CITY, or any other public authority having jurisdiction, determines that portions of the Construction Work require additional testing, inspection or approval beyond that required by subsection 2.15.1, CITY will instruct CONTRACTOR to make arrangements for such additional testing, inspection or approval by an entity acceptable to CITY, and CONTRACTOR shall give timely notice to CITY of when and where tests and inspections are to be made so CITY may observe such procedures. If such additional tests and/or inspections reveal failure of the portions of the Work to comply with the requirements of the Contract Documents, the costs of such tests and required correction shall be paid as a Cost of the Work, subject to the limitations set forth in Section 2.22 hereof. If the additional tests and/or inspections show that the portions of the Work comply with the

requirements of the Contract Documents, the costs thereof shall be an increase to the GMP in accordance with the Change Order provisions of this Agreement.

2.15.3 Required Certificates. Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by CONTRACTOR and promptly delivered to CITY.

2.1 5.4 Timing of Testing. Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

2.16 Execution, Correlation and Intent.

2.16.1 Execution of Agreement. Execution of this Agreement by CONTRACTOR is a representation that CONTRACTOR has visited the Site, become familiar with the local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

2.16.2 Intent of Contract Documents. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by CONTRACTOR. The Contract Documents are complementary and what is required by one shall be as binding as if required by all; performance by CONTRACTOR shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results.

2.16.3 Organization of Materials. Organization of the Design Materials into divisions, sections and articles, and arrangement of drawings does not necessarily control CONTRACTOR in dividing the Construction Work among Subcontractors or in establishing the extent of Construction Work performed by any trade.

2.16.4 Meaning of Words. Unless otherwise stated in this Agreement, words which have well-known technical or construction industry meanings are used in accordance with such recognized meanings.

2.17 Labor and Materials; Liens (Stop Payment Notice Claims); Indemnity. Unless otherwise provided in the Contract Documents, CONTRACTOR shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. CONTRACTOR shall enforce strict discipline and good order among CONTRACTOR's employees, subcontractors, and other persons carrying out the Work. CONTRACTOR shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

CONTRACTOR shall not permit any Subcontractor, materialman, or laborer to place liens on the Project covering any portion of the Work for which CITY has made payment to CONTRACTOR. If any liens (e.g., stop payment notice claims) are imposed, CITY may

withhold payment in the amount of 125% of the claim until such time an unconditional release is provided in a form satisfactory to CITY. CONTRACTOR shall indemnify, defend, and hold harmless CITY regarding any claim or lien that proceeds to, or is the subject of litigation. CITY may withhold payment(s) pending compliance with this provision.

2.18 Cutting and Patching.

2.18.1 Cutting and Patching of the Work. CONTRACTOR shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly.

2.18.2 Damage to Work of CITY or Separate Contractors. CONTRACTOR shall not damage or endanger a portion of the completed Work, fully or partially completed construction of CITY, or work or construction by Separate Contractor(s) by cutting, patching or otherwise altering such construction or work, or by excavation. CONTRACTOR shall not cut or otherwise alter such construction by CITY or a Separate Contractor except with written consent of CITY and of such Separate Contractor, such consent not to be unreasonably withheld.

2.19 Uncovering of Construction Work.

2.19.1 Uncovering. If a portion of the Construction Work is covered contrary to CITY's written request to observe such work prior to it being covered or contrary to requirements of the Contract Documents, it must, if directed in writing by CITY, be uncovered for CITY's observation and be replaced without change in the Schedule or GMP. The costs of such uncovering and replacement shall be Cost of the Work, subject to the limitation set forth in Section 2.22 hereof.

2.19.2 Covering of Work Requested to be Observed. If a portion of the Construction Work has been covered which CITY has not specifically requested to observe prior to it's being covered, CITY may request to see such Construction Work and it shall be uncovered by CONTRACTOR. If such Construction Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be charged to CITY and shall increase the GMP. An appropriate time extension shall also be given. If such Construction Work is not in accordance with the Contract Documents, CONTRACTOR shall pay such costs as Cost of the Work, unless such condition was caused by CITY or a Separate Contractor in which event CITY shall be responsible for payment of such costs by appropriate Change Order, and an appropriate time extension shall also be given.

2.20 Correction of Work.

2.20.1 Work Rejected by CITY. CONTRACTOR shall promptly correct Construction Work rejected by CITY or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. CONTRACTOR shall bear the costs of correcting such rejected Construction Work, as a Cost of the Work, including additional testing and inspection and compensation for services and expenses of CITY made necessary thereby.

2.20.2 [Intentionally deleted].

2.20.3 Removal of Work. CONTRACTOR shall remove from the Site portions of the Construction Work, which are not in accordance with the requirements of the Contract Documents and are neither corrected by CONTRACTOR nor accepted by CITY. The costs incurred in removing such Work shall be a Cost of the Work, subject to the limitation set forth in Section 2.22 hereof.

2.20.4 Failure to Correct Nonconforming Work. If CONTRACTOR fails to correct nonconforming Construction Work within a reasonable time, CITY may correct it in accordance with the terms of this Agreement. If CONTRACTOR does not proceed with correction of such nonconforming Construction Work within a reasonable time fixed by written notice from CITY, CITY may remove it and store the salvageable materials or equipment at CONTRACTOR's expense. If CONTRACTOR does not pay costs of such removal and storage within ten (10) Days after written notice, CITY may, upon ten (10) additional Days written notice, sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by CONTRACTOR, including compensation for services and expenses made necessary thereby. If such proceeds of sale do not cover costs which CONTRACTOR should have borne, CONTRACTOR shall pay such excess to CITY. If such proceeds are in excess of the costs which CONTRACTOR should have borne, such excess shall be paid by CITY to CONTRACTOR. If such costs arise during the performance of the Work, such costs shall be charged against the Cost of the Work. If such costs arise after Substantial Completion, such costs shall be payable as provided in Section 5.1.

2.20.5 Damaged or Destroyed Work. CONTRACTOR shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of CITY or Separate Contractors caused by CONTRACTOR's correction or removal of Construction Work which is not in accordance with the requirements of the Contract Documents. If such costs arise during the performance of the Work, such costs shall be charged against the Cost of the Work. If such costs arise after Substantial Completion, such costs shall be payable as provided in Section 5.1.

2.20.6 No Limitation. Nothing contained in this section 2.20 shall be construed to establish a period of limitation with respect to other obligations which CONTRACTOR might have under the Contract Documents.

2.21 Value Engineering. CONTRACTOR shall suggest to CITY value engineering to reduce the cost of the Project, which CITY may accept at its sole discretion.

2.21.1 Subcontractors Bids. CONTRACTOR shall use its best effort to choose the highest quality of materials, equipment, component systems and types of construction for the most reasonable prices for inclusion in the Construction Documents, and make reasonable adjustments in the scope of the Project so that the total cost bid by the bidding Subcontractors will not exceed the estimate.

2.22 Acceptance of Nonconforming Work. If CITY prefers to accept Work, which is not in accordance with the requirements of the Contract Documents, CITY may do so instead of requiring its removal and correction, in which case the GMP will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

2.23 Contractor Registration. No contractor or subcontractor may work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. During the performance of this Contract, CONTRACTOR and its subcontractors shall have a continuing legal obligation to maintain current registration with the Department of Industrial Relations. CONTRACTOR is hereby notified that this Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

ARTICLE 3 CITY'S RIGHTS AND RESPONSIBILITIES

3.1. Information and Services Required of CITY.

3.1.1 CITY Designation of Authorized Representative. Both Parties shall designate, from time to time, one or more representatives authorized to act on their behalf with respect to the Project, together with the scope of his/her respective authority. CONTRACTOR shall not be entitled to rely on directions from anyone outside the scope of that person's authority as set forth in written delegations pursuant to this Agreement. Directions and decisions made by Authorized Representative(s) of CITY shall be subject to any further approval(s) required by any provisions of CITY's Charter or the Roseville Municipal Code.

3.1.2 Communication. During the term of this Contract, CITY shall communicate with Subcontractors, suppliers and others performing any part of the Work only through CONTRACTOR's Authorized Representative.

3.1.3 Governmental Approvals. CITY shall be responsible for obtaining the Governmental Approvals. Any delay in obtaining the Governmental Approvals may entitle CONTRACTOR to an equitable adjustment in the Schedule and GMP in accordance with the Change Order provisions of this Agreement, except to the extent such delay is due to the fault or neglect of CONTRACTOR.

3.2 [Intentionally deleted.]

3.3 [Intentionally deleted.]

3.4 Activities on the Site by CITY or Separate Contractors.

3.4.1 CITY's Right to Award Separate Contracts. CITY reserves the right to perform work or operations related to the Project, with CITY's own forces, and to award separate contracts to Separate Contractors in connection with other portions of the Project.

3.4.2 Integration of the Work with Separate Contractors. Following the request of CITY, CONTRACTOR shall prepare a plan in order to integrate the work performed by Separate Contractors with the performance of the Work, and shall submit such plan to CITY for approval. The plan shall be fair and reasonable for CONTRACTOR and the Separate Contractors, and CONTRACTOR shall work with the Separate Contractors to reach agreement on such plan. CONTRACTOR shall arrange the performance of the Work so that the Work and the work of the Separate Contractors are, to the extent applicable, properly integrated, jointed in an acceptable manner, and performed in the proper sequence so that any disruption or damage to the Work or to any work of Separate Contractors is avoided.

3.4.3 Coordination. CONTRACTOR shall provide for the coordination of the activities of CONTRACTOR and its Subcontractors with the activities of the Separate Contractors. CONTRACTOR shall participate with all Separate Contractors and CITY in reviewing and coordinating the schedules of the Separate Contractors with the Schedule. CONTRACTOR shall make any revisions to the Schedule deemed necessary to properly incorporate the work of the Separate Contractors with the Work. To the extent (a) the date of Substantial Completion is extended by such Schedule revision; (b) CONTRACTOR is required to perform its Work materially out of sequence, and in a manner which is not as efficient or cost effective as originally planned; or (c) the Scope of Work is increased, an equitable adjustment in the GMP and the Schedule shall be made in accordance with the Change Order provisions of this Agreement.

3.4.4 Use of Site. CONTRACTOR shall afford CITY and all Separate Contractors reasonable opportunity for storage of materials and equipment and performance of their work. CONTRACTOR shall also connect and coordinate its Work and operations with CITY and all Separate Contractors' operations as required by the Contract Documents. CITY shall direct the Separate Contractors to cooperate with CONTRACTOR and to avoid actions or omissions, which could interfere with or delay the activities of CONTRACTOR.

3.4.5 Deficiency in Work of Contractors. If part of CONTRACTOR's Work depends upon proper execution or results upon construction or operations by CITY or a Separate Contractor, CONTRACTOR shall, prior to proceeding with that portion of the Work, promptly report to the Separate Contractor and CITY apparent discrepancies or defects in such other construction that would render it unsuitable for proper execution and results by CONTRACTOR. CONTRACTOR and the Separate Contractor shall use good faith efforts to resolve any such discrepancies or defects or any disagreements relating thereto. Failure of CONTRACTOR to report such discrepancies or defects shall constitute acceptance by CONTRACTOR of the work of Separate Contractors as fit and proper to receive CONTRACTOR's Work (except as to those defects or discrepancies that are not apparent).

3.4.6 Claims Involving Separate Contractors. In the event that CONTRACTOR unnecessarily and unreasonably delays the work of Separate Contractors by not cooperating with them as required hereby, or by not affording them reasonable opportunity to perform their work as stated herein, CONTRACTOR shall, in such event, pay, as Cost of the Work, all reasonable direct incremental costs and expenses incurred by such Separate Contractors due to any such delays. If any Separate Contractor shall assert a claim or bring an action against CITY alleging

damage due to the fault or neglect of CONTRACTOR, CITY shall immediately notify CONTRACTOR, who shall defend such claim. If it is determined that CONTRACTOR was at fault, CONTRACTOR shall pay all costs of defense, including attorney's fees, as well as any resulting judgment or settlement, as a Cost of the Work.

3.5 Assignment of Separate Contracts. If CITY determines that it wishes to assign to CONTRACTOR one or more contracts between CITY and a Separate Contractor, it shall give CONTRACTOR written notice of such desire, including in such notice a copy of such contract for CONTRACTOR's review and approval. The Separate Contractor shall be fully qualified to perform the work under the to-be-assigned contract, shall possess the financial capability to perform its obligations under such to-be-assigned contract, and shall provide one hundred percent (100%) payment and performance bonds covering such work from sureties meeting the standards set forth in Section 1.53 hereof. Such contract shall contain provisions similar to those contained in CONTRACTOR's agreements with its Subcontractors with respect to liability, indemnification, retention, payment, labor, warranty, and other material items. Upon CONTRACTOR's approval of the assignment of such contract, which approval shall not be unreasonably withheld, delayed or conditioned, such Separate Contractor shall cease to be a Separate Contractor and shall thereafter be deemed to be a Subcontractor of CONTRACTOR, and the GMP shall be increased by Change Order in the amount of (a) such assigned contract, and (b) the additional Fee pursuant to the provisions of Section 6.5.1.

3.6 CITY's Right to Stop the Work. If CONTRACTOR persistently fails to correct Work which is not in accordance with the requirements of the Contract Documents and this Agreement or persistently fails to carry out the Work in accordance with the Contract Documents, CITY, by written order signed by CITY, may deliver a notice to CONTRACTOR setting forth that such a persistent and material failure is occurring and has occurred, and demanding that CONTRACTOR commence a cure of such persistent and material failure within twenty (20) Days and diligently pursue such cure thereafter. In the event that the cure is not commenced and pursued diligently, CITY may, by written notice to CONTRACTOR, order CONTRACTOR to stop the Work, or any portion thereof, until the use for such order has been eliminated; provided, however, that the right of CITY to stop the Work shall not give rise to a duty on the part of CITY to exercise this right for the benefit of CONTRACTOR or any other person or entity and shall not give rise to any liability of CITY to CONTRACTOR resulting from any delay (except to the extent that such order is found to be improper).

3.7 CITY's Right to Carry out the Work. If CONTRACTOR defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven (7) Day period after receipt of written notice from CITY to commence and diligently continue correction of such default or neglect with diligence and promptness, CITY may after such seven (7) Day period give CONTRACTOR a second written notice to correct such deficiencies within such second seven (7) Day period. If CONTRACTOR within such second seven (7) Day period after receipt of such second notice fails to commence and diligently continue to correct any deficiencies, CITY, without prejudice to other remedies CITY may have, may correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due to CONTRACTOR the cost of correcting such deficiencies, including Compensation for additional services and expenses made necessary by such default, neglect or

failure. If payments then or thereafter due to CONTRACTOR are insufficient to cover such amounts, CONTRACTOR shall pay the difference to CITY.

ARTICLE 4 TIME

4.1. Progress and Completion. Time limits stated in the Contract Documents are of the essence of this Agreement. By executing this Agreement, CONTRACTOR confirms that the Contract Time is a reasonable period of time for achieving Final Completion of the Work.

4.2 Schedule Obligations.

4.2.1 Contract Schedule and Notice To Proceed. CONTRACTOR shall provide a schedule as stated in Section 1.46. CONTRACTOR shall begin work pursuant to this Agreement and in accordance with the Schedule (as described in Exhibit F) within fifteen (15) calendar Days of the date of issuance of a Notice To Proceed by CITY, unless extended at the request made to and at the sole discretion of City. CONTRACTOR shall update said schedule to commence from the date of this Agreement, and the overall timeline shall remain consistent with the original schedule. CITY may issue the Notice To Proceed within fifteen (15) Days of full execution of this Agreement.

4.2.2 Prosecution of the Work. CONTRACTOR shall prosecute the Work so that the portion of the Work completed at any point in time shall be not less than as required by the Schedule. If the rate of progress is such that the total amount of Work and/or the degree of completion of the Project accomplished by CONTRACTOR within any time period required by the Schedule is less than the amount therein specified, CONTRACTOR shall so notify CITY. If the delay is an Unexcused Delay, CONTRACTOR shall prepare a recovery schedule for CITY's review and approval, showing how CONTRACTOR will compensate for the delays and achieve Final Completion by the date shown on the Schedule. If CONTRACTOR is unable to demonstrate how it will overcome Unexcused Delays, CONTRACTOR shall employ such extraordinary measures as are necessary to bring the Work into conformity with the Final Completion Date set forth therein, the costs of which shall be a Cost of the Work and not exceed the GMP. If the delay is an Excusable Delay, CITY shall either (a) authorize an equitable extension in the Schedule to account for such delay, and equitably adjust the GMP on account of such delay, to the extent permitted by Article 6; or (b) request that CONTRACTOR prepare a recovery schedule showing how (if possible) CONTRACTOR can achieve Substantial Completion by the date shown on the Schedule (as modified), and equitably adjust the GMP in accordance with the Change Order provisions of this Agreement on account of any extraordinary activities required of CONTRACTOR on account of such recovery schedule. Schedule float (total float) shall be owned by CITY. As float is an expiring resource, if the Work is delayed on the critical path due to a delay caused by the CONTRACTOR and/or Architect/Engineer, the CONTRACTOR may not use any float created by such a delay on any other path without the express written approval of CITY.

4.3 Pre-construction Activities. Within thirty (30) Days after execution of this Agreement, CONTRACTOR shall submit to CITY for review a detailed schedule of pre-construction

activities, by expanding the pre-construction activities set forth on the Schedule. This pre-construction schedule shall be prepared using the CPM, and shall show in sufficient detail the starting and completion times sequences of Subcontract award activities of CONTRACTOR, and identify all interface activities of CITY.

4.4 Extensions of Time.

4.4.1 General. An extension in the scheduled date of Final Completion will only be granted in the event of Excusable Delays affecting Work activities on the critical path.

4.4.2 Excusable Delays. Subject to 4.4.1 and 4.5.2, to the extent any of the following events results in an actual delay in the Work affecting Work activities on the critical path, such shall constitute an "**Excusable Delay**" (to the extent not set forth below, a delay will be considered an "**Inexcusable Delay**").

4.4.2.1 Failure or inability of CITY to make available any or all of the Site in accordance with the requirements of the Schedule.

4.4.2.2 Failure or inability of CITY or CONTRACTOR to obtain necessary zoning changes, variances, code changes, permits or approvals from any governmental authority, or failure to obtain any street or alley vacations required for the performance of the Work, except to the extent due to the fault or neglect of CONTRACTOR.

4.4.2.3 Delays resulting solely from the acts or omissions of Separate Contractors; provided however, only to the extent Separate Contractors perform their work improperly and not in accordance with any applicable critical path schedule.

4.4.2.4 Delays resulting from Force Majeure.

4.4.2.5 Differing, unusual or concealed site conditions that could not reasonably have been anticipated by CONTRACTOR in preparing the Schedule.

4.4.2.6 Delays resulting from the existence or discovery of Hazardous Materials on the Site not brought to the site by CONTRACTOR or any Subcontractor.

4.4.2.7 Delays resulting from changes in Applicable Laws occurring after the date of execution of this Agreement.

4.4.2.8 Delays occurring solely due to the acts or omissions of CITY and those within the control of CITY, including, but not limited to, Separate Contractors.

4.4.2.9 Delays resulting from weather conditions, which shall be determined as follows: Should CONTRACTOR prepare to begin work at the regular starting time of any working day on which inclement weather, or the conditions resulting from the weather, prevents the Work from beginning at the usual starting time and the crew is dismissed as a result thereof and CONTRACTOR does not proceed with at least 75% of the normal labor and equipment force engaged in the current operations for at least 60% of the total daily time being spent,

CONTRACTOR will not be charged for a working day, even if the conditions change during the course of the day. At the start of such days, CONTRACTOR shall notify CITY if CONTRACTOR believes that inclement weather or conditions resulting from the weather exist. A non-working day determination of such conditions shall be made by CITY, who will immediately notify CONTRACTOR.

4.4.2.10 Delays resulting from unproductive work days, which shall be determined as follows: When CONTRACTOR is prevented from working on current operations due to site conditions, CITY action, or force majeure for at least 60% of the total daily time on the controlling operations. Controlling operations are determined by the critical path method schedule described in the applicable CITY construction standards. The critical path schedule used in this determination shall be no more than thirty (30) days old. CONTRACTOR shall notify CITY if CONTRACTOR believes an unproductive work day exists upon discovery of such condition. A non-working day determination of such conditions shall be made by CITY, who will immediately notify CONTRACTOR.

4.4.3 Requirements for Schedule Amendment due to Excusable Delays. In order to obtain an extension of time due to an Excusable Delay, CONTRACTOR shall comply with the following requirements:

4.4.3.1 CONTRACTOR shall notify CITY of the Excusable Delay as soon as practicable, but in no event more than four (4) Business Days after CONTRACTOR becomes aware of the occurrence of the Excusable Delay. Such notice shall describe the Excusable Delay and shall state the approximate number of Days CONTRACTOR expects to be delayed. After the cessation of the Excusable Delay, CONTRACTOR shall notify CITY of the number of Days CONTRACTOR believes that its activities were in fact delayed by the Excusable Delay. In the event that the delay arises as a result of a Change Order request by CITY, the request for an extension of time contained in the resulting Change Order proposal shall be deemed sufficient for purposes of this subsection.

4.4.3.2 CONTRACTOR shall demonstrate to the satisfaction of CITY that the Excusable Delay in fact delayed the critical path for performance of the Work (by use of CPM analysis). Any delay that impacts the CPM will be presented to the Project Manager at the monthly meeting, and prior to completion of each activity.

4.4.4 Decision by CITY. Within thirty (30) Days after cessation of an event giving rise to either an Excusable Delay or Inexcusable Delay, the parties will use good faith efforts to agree on the extent to which the Work has been delayed and whether the delay is an Excusable Delay or an Inexcusable Delay. In the absence of agreement between the parties as to the then current status of Excusable Delays and Inexcusable Delays, CITY will provide CONTRACTOR with written notice of CITY's determination of the respective number of Days of Excusable Delay and/or Unexcusable Delay within ten (10) Days after receipt by CITY of CONTRACTOR's written request for such determination. The issuance by CITY of such a determination shall not, however, be deemed a concurrence by CONTRACTOR of the matters set forth therein, and CONTRACTOR may invoke the dispute resolution procedures with respect to such determination. Pending completion of dispute resolution procedures, CONTRACTOR may take such acceleration or other measures required on account of CITY's determination of

Inexcusable Delay, and if completion of the dispute resolution procedures results in CITY's determination being changed to Excusable Delay, the costs associated with such measures shall be paid by CITY as an increase to the GMP in accordance with the Change Order provisions of this Agreement.

4.5 Adjustment in GMP on Account of Extensions of Time.

4.5.1 Certain Excusable Delays. Section 4.5 governs the extent to which CONTRACTOR is entitled to an extension of time due to Excusable Delays. Provisions governing the payment of additional compensation on account of such Excusable Delays, (if any) are set forth in Article 6.

4.5.2 Concurrent Delays. To the extent CONTRACTOR is entitled to an extension of time due to an Excusable Delay, but the performance of the Work would have been suspended, delayed or interrupted by the fault or neglect of CONTRACTOR, any subcontractor and/or by an Inexcusable Delay, CONTRACTOR shall not be entitled to any additional costs for the period of such concurrency.

4.6 Liquidated Damages.

4.6.1 General. CONTRACTOR and CITY acknowledge that in the event that CONTRACTOR fails to achieve Final Completion of the Project by the date established, CITY will incur substantial damages that shall be incapable of accurate measurement. Nonetheless, the parties acknowledge that on the date of this Agreement, the amount of liquidated damages set forth below represents a good faith estimate as to the actual potential damages that CITY would incur as a result of late Completion of the Project. Such liquidated damages shall be in-lieu of actual damages resulting from late completion. The amount of the liquidated damages calculated hereunder does not include any penalty.

4.6.2 Amount of Liquidated Damages. If CONTRACTOR fails to achieve Final Completion of the Work on or before the Notice of Completion date, as adjusted for Excusable Delays, CONTRACTOR shall pay to CITY liquidated damages in the amount of \$500.00 (five hundred dollars) per Day for each calendar day the date of Final Completion is unexcusably delayed. Payment of liquidated damages shall be made contemporaneously with CITY's required payment to CONTRACTOR, and such payments may be offset against each other.

ARTICLE 5 PAYMENT AND COMPLETION

5.1 Guaranteed Maximum Price ("GMP") and GMP Shared Savings. CITY shall pay for CONTRACTOR's performance under this Agreement the Cost of the Work and Fee (as described in Exhibit A hereto); provided, however, that the sum of the Cost of the Work and the Fee shall not exceed the GMP, as adjusted by Change Order/Directive in accordance with the Contract Documents. CONTRACTOR bears the risk of its increased costs due to market price increases (including escalating costs for materials).

5.1.1 Shared Savings. CONTRACTOR shall be compensated for actual work completed based on the Cost of Work and Fee up to the amount of the GMP. If CONTRACTOR's actual total Cost of the Work and Fee is less than the GMP, upon Final Completion, the CONTRACTOR shall be entitled to receive forty percent (40%) of the GMP Savings. "GMP" Savings shall mean the positive difference, if any, when the actual Total Cost of the Work and Fee is subtracted from the GMP; provided, however, that unused contingency monies, if any, shall not be subject to shared savings.

5.2 Schedule of Values. Before the first Application for Payment, CONTRACTOR shall submit to CITY, and CITY shall approve, a schedule of values, setting forth the various portions of the Work, and the portions of the GMP allocated to each portion. This schedule of values shall be used as a basis for payment.

5.3 Applications for Payment. CONTRACTOR shall deliver to CITY not more than once each month an Application for Payment covering the Cost of Work and Fee applicable to the Work performed during the immediately preceding month. With each Application for Payment CONTRACTOR shall submit such evidence as may be necessary to demonstrate costs incurred on account of Cost of the Work during such month and the percentage of completion of each category of Work. CITY may reject requests for payment, or portions thereof, for Work, or portions thereof, not performed or completed.

5.4 Amount of Progress Payments. CITY shall pay CONTRACTOR the actual Cost of the Work and Fee, if any, through the period covered by the Application for Payment, less Retention as set forth in Section 5.5 below, provided that the aggregate payment amount before retention will not exceed the percentage of completion of the Work multiplied by the GMP (excluding items of the GMP not subject to retention). CITY may additionally withhold from progress payments such amounts pursuant to stop payment notice claims as required by law and CITY administrative regulation 4.01.

5.5 Retention; Escrow Agreement; Final Payment. Five percent (5%) Retention shall be withheld from each progress payment until the expiration of thirty-five (35) days following the recordation of the notice of completion; provided however, City shall continue to retain such amount as required by law and/or CITY administrative regulation 4.01. CONTRACTOR may elect to establish an escrow account for securities in-lieu of the five percent (5%) Retention in a form of escrow agreement compliant with law and subject to approval by the City Attorney (form of escrow agreement is attached as Exhibit D). Release of Retention monies shall constitute the Final Payment.

5.6 Early Release of Subcontractor Retention. [reserved]

5.7 Payment for On-Site and Off-Site Stored Materials. [reserved]

5.8 Title to Construction Work. CONTRACTOR warrants that title to all Construction Work covered by an Application for Payment shall pass to CITY no later than the time of payment. CONTRACTOR further warrants that upon submittal of an Application for Payment,

all Construction Work for which Applications for Payment have been previously issued and payments received from CITY shall, to the best of CONTRACTOR's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of CONTRACTOR, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials or equipment relating to the Construction Work.

5.9 Withholding of Payment. CITY may withhold payment on account of an Application for Payment if required or authorized by any Applicable Law, or to the extent necessary to protect CITY from loss because of:

5.9.1 defective Work not remedied;

5.9.2 third party claims filed or reasonable evidence indicating probable filing of such claims;

5.9.3 failure of CONTRACTOR to make payments of undisputed amounts to Subcontractors for labor, materials or equipment;

5.9.4 damage to CITY or a Separate Contractor caused by the fault or neglect of CONTRACTOR to the extent not reimbursed by insurance; or

5.9.5 reasonable evidence that the Work will not be Substantially Completed within the Contract Time due to Inexcusable Delay, and that the unpaid balance of the GMP would not be adequate to cover liquidated damages for the anticipated Inexcusable Delay.

5.10 Failure of Payment; Interest. In accordance with Public Contract Code §20104.50, CITY shall pay CONTRACTOR interest on any progress payment, which is made by CITY more than thirty (30) days after CITY receives an undisputed and properly submitted written payment request. Said interest shall be equal to the rate set forth in Code of Civil Procedure §685.010(a), and shall begin to accrue upon the expiration of said thirty (30) day period. Any written request for a progress payment which CITY determines to be disputed, improper or not suitable for payment for any reason shall be returned to CONTRACTOR within seven (7) days after receipt by CITY, along with a written statement of the reason or reasons why such request is disputed, improper or not suitable for payment.

5.11 Occupancy by CITY Prior to Acceptance. CITY reserves the right to Beneficial Occupancy and without charge by CONTRACTOR. In those areas of the Work which are completed, CITY may store materials, equipment, and supplies, and may perform partial operation.

5.12 Substantial Completion. When CONTRACTOR considers the entire Work complete and ready for its intended use, CONTRACTOR shall certify in writing to CITY that the entire Work is substantially complete by providing CITY with a Certificate of Substantial Completion. Within a reasonable time thereafter, CITY and CONTRACTOR shall make an inspection of the Work to determine the status of completion. If CITY does not consider the Work substantially complete, CITY will notify CONTRACTOR in writing giving reasons therefor. If CITY

considers the Work substantially complete, CITY will accept a corresponding partial Certificate of Substantial Completion. There shall be attached to the Certificate a Punch List of items to be completed or corrected before Final Acceptance and Final Payment.

5.13 Final Completion. When the Work is fully completed, CONTRACTOR shall provide CITY with a Certificate of Final Completion and shall request final inspection in writing. Additionally, CONTRACTOR shall provide legally effective releases or waivers satisfactory to CITY of all lien rights arising out of or liens filed in connection with the Work. Within ten (10) calendar days of receipt of such completed request form, CITY shall make final inspection. If following final inspection CITY determines that the Work (including all Punch List items) has been fully completed, CITY will process a Notice of Completion. If CITY determines that the Work is not complete after receipt of certification from CONTRACTOR, CONTRACTOR shall be notified in writing of deficiencies. After the deficiencies have been corrected, the procedure for final inspection as set forth above shall again be initiated by CONTRACTOR. In the event CITY determines the Work is fully completed, CITY shall initiate process of attaining a notice of completion.

5.13.1 Waiver of Claims at Final Payment. Acceptance of final payment by CONTRACTOR shall constitute a waiver of all claims by CONTRACTOR, except those previously made in writing and identified as unsettled at the time of final payment.

5.14 Construction Allowance Items. [reserved]

5.15 Superintendent. CONTRACTOR shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Construction Work. The superintendent shall represent CONTRACTOR, and communications given to the superintendent shall be as binding as if given to CONTRACTOR.

5.16 Documents and Samples at the Site. CONTRACTOR shall maintain at the site for CITY one record copy of the drawings, specifications, addenda, Change Order and other Modifications, in good order and marked currently to record changes and selections made during construction, and in addition approved Shop Drawings, Product Data, Samples and similar required submittals. CONTRACTOR shall also prepare one reproducible set of as-built drawings. These shall be provided to CITY upon completion of the Work.

5.17 Contingency. [reserved]

ARTICLE 6 CHANGES IN THE WORK; CLAIMS

6.1 Changes. Changes in the Work shall be performed under applicable provisions of the Contract Documents. If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are so changed in a proposed Change Order or Change Directive that application of such unit prices to quantities of Work proposed will cause substantial inequity to CITY or CONTRACTOR, the applicable unit prices for such change

order/directive shall be equitably adjusted. No GMP adjustment on account of a Change Order shall include CONTRACTOR's or Subcontractor's profit, Fee, home office overhead or a formula allocation of indirect costs unless otherwise specifically allowed hereunder.

6.2 Change Directives. The following procedures shall apply with respect to Change Directives:

6.2.1 Upon receipt of a Change Directive signed by CITY, CONTRACTOR shall promptly proceed with the change in the Work involved and advise CITY of CONTRACTOR's agreement or disagreement with the method, if any, provided in the Change Directive for determining the proposed adjustment in the GMP or the Schedule. If CONTRACTOR receives a written communication signed by CITY which CONTRACTOR believes is a Change Directive but is not so identified, it shall not proceed with the change in the Work until it receives from CITY a written confirmation that such communication is in fact a Change Directive.

6.2.2 A Change Directive signed by CONTRACTOR indicates the agreement of CONTRACTOR with the contents thereof, and shall convert the Change Directive to a Change Order.

6.2.3 If CONTRACTOR does not respond promptly or disagrees with the method for adjustment in the GMP or Schedule, the method and adjustment shall be determined as provided in Sections 6.5 or 6.10 below, as applicable. In such case, CONTRACTOR shall keep and present, in such form as CITY may request, an itemized accounting, together with appropriate supporting data.

6.2.4 Pending final determination of cost to CITY, amounts not in dispute shall be included in Applications for Payment. The amount of credit to be allowed by CONTRACTOR to CITY for a deletion or change which results in a net decrease in the GMP shall be actual net cost. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for Fee shall be figured on the basis of net increase, if any, with respect to that change.

6.2.5 If CITY and CONTRACTOR do not agree with the adjustment in the Schedule or the GMP, such disagreement shall be submitted for dispute resolution in accordance with the provisions of this Contract.

6.3 Change Proposals. If CITY requests CONTRACTOR to submit a Change Proposal which would entitle CONTRACTOR to an increase in the GMP for costs of preparation of such Change Proposal pursuant to the provisions of this Section 6.3, CONTRACTOR shall first estimate the costs of preparing such Change Proposal and inform CITY in writing of such costs. CITY shall then direct CONTRACTOR either to proceed with the Change Proposal or cancel the Change Proposal. If CITY directs CONTRACTOR to proceed with the Change Proposal and then elects not to proceed with the Change Order contemplated therein, a Change Order shall be issued to reimburse CONTRACTOR for costs reasonably incurred by CONTRACTOR on account of such Change Proposal, but only to the extent the Change Order contemplated by such Change Proposal involves a material change to the scope of the Work requiring modification to

one or more systems which have been designed and approved in accordance with the standards set forth in the technical specifications. To the extent the preparation of such Change Proposal impacts the Schedule (e.g., other Work is suspended pending a decision on such Change Proposal or the Design Work is delayed due to the preparation of the Change Proposal), an equitable adjustment in the Schedule shall be made.

6.4 Claims. CONTRACTOR shall submit any claims for additional compensation to CITY in writing. The claim shall set forth the reason(s) that CONTRACTOR believes additional compensation will or may be due, the nature of the costs involved, and insofar as possible, the amount of the potential claim. The notice must be given to the Project Manager prior to the time that CONTRACTOR shall have performed the work giving rise to the potential work for additional compensation, if based on an act or failure to act by CITY, or in all other cases within fifteen (15) calendar days after happening of the event, thing or occurrence giving rise to the potential claim. Any and all Claims not presented as required herein shall be waived.

6.5 Change Orders Increasing or Decreasing Scope.

6.5.1 Increased Scope. With respect to Change Orders which increase the Scope of Work described on Exhibit F, are not due to the errors or omissions of CONTRACTOR and are not attributable to Excusable Delays or the contingencies set forth in Section 6.6 below, the GMP shall be increased by the following "Scope Change Costs":

6.5.1.1 Construction Work and Mark Ups.

6.5.1.1.1 The estimated increase in the Cost of the Work attributable to the Change Order and which would not have been incurred but for the Change Order and/or Work Directive. In addition, CONTRACTOR may add a markup of up to ten percent (10%), subject to the discretion of the Project Manager, to the increase in the Cost of the Work due to the Change Order. This markup shall constitute full compensation for all delay costs, overhead costs and profit. The GMP shall be revised accordingly.

6.5.1.1.2 When Change Order work is performed by a Subcontractor(s), each Subcontractor may add a markup of up to ten percent (10%), subject to the discretion of the Project Manager, to their direct costs for labor, materials and equipment used in performing the Change Order work. The GMP shall be revised accordingly.

6.5.2 Decreased Scope. With respect to Change Orders, which decrease the Scope of Work described on Exhibit F, the GMP shall be decreased by the Cost of Work attributable to such Change Order and/or Work Directive. Furthermore, if the Change Order deletes a part of the Scope of Work, CONTRACTOR shall be entitled to retain a value of five percent (5%) of the full value of the reduction in Cost of Work attributable only to the portion of the Scope of Work deleted from the Scope of Work. The GMP shall be revised accordingly.

6.6 Change Orders on Account of Contingencies. With respect to Change Orders which are attributable to the following contingencies, the GMP shall be adjusted (increased or decreased) by the following "**Contingency Costs**," consisting of the following:

6.6.1 With respect to new or increased taxes arising after the date of this Agreement (other than taxes assessed based on the income of CONTRACTOR), the Change Order shall consist of the incremental amount of such new or increased taxes only. With respect to reductions in taxes arising after the date of this Agreement (other than taxes assessed based on the income of CONTRACTOR), the Change Order shall consist of the incremental amount of such reduced taxes only.

6.6.2 With respect to increases or decreases in fees for permits or other governmental certificates or instruments arising after the date of this Agreement, the Change Order shall consist of the incremental amount of such increases or decreases. To the extent this Agreement states that a permit or certificate is not required and CONTRACTOR is later required to procure such permit or certificate, all out-of-pocket costs reasonably associated therewith shall be included in the Change Order.

6.7 Change Orders on Account of Excusable Delay. With respect to Change Orders, which are attributable to Excusable Delays, and subject to the exceptions set forth in Section 6.7.3 below, the GMP shall be increased by the following "Delay Costs":

6.7.1 Construction Work.

6.7.1.1 Increased allowable labor costs resulting from wage increases paid due to the delay;

6.7.1.2 Premiums for overtime and extra shifts incurred in accelerating the Work, but only if acceleration is required in advance by CITY;

6.7.1.3 Proven increased material costs;

6.7.1.4 Additional general conditions costs which would not have been incurred but for the delay (itemized, and not based on a formula allocation);

6.7.1.5 Demobilization and remobilization costs; and

6.7.1.6 Additional items of Cost of the Work attributable to the Excusable Delay and which would not have been incurred but for the Excusable Delay.

6.7.2 Intentionally left blank.

6.7.3 Exceptions. The following exceptions to the provisions of Section 6.7.1 above shall apply:

6.7.3.1 With respect to the Excusable Delay described in Section 4.4.2.1, the cost described in Section 6.7.1 shall not be compensable delay costs if such Excusable Delay occurs prior to the commencement of the Construction Work.

6.7.3.2 With respect to the Excusable Delay described in Section 4.4.2.2, the cost described in Section 6.7.1 shall not be compensable delay costs if such Excusable Delay occurs prior to the commencement of the Construction Work.

6.7.3.3 With respect to the Excusable Delay described in Section 4.4.2.4, costs incurred in connection with such delay are chargeable against the Cost of the Work but shall not increase the GMP.

6.7.3.4 With respect to the Excusable Delay described in Section 4.4.2.5, in addition to the compensation provided in Section 6.7.1, CONTRACTOR shall be entitled to the additional costs set forth in Section 6.10.

6.7.3.5 With respect to the Excusable Delay described in Section 4.4.2.7, additional compensation shall only be paid if the change in Applicable Law is not a change in law of general application (e.g., CAL/OSHA), but is a change in law specifically affecting the Project.

6.8 Force Majeure. There shall be no additional compensation to CONTRACTOR on account of Force Majeure.

6.9 Intentionally left blank.

6.10 Change Orders on Account of Differing Site Conditions. If CONTRACTOR encounters conditions described in Section 4.4 which constitute Excusable Delay, in addition to the increase in the GMP on account of delay costs incurred by CONTRACTOR (as described in Section 6.7.1), the GMP shall also be increased by the additional Cost of the Work attributable to such conditions which would not have been incurred but for such conditions.

6.11 Time Extensions on Account of Change Orders. CONTRACTOR shall be entitled to a time extension in connection with any Change Order to the extent its time of performance is extended due to such Change Order. CONTRACTOR shall present to CITY a CPM analysis showing how the Change Order affects the critical path of the Work.

ARTICLE 7 CORRECTION OF WORK

7.1 Correction of Work Prior to Completion. Prior to the date of Final Completion, CONTRACTOR shall correct Work which (a) CITY reasonably rejects as being defective or nonconforming to the requirements of the Contract Documents in a written notice delivered to CONTRACTOR or (b) CONTRACTOR recognizes is defective or nonconforming to the Contract Documents. If other portions of the Work are adversely affected by or are damaged by such defective Work, CONTRACTOR shall also correct, repair or replace such affected or damaged Work, as well as any other property of CITY or others damaged by such defective or nonconforming Work. Prior to the date of Final Completion, the cost of correcting any damaged or defective work shall be paid as a Cost of the Work.

7.2 Correction of Work After Completion. For defects identified by CITY and for which CITY has notified CONTRACTOR within a period of twelve (12) months after the date of Final Completion, or within such longer period as may be provided by special warranties contained in the Contract Documents, CONTRACTOR shall re-execute, correct, repair or replace all Work found to be defective or nonconforming to the Contract Documents (whether arising from a design or construction defect, error, omission or deficiency). If other portions of the Work are adversely affected by or damaged by such defective Work, CONTRACTOR shall also correct, repair or replace such affected or damaged Work, as well as any other property of CITY or others damaged by such defective or nonconforming Work.

7.3 Acceptance of Nonconforming Work. If CITY prefers to accept Work, which is not in accordance with the requirements of the Contract Documents, CITY may do so instead of requiring its removal and correction, in which case the GMP will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

7.4 No Effect on Limitations. Nothing contained in this Article shall be construed to establish a period of limitation with respect to other obligations, which CONTRACTOR may have under the Contract Documents.

ARTICLE 8 SUBCONTRACTORS

8.1 Subcontracts

8.1.1 Incorporation of Contract Documents. CONTRACTOR may enter into Subcontracts with various Subcontractors for portions of the Work. The Subcontracts shall require each Subcontractor, to the extent of the Work to be performed by such Subcontractor, to assume towards CONTRACTOR all the obligations and responsibilities which CONTRACTOR assumes towards CITY. All Subcontracts shall incorporate the terms of this Agreement and the Contract Documents to the extent applicable to the Work to be performed by the Subcontractor.

8.1.2 Approval of Subcontractors. Those portions of the Construction Work that the CONTRACTOR does not intend to perform with CONTRACTOR's own personnel shall be performed under Subcontracts. A proposed list of Subcontractors shall be submitted to CITY for approval. Proposed Subcontractors will be deemed accepted unless CITY objects in writing within five (5) days after submission by CONTRACTOR.

ARTICLE 9 INSURANCE AND BONDS; INDEMNIFICATION

9.1 Insurance to be provided by CONTRACTOR:

A. Evidence of Coverage. CONTRACTOR shall, at all times, maintain in full force and effect at a minimum the insurance required by this section; and CONTRACTOR shall not allow any subcontractor to commence Work until similar insurance required of the subcontractor has been obtained and filed, except as provided below in Section 9.1.D.3 for subcontractors performing less than five percent (5.0%) of the total Work. All Subcontractors with 5.0% or more of the total Work must obtain insurance coverage that matches the insurance requirements of the CONTRACTOR, including the Architects and Engineers, regardless of the percentage of total work to be performed. An original Certificate of Insurance, and copies of all required endorsements, all in a form approved by the Risk Manager, evidencing all required coverage or policies shall be filed after the award of the bid and prior to approval of the Contract by the City Council. CONTRACTOR shall provide ten (10) Days prior written notice to CITY of any reduction of coverage limits or cancellation of the coverage or policies shall be given to the City of Roseville as Certificate holder.

B. Qualifying Insurers. With the exception of the State Compensation Insurance Fund, all required insurance policies shall be issued by companies licensed to do business in the State of California and who hold a current policy holders alphabetic and financial size category rating of not less than AVII according to the most recent issue of Best's Insurance Reports.

C. Insurance Required. Commercial General Liability, automobile liability, and worker's compensation insurance shall be maintained as follows:

1.	Commercial General Liability	\$1,000,000 each occurrence
	Minor Construction Project	\$2,000,000 aggregate
	(Projects under \$1,000,000)	
		Personal Injury:
		\$1,000,000 each occurrence
		\$2,000,000 aggregate
	Commercial General Liability for	\$5,000,000 each occurrence
	Major Construction Projects	\$10,000,000 aggregate
	(Projects over \$1,000,000)	Personal Injury:
		\$5,000,000 each occurrence
		\$10,000,000 aggregate
2.	Professional Liability (errors and	\$2,000,000 per claim
	omissions)	\$4,000,000 aggregate

The Commercial General Liability policy shall include coverage or endorsements for:

- a. Completed operations.
- b. Losses related to independent contractors, products and equipment.
- c. Explosion, collapse and underground hazards.

The Commercial General Liability Insurance shall include the following, copies of which shall be provided:

- a. Inclusion of the City of Roseville, and its officers, agents, employees and volunteer, as additional insured (except for workers' compensation as respects services or operations under the Contract. The additional insured endorsement for the general liability policy shall be at least as broad as the Insurance Services Office ("ISO") CG 20 38 04 13 or an equivalent, blanket endorsement or section of the policy. Endorsements must include coverage for on-going and completed operations. Endorsements shall cover the City of Roseville, its officers, agents, employees, and volunteers.
- b. Cross liability and severability of interest clauses providing that the insurance applies separately to each insured except with respect to the limits of liability.
- c. Stipulation that the insurance is primary and noncontributory, as evidenced by a separate endorsement (CG 20 01 04 13 or an equivalent) or section of the policy, and that neither CITY nor its insurers will be called upon to contribute to a loss.
- d. Such insurance shall specifically cover the contractual liability of the CONTRACTOR.
- e. Any available insurance proceeds in excess of the specified minimum insurance coverage requirements and limits shall be available to the additional insureds. Furthermore, the requirements for coverage and limits shall be: (1) the minimum coverage and limits specified in this Agreement; or (2) the full coverage and maximum limits of any insurance proceeds available to the named insureds, whichever is greater.
- f. Waiver of subrogation endorsement.
- g. CONTRACTOR shall furnish a certificate for the period covered.

SPECIAL NOTICE - CLAIMS MADE COVERAGE:

Liability insurance coverage may not be written on a "claims made" basis. The Certificate of Insurance must clearly provide that the coverage is on an "occurrence" basis.

2. Comprehensive Automobile Liability for bodily injury (including death) and property damage which provides total limits of not less than One Million Dollars (\$1,000,000) combined single limits per accident, applicable to all owned, non-owned, and hired vehicles.

3. Statutory Workers' Compensation and Employer's Liability Insurance, including a waiver of subrogation endorsement and a Broad Form "All-States" Endorsement for all employees engaged in services or operations under the Contract. The employer's liability insurance shall provide limits of not less than One Million Dollars (\$1,000,000) per occurrence. Both the worker's compensation and employer's liability policies shall contain the Insurer's waiver of subrogation in favor of CITY, its officers, agents, employees, and volunteers.

4. Builder's Risk/Course of Construction Insurance: CONTRACTOR shall be responsible for all loss, damage or destruction whatsoever to the Work called for by this Contract until the approval of a Notice of Completion. CONTRACTOR shall secure "All Risk" type of builder's Risk Insurance of the type covering one hundred percent (100%) of the value of the Work performed under this Contract (the value is presumed to be the Contract amount unless

otherwise stated in Supplemental Conditions) and all materials, equipment, or other items to be incorporated therein while the same are located at the construction site, a bonded warehouse, or its place of manufacture. At any time, the policy shall cover the value of the Work completed. The policy shall cover hazards including the losses due to fire, explosion, hail, rain, lightning, flood (separate insurance as needed), vandalism, malicious mischief, wind, collapse, aircraft, and smoke.

The policies providing such insurance shall name CITY as a loss payee as its respective interests may appear, and certified copies of such policies shall be filed with CITY. The maximum deductible allowable under the Builder's All Risk policy shall be five percent (5%) of the Contract amount.

Builder's Risk Insurance is not required for coverage of losses in excess of five percent (5%) of the Contract amount for damages resulting from earthquake in excess of a magnitude of 3.5 on the Richter scale, or tidal waves. Coverage in the amount of five percent (5%) of the Contract amount for such losses is required.

D. Other Insurance Provisions.

1. The requirements of the Contract Conditions as to types and limits of insurance coverage to be maintained by CONTRACTOR, and any approval of insurance by CITY, are not intended to, and shall not in any manner limit or qualify the liabilities and obligations otherwise assumed by CONTRACTOR pursuant to the Contract, including, but not limited to, the provisions concerning indemnification, nor preclude CITY from taking any other action available to it under any other provision of the Contract or law.

2. CITY acknowledges that some insurance requirements contained in the Contract Conditions may be fulfilled by self-insurance on the part of CONTRACTOR. However, this shall not in any way limit liabilities assumed by CONTRACTOR under the Contract. Any self-insurance must be approved in writing by CITY, in its sole discretion and shall not reduce the limits of liability. Any deductibles or self-insured retentions ("SIR") must be declared on the certificate of insurance and approved by CITY in writing. Policies containing any SIR provision shall provide or be endorsed to provide that the SIR may be satisfied by either the named insured or CITY. CITY reserves the right to obtain a full certified copy of any insurance policy and endorsements. The failure to exercise this right shall not constitute a waiver of such right.

3. CONTRACTOR agrees to include in its contracts with all subcontractors the same requirements and provisions of this Contract, including the indemnity and insurance requirements, to the extent they apply to the scope of the subcontractor's work. Furthermore, CONTRACTOR shall require its subcontractors to agree to be bound to CONTRACTOR and CITY in the same manner and to the same extent as CONTRACTOR is bound to CITY under this Contract, except as provided below. Additionally, CONTRACTOR shall obligate its subcontractors to comply with these same provisions with respect to any tertiary subcontractor, regardless of tier, except as provided below. A copy of CITY's indemnity and insurance provisions will be furnished to the subcontractor or tertiary subcontractor upon request. Alternatively, CONTRACTOR may insure subcontractor(s) under its own policy.

Notwithstanding the foregoing, with regard to subcontractors that will perform less than five percent (5.0%) of the total Work, the insurance limits required to be provided by such subcontractors shall be in the amounts and limits listed in Section 9.1.C.1 above for projects under one million dollars (\$1,000,000).

4. CITY, its officers, agents, employees and volunteers are to be covered as insureds with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of CONTRACTOR; and with respect to liability arising out of work or operations performed by or on behalf of CONTRACTOR including materials, parts or equipment furnished in connection with such work or operations. Coverage shall not extend to any indemnity coverage for the active negligence of the additional insured in any case where an agreement to indemnify the additional insured would be invalid under California Insurance Code Section 11580.04. In addition, the insurance policy may not contain language which prohibits additional insureds or other insurers from satisfying the self-insured retention or deductible.

5. The limits of insurance required in this Contract may be satisfied by a combination of primary and excess insurance. Any excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and noncontributory basis for the benefit of CITY (if agreed to in a written contract) before the CITY's own insurance shall be called upon to protect it as a named insured.

6. Unless provided by CONTRACTOR, CONTRACTOR shall require its Architect/Engineer to provide professional liability (errors and omissions) insurance (certificate and additional insured endorsement).

7. CITY RESERVES THE RIGHT TO WITHHOLD ANY PROGRESS PAYMENTS TO CONTRACTOR IN THE EVENT OF NONCOMPLIANCE WITH ANY INSURANCE REQUIREMENTS.

9.2 Insurance to be provided by CITY. [not applicable]

9.3 Payment, Performance and Warranty Bonds. CONTRACTOR shall furnish and deliver to CITY Performance, Labor & Materials, and Warranty Bonds issued by a surety prior to, and as a condition precedent to, commencement of the Construction Work on the Site; provided, however, the Warranty Bond shall be waived if such bond is not required pursuant to CITY's request for proposals for the Project. The Payment and Performance Bonds shall be in a penal sum equal to one hundred percent (100%) of the GMP, and the Warranty Bond shall be in the penal sum equal to ten percent (10%) of the GMP. All bonds shall be in the form as set forth in Exhibit E hereto. All premiums for the Performance, Labor & Materials, and Warranty Bonds shall be a Cost of the Work. CITY shall have the right to withhold any payment(s) under this Agreement until CONTRACTOR has fully complied with this sub-section.

9.4 Indemnification. To the fullest extent allowed by law, CONTRACTOR shall defend, indemnify, and hold harmless, CITY, its officers, employees, agents, and volunteers, and each and every one of them, from and against all actions, damages, claims, losses, expenses or other liabilities of every type and description, including reasonable attorney fees, to which they may be

subjected or put, by reason of, or resulting from, the performance of the Work, whether upon or off the Work, including the loss of use thereof, that is caused in whole or in part by willful or reckless misconduct and/or any negligent or wrongful act or omission of CONTRACTOR, any Subcontractor, and anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, whether or not it is caused in part by a party indemnified hereunder, except for such claims arising from the sole or active negligence of CITY. The parties intend that this provision shall be broadly construed.

CONTRACTOR's responsibility for such defense and indemnity obligations shall survive the termination or completion of this Agreement for the full period of time allowed by law. The defense and indemnity obligations of this Agreement are undertaken in addition to, and shall not in any way be limited by, the insurance obligations contained in this Agreement.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

10.1 Safety Precautions and Programs.

10.1.1 Site Safety. CONTRACTOR shall be responsible for initiating, maintaining and providing supervision of safety precautions and programs in connection with the Work, and shall also comply with any and all insurance carrier-mandated safety requirements and programs.

10.1.2 Safety Notices. In connection with the performance of the Work, CONTRACTOR shall provide notices and comply with all Applicable Laws bearing on the safety of persons and property and their protection from damage, injury or loss.

10.2 Safety of Persons and Property.

It is the intent of the parties that CITY is not an exposing, creating, controlling, or correcting employer under California Labor Code Section 6400. In accordance with generally accepted fabrication and construction practices and all applicable Laws and Standards and Codes, CONTRACTOR shall have the authority and be solely and completely responsible for the safety of all property utilized and all persons performing under this Agreement. Moreover, the CONTRACTOR shall be the controlling employer and has the authority and responsibility to enforce safety for all fabrication, construction work, and Work performed under this Agreement. The services of CITY's contract administrator, if any, in conducting a review of CONTRACTOR's performance under this Agreement is not intended to include a review of the adequacy of CONTRACTOR's work methods, equipment or safety measures. If CITY and/or its contract administrator observes a safety violation related to the CONTRACTOR's performance under this Agreement, then CITY and/or its contract administrator will report the violation to the CONTRACTOR who is then responsible for assuring the violation is abated.

CONTRACTOR is hereby informed that work on this Project could be hazardous. CONTRACTOR shall carefully instruct all personnel performing under this Agreement in

potentially hazardous work areas as to potential dangers and shall provide such necessary safety equipment and instructions as are necessary to prevent injury to personnel and damage to property.

All Equipment, Work and materials provided under this Agreement shall be in strict accordance with all applicable Laws and Standards and Codes, and attention is drawn to the requirements of CAL/OSHA.

CONTRACTOR shall perform under this Agreement so as not to expose personnel to, or to discharge into the atmosphere from any materials brought to the Site by CONTRACTOR, smoke, dust, asbestos, toxic chemicals or other air contaminants in violation of applicable Laws and Standards and Codes.

10.2.1 Reasonable Precautions. CONTRACTOR shall take all precautions and implement all safety measures and requirements imposed by any Applicable Law. Without limiting the generality of the foregoing, CONTRACTOR shall take necessary precautions for the safety of, and shall provide necessary protection to prevent damage, injury or loss to:

10.2.1.1 Employees on the Work and other persons who may be affected thereby;

10.2.1.2 The Work and materials and equipment to be incorporated therein, whether in storage on or off the Site under care, custody or control of CONTRACTOR; and

10.2.1.3 Other property at the Site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of the Construction Work.

10.2.2 Safeguards. CONTRACTOR shall erect and maintain, as required by existing conditions and performance of the Work, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying CITY and users of adjacent sites and utilities, and shall comply fully with the requirements of CAL/OSHA.

10.2.3 Use of Explosives. Use of explosives is prohibited, unless approved in advance in writing by CITY. CITY may impose reasonable conditions on the use of explosives.

10.2.4 Remedy of Damage. CONTRACTOR shall promptly remedy damage and loss to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by CONTRACTOR, or anyone employed by or in control of CONTRACTOR, or any Subcontractor. All costs incurred by CONTRACTOR in connection with its obligations under this Section shall be cost of the Work, but shall not increase the GMP.

10.2.5 Designation of Safety Coordinator. [reserved]

10.2.6 Loads. CONTRACTOR shall not load or permit any part of the Construction Work or the Site to be loaded so as to endanger its safety.

10.3 Security. CONTRACTOR shall take any and all precautions that may be reasonably necessary to render all portions of the Work, the Site and any adjacent areas affected by the Work secure in all material respects, to decrease the likelihood of accidents, and to avoid vandalism and other contingencies which are liable to delay the Work or give rise to claims or liabilities. CONTRACTOR shall furnish and install all necessary facilities to provide safe means of access to all points where Work is being performed. CONTRACTOR shall take all precautions and measures as may be reasonably necessary to secure the Project at all hours, including evenings, holidays and non-work hours. Such precautions may include provision of security guards.

10.4 Damage to Property at the Site. CONTRACTOR shall be responsible for any and all damage or loss to property at the Site, except to the extent caused by the acts or omissions of CITY or its representatives, agents or employees. If such damage or loss is caused by CONTRACTOR, payment of such costs as Cost of the Work shall be limited by the provisions of Section 2.20.5 hereof.

10.5 Damage to Property of Others. CONTRACTOR shall avoid damage, as a result of CONTRACTOR's operations, to existing sidewalks, curbs, streets, alleys, pavements, utilities, adjacent property, the work of Separate Contractors and the property of CITY. CONTRACTOR shall repair any such damage caused by the operations of CONTRACTOR.

10.6 Failure of CONTRACTOR to Repair Damage. If CONTRACTOR fails to commence the repair of damage to property as set forth in this Article, and/or diligently pursue such repair, then CITY, after ten (10) Days prior written notice to CONTRACTOR (provided CONTRACTOR has not commenced such repair during such ten (10) Day period), may elect to repair such damages with its own forces and to deduct from payments due or to become due to CONTRACTOR amounts paid or incurred by CITY in correcting such damage.

10.7 Emergencies. In an emergency affecting the safety of persons or property, CONTRACTOR shall act, at CONTRACTOR's discretion, to prevent threatened damage, injury or loss. Additional costs or extensions of time caused by CONTRACTOR on account of an emergency not caused by the fault or neglect of CONTRACTOR shall be determined as provided in Section 6.2 hereof.

ARTICLE 11 DISPUTES

11.1 Disputes between CITY and CONTRACTOR. In the event of any dispute arising between CITY and CONTRACTOR regarding any part of the Contract or the Contract Documents, or the Parties' obligations or performance thereunder, and subject to any claims presentation requirements set forth in the Contract Documents, either Party may institute the dispute resolution procedures set forth herein. The Parties shall continue performance of their respective obligation hereunder notwithstanding the existence of a dispute.

11.2 Dispute Resolution Procedures. CONTRACTOR must submit all claims as defined in and in accordance with the claim resolution process set forth in Section 9204 of the Public Contract Code. Each such claim must be sent to CITY by registered mail or certified mail with return receipt requested and must contain reasonable documentation to support the claim. All claims must be received prior to acceptance of the Work and will be handled in accordance with the procedures set forth in Section 9204 of the Public Contract Code.

ARTICLE 12 EVENTS OF DEFAULT AND REMEDIES; TERMINATION

12.1 CONTRACTOR Events of Default. The following shall be considered "CONTRACTOR Events of Default":

12.1.1 If CONTRACTOR fails or neglects to carry out the Work in accordance with the provisions of the Contract Documents, and fails, after seven (7) Days notice from CITY, to commence a cure to correct such failure or neglect and thereafter diligently pursue such cure to completion;

12.1.2 If CONTRACTOR materially breaches this Agreement and fails, after seven (7) Days notice from CITY, to commence a cure to correct such breach and thereafter diligently pursue such cure to completion (such breach to include, but not be limited to, failure to make payment to Subcontractors for materials or labor in accordance with the respective agreements between CONTRACTOR and the Subcontractors or violation of Applicable Laws);

12.1.3 If a custodian, trustee or receiver is appointed for CONTRACTOR, or if CONTRACTOR becomes insolvent or bankrupt, is generally not paying its debts as they become due or makes an assignment for the benefit of creditors, or CONTRACTOR causes or suffers an order for relief to be entered with respect to it under applicable bankruptcy law or applies for or consents to the appointment of a custodian, trustee or receiver for CONTRACTOR, or bankruptcy, reorganization, arrangement or insolvency proceedings, or other proceedings for relief under any bankruptcy or similar law or laws for the relief of debtors, are instituted by or against CONTRACTOR, and in any of the foregoing cases such action is not discharged or terminated within sixty (60) Days of its institution.

12.2 Remedies of CITY upon a CONTRACTOR Event of Default.

12.2.1 Termination of Contract. Upon the occurrence of a CONTRACTOR Event of Default, CITY shall have the right to terminate this Contract upon an additional seven (7) Days written notice to CONTRACTOR, provided that CONTRACTOR has not commenced a cure within such seven (7) Day period. Without prejudice to any other rights or remedies of CITY, CITY may:

12.2.1.1 Take possession of the Site and of all materials, equipment, tools and construction equipment thereon owned by CONTRACTOR;

12.2.1.2 Accept assignment of Subcontracts; and

12.2.1.3 Finish the Work by whatever reasonable method CITY may deem expedient.

12.2.1.4 When CITY terminates the Contract as aforesaid, CONTRACTOR shall not be entitled to receive further payment until the Work is finished. If the unpaid balance of the GMP exceeds costs incurred in finishing the Work, such excess shall be paid to CONTRACTOR, up to the amount due CONTRACTOR for work performed prior to termination. If such costs exceed the unpaid balance of the GMP, CONTRACTOR shall pay the difference to CITY.

12.2.2 Recourse to Payment and Performance Bonds. Upon the occurrence of a CONTRACTOR Event of Default and termination of this Contract by CITY, CITY may call upon the Surety to perform its/their obligations under the Payment and Performance Bonds, if applicable.

12.3 Remedies not Exclusive. Except as otherwise provided in this Agreement, no remedy hereunder is intended to be exclusive of any other remedy, but each and every such remedy shall be cumulative and shall be in addition to any other available legal or equitable remedy, existing now or hereafter. No delay or omission to exercise any right or power accruing shall impair any such right or power nor shall it be construed to be a waiver of any Event of Default or acquiescence therein, and every such right and power may be exercised from time to time as often as may be deemed expedient.

12.4 Termination or Suspension for Convenience.

12.4.1 Termination for Convenience. CITY may, without cause, terminate this Contract, or any portion of Work to be performed hereunder at any time by a notice in writing from CITY to CONTRACTOR for CITY's convenience. In such case, CITY shall pay to CONTRACTOR all funds due CONTRACTOR for work performed up to the date of termination, plus all demobilization and close-out costs, including, but not limited to, any amounts payable to Subcontractors for early termination, plus reasonable overhead and profit on Work performed. All funds due hereunder, including unpaid Retention, shall be released within thirty (30) Days of termination of the Contract for convenience, subject to any withholding required or authorized by any Applicable Law. In no event shall such amounts owed to CONTRACTOR exceed the GMP.

12.4.2 Suspension for Convenience. CITY may, without cause, order CONTRACTOR in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as CITY may determine. An adjustment shall be made for increases in the cost of performance of the Work, including Fee on the increased cost of performance, caused by the suspension, delay or interruption, in accordance with the Change Order provisions of this Contract. No adjustment shall be made to the extent (1) the performance is, was or would have been so suspended, delayed or interrupted by another cause for which CONTRACTOR is responsible or (2) that an equitable adjustment to the GMP and/or Schedule is made or denied under another provision of

this Contract. Adjustments made in the cost of performance may have a mutually agreed fixed or percentage Fee.

ARTICLE 13 MISCELLANEOUS PROVISIONS

13.1 Governing Law. This Contract shall be construed with and governed by the laws of the State of California.

13.2 Successors and Assigns. CITY and CONTRACTOR respectively bind themselves, their partners, shareholders, successors, assigns and legal representatives to the other Party hereto and to shareholders, successors, assigns and legal representatives of such other Party in respect to covenants, agreements and obligations contained in the Contract Documents. Neither Party shall assign the Contract without the prior written consent of the other.

13.3 Notice. Any notices to Parties required by this Agreement shall be delivered or mailed, U.S. first class, postage prepaid, addressed as follows:

If to CITY:

City of Roseville
Attn: City Clerk
311 Vernon Street
Roseville, CA 95678

If to CONTRACTOR:

Diede Construction, Inc.
Attn: Steven Diede, President
P.O. Box 1007
Woodbridge, CA 95258

Address for Notice may be changed by Notice to the other Party.

13.4 Prevailing Wages. For purposes of this Agreement, CONTRACTOR and its Subcontractors shall comply with all applicable prevailing wage laws, e.g., but not limited to, California Labor Code Sections 1770 et seq. In accordance with said Section 1775, CONTRACTOR shall forfeit as a penalty to CITY Two Hundred Dollars (\$200) for each calendar Day or portion thereof for each worker paid less than the prevailing rates for such work or craft in which such worker is employed for any work done on-Site under the Agreement by CONTRACTOR or by any Subcontractor in violation of the provisions of the Labor Code and in particular, Labor Code Sections 1770 to 1780, inclusive. In addition to said penalty and pursuant to said Section 1775, the difference between such stipulated prevailing wage rates and the amount paid to each worker for each calendar Day or portion thereof for which each worker was paid less than the stipulated prevailing wage shall be paid to each worker by CONTRACTOR or the applicable Subcontractor.

Pursuant to the provisions of California Labor Code Section 1773, the Department of Industrial Relations has identified the source, stated below, of the General Prevailing Rate of Wages applicable to the work to be done, for straight time, overtime, and holiday work. The holiday wage rate listed shall be applicable to all holidays recognized in the collective bargaining agreement of the particular craft, classification or type of worker concerned. These wage rates may be obtained from the State Department of Industrial Relations and/or the following website address: <http://www.dir.ca.gov/dlsr/DPreWageDetermination.htm>, which is a part of this Agreement.

Pursuant to Labor Code Section 1773.2, the General Prevailing Wage Rates set forth above by the Department of Industrial Relations, which form a part of this Agreement, shall be posted by CONTRACTOR at a prominent place at the Site.

13.5 Modifications. No Modifications or Change Orders shall be valid unless in writing and signed by CITY and CONTRACTOR.

13.6 Interpretation. Any and all headings of this Agreement are for convenience of reference only and do not modify, define or limit the provisions thereof. Words of any gender shall be deemed and construed to include correlative words of the other gender. Words importing the singular number shall include the plural number and vice versa, unless the context shall otherwise be deemed to include all supplements and/or amendments to any such exhibits or documents entered into in accordance with the terms hereof and thereof. All references to any person or entity shall be deemed to include any person or entity succeeding to the rights, duties and obligations of such person or entity in accordance with the terms of this Agreement. Where reference is made in this Agreement to another Contract Document, the reference refers to that provision as amended or supplemented by the other provisions of the Contract Documents. In the event of any conflict between or among the Contract Documents, the provisions of this Agreement shall govern.

13.7 Severability. If any provision of this Agreement is held to be inoperative or unenforceable as applied in any particular case because it conflicts with any other provision hereof or any constitution, statute, ordinance, rule of law or public policy, or for any other reason, such holding shall not have the effect of rendering the provision in question inoperative or unenforceable in any other case, or of rendering any other provision herein contained inoperative or unenforceable to any extent whatever. The invalidity of any one or more phrases, sentences, clauses or sections contained in this Agreement shall not affect the remaining portions of this Agreement or any part hereof, and they shall otherwise remain in full force and effect.

13.8 Whole Agreement. This Agreement, the Exhibits hereto and the Contract Documents, specifications and Drawings shall constitute the entire agreement between the Parties, and no inducements, considerations, promises or other references shall be implied in this Agreement that are not expressly addressed herein

13.9 Accounting Records. CONTRACTOR shall keep full and detailed accounts and exercise such controls as may be necessary for proper financial management under this Agreement; the accounting and control systems shall be reasonably satisfactory to CITY. CITY and CITY's accountants shall be afforded access to CONTRACTOR's records, books,

correspondence, instructions, drawings, receipts, Subcontracts, vouchers, memoranda and other data relating to this Agreement, and CONTRACTOR shall preserve these for a period of three (3) years after final payment, or for such longer period as may be required by law.

13.10 Intentionally left blank.

13.11 No Waiver. Neither the inspection by CITY or its agents, nor any order or certificate for payment of money, nor payment for, nor acceptance of the whole or any part of the work by CITY, nor any extensions of time, nor any position taken by CITY or its agents shall operate as a waiver of any provision of this Agreement or of any power herein reserved to CITY or any right to damages herein provided, nor shall any waiver of any breach of this Agreement be held to be a waiver of any other or subsequent breach.

13.12 CONTRACTOR Shall Assume Risks. Until the Final Completion or acceptance by CITY of all Work under this Contract, the Work shall be under CONTRACTOR's responsible care and charge. CONTRACTOR shall rebuild, repair, restore and make good all injuries, damages, corrections, and repairs occasioned or rendered necessary by accidental causes of any nature, to all or any portions of the Work, except as otherwise stipulated.

13.13 General Liability of CONTRACTOR. Except as otherwise herein expressly stipulated, CONTRACTOR shall perform all the work and furnish all the labor, materials, tools power and light, and appliances, necessary or proper for performing and completing the Work herein required in the manner within the time herein specified. The mention of any specific duty or liability of CONTRACTOR shall not be construed as a limitation or restriction of any general liability or duty of CONTRACTOR and, any reference to any specific duty or liability shall be construed to be the purpose of explanation.

13.14 Attorney's Fees and Venue. If either Party commences any legal action against the other Party arising out of this Agreement or the performance thereof, the prevailing Party shall be entitled to recover its reasonable litigation expenses, including but not limited to, court costs, expert witness fees, discovery expenses, and attorney's fees. Any action arising out of this Agreement shall be brought in Placer County, California, regardless of where else venue may lie. To the extent permitted by applicable law, each Party waives any defense that it may have based on lack of *in personam* jurisdiction or *forum nonconveniens*.

13.15 Third Party Beneficiaries. There are no third party beneficiaries to this Agreement.

[SIGNATURES ON FOLLOWING PAGE]

IN WITNESS WHEREOF, the City of Roseville, a municipal corporation, has authorized the execution of this Agreement in duplicate by its City Manager and attested to by its City Clerk under the authority of Resolution No. _____, adopted by the Council of the City of Roseville on the ____ day of _____, 20____, and CONTRACTOR has caused this Agreement to be executed.

CITY OF ROSEVILLE, a
municipal corporation:

DIEDE CONSTRUCTION, INC., a
California corporation:

BY: _____
DOMINICK CASEY
City Manager

BY: _____
its: Steven L Diede, President

ATTEST:

and

BY: _____
SONIA OROZCO
City Clerk

BY: 
its: Lillian K Diede, Secretary/Treasurer

APPROVED AS TO FORM:

BY: _____
MICHELLE SHEIDENBERGER
City Attorney

APPROVED AS TO SUBSTANCE:

By: 
RICHARD D. PLECKER
Environmental Utilities Director

LIST OF EXHIBITS:

Exhibit A	Guaranteed Maximum Price
Exhibit B	Construction Allowance Items [reserved]
Exhibit C	Hazardous Materials
Exhibit D	In Lieu of Securities Escrow Agreement
Exhibit E	Performance, Labor & Materials, and Warranty Bonds
Exhibit F	CONTRACTOR's Proposal

EXHIBIT A

GUARANTEED MAXIMUM PRICE, FEE, AND COST OF WORK

A. GUARANTEED MAXIMUM PRICE: The **Guaranteed Maximum Price** as of the date of execution of this Agreement is two million, nine hundred ninety-eight thousand, seven hundred dollars (\$2,998,700), U.S. Currency.

B. FEE AND CONTINGENCY: The Fee and Contingency amounts, if any, are as stated in the Proposal.

C. COST OF THE WORK:

1. "Cost of the Work." The term "Cost of the Work" shall mean costs incurred by CONTRACTOR in the performance of the Work, that do not exceed the GMP. The following are categories of cost and expense to be paid by CITY to CONTRACTOR as Cost of the Work:

2. Construction Costs.

2.1 Labor Costs.

2.1.1 Wages of construction workers directly employed by CONTRACTOR to perform the construction of the Work at the Site or, with CITY's agreement, at off-site workshops.

2.1.2 Wages or salaries of CONTRACTOR's supervisory and administrative personnel when stationed at the Site and wages, salaries and other costs of project management, pre-construction services, form design, foundation engineering, manpower planning, purchasing, estimating and data processing, whether performed at the Site or in CONTRACTOR's offices, including, but not limited to services rendered during the Design Phase of the Project.

2.1.3 Wages and salaries of CONTRACTOR's supervisory or administrative personnel engaged at factories, workshops or on the road, in expediting the production or transportation of materials or equipment required for the Work, but only for that portion of their time required for the Work.

2.1.4 Costs paid or incurred by CONTRACTOR for taxes, insurance, contributions, assessments and benefits required by law or collective bargaining agreements and, for personnel not covered by such agreements, customary benefits such as sick leave, medical and health benefits, holidays, vacations and pensions, provided such costs are based on wages and salaries included in subsections 2.1.1 through 2.1.3 above.

2.2 Subcontract Costs. Amounts due Subcontractors for work, excluding Change Order work, in accordance with the requirements of the Subcontracts.

2.3 Costs of Materials and Equipment Incorporated in the Completed Construction. Costs, including transportation, of materials and equipment incorporated or to be incorporated in the completed construction.

2.4 Costs of other Materials and Equipment, Temporary Facilities, and Related Items.

2.4.1 Costs, including transportation, installation, maintenance, dismantling and removal of materials, supplies, temporary facilities, machinery, equipment and hand tools not customarily owned by the construction workers, which are provided by CONTRACTOR at the Site and fully consumed in the performance of the Work; and cost, less salvage value, on such items if not fully consumed, whether sold to others or retained by CONTRACTOR. Costs for items previously used by CONTRACTOR shall mean fair market value.

2.4.2 Rental charges for temporary facilities, machinery, equipment and hand tools not customarily owned by the construction workers, which are provided by CONTRACTOR at the Site, whether rented from CONTRACTOR or others, and costs of transportation, installation, minor repairs and replacements, dismantling and removal thereof. Rental charges for equipment owned by CONTRACTOR shall be at then prevailing rates.

2.4.3 Costs of removal of debris from the Site.

2.4.4 Costs of facsimiles, telegrams and long distance telephone calls, postage and delivery charges (whether originating at the Site or at the offices of CONTRACTOR or CONTRACTOR), telephone service at the Site and reasonable petty cash expenses of the Site office.

2.5 Premiums; Taxes; Fees; Royalties.

2.5.1 That portion directly attributable to this Agreement of premiums for insurance and the Payment and Performance Bonds.

2.5.2 Sales, use, gross receipts or similar taxes imposed by a governmental authority, which are related to the Work and for which CONTRACTOR is liable.

2.5.3 Fees and assessments for any permits, licenses and inspections required by the Contract Documents.

2.5.4 Fees of testing laboratories for tests required by the Contract Documents or government authorities.

2.5.5 Royalties and license fees paid for the use of a particular design, process or product required by the Contract Documents. The costs of defending suits or claims for infringement of patent rights arising from such requirement by the Contract Documents; payments made in accordance with legal judgments against CONTRACTOR or CONTRACTOR resulting from such suits or claims and payments of settlements in connection therewith.

2.5.6 Deposits lost for cause other than CONTRACTOR's negligence.

2.6 Emergencies. Costs incurred in taking action to prevent threatened damage, injury or loss in case of emergency affecting the safety of persons and property, as provided in Section 10.7 of this Agreement.

2.7 Other Costs. Other costs incurred in the performance of the Work, if and to the extent approved in writing by CITY, which approval shall not be unreasonably withheld.

3. Items not Included in Cost of the Work.

3.1 Salaries and other compensation of CONTRACTOR's personnel stationed at CONTRACTOR's principal office or offices other than the Site, except as specifically provided in subsections 2.1.2 and 2.1.3 above.

3.2 Expenses of CONTRACTOR's principal office and offices, other than the Site office.

3.3 Overhead and general expenses, except as may be included in Sections 1 and 2 above.

3.4 The capital expenses of CONTRACTOR, including interest on capital employed for the Work.

3.5 Costs that would cause the GMP to be exceeded.

EXHIBIT B
CONSTRUCTION ALLOWANCE ITEMS

(reserved)

EXHIBIT C
HAZARDOUS MATERIALS

1. Certain Definitions.

1.1 "Hazardous Materials" means any substance:

1.1.1 the presence of which requires investigation or remediation under federal, state or local law, statute, regulation, ordinance, order, action, policy or common law;

1.1.2 which is or becomes defined as a "hazardous waste," "hazardous substance," pollutant or contaminant under any federal, state or local law, statute, regulation, rule or ordinance or amendments thereto, including, without limitation, the Comprehensive Environmental Response, Compensation and Liability Act, 42 USC §§9601 et seq. ("CERCLA"), as amended, or the Resource, Conservation and Recovery Act, as amended, 42 USC §§6901 et seq. ("RCRA");

1.1.3 which is petroleum, including crude oil or any fraction thereof not otherwise designated as a "hazardous substance" under CERCLA, including without limitation gasoline, diesel fuel or other petroleum hydrocarbons;

1.1.4 which is toxic, explosive, corrosive, flammable, infectious, radioactive, carcinogenic, mutagenic, or otherwise hazardous and is or becomes regulated by any governmental authority or instrumentality;

1.1.5 the presence of which on the Site causes or threatens to cause a nuisance upon the Site or to the adjacent properties or poses or threatens to pose a hazard to the health or safety of persons on or about the Site; or

1.1.6 the presence of which on adjacent properties could constitute a trespass by CONTRACTOR or CITY.

1.2 "Underground Storage Tank" shall have the definition assigned to that term by RCRA §9001, 42 USC §6991, and also shall include:

1.2.1 any tank of 1,100 gallons or less capacity used for storing motor fuel;

1.2.2 any tank used for storing heating oil for consumption on the premises where stored;

1.2.3 any septic tank; and

1.2.4 any pipes connected to items 1.2.1-1.2.3.

1.3 "Environmental Requirements" means all Applicable Laws, statutes, regulations, rules, ordinances, codes, licenses, permits, orders and similar items of all federal, state or local governmental agencies or other instrumentalities and all applicable judicial, administrative and regulatory decrees, judgments and orders relating to the protection of human health or the environment, including, without limitation:

1.3.1 all requirements, including but not limited to, those pertaining to reporting, licensing, permitting, investigation and remediation of emissions, discharges, releases or threatened releases of Hazardous Materials into the air, surface water, ground water or land, or relating to the manufacture, processing, distribution, use, treatment, storage, disposal, transport or handling of Hazardous Materials; and

1.3.2 all requirements pertaining to the protection of the health and safety of employees or the public.

1.4 "Environmental Damages" means all claims, judgments, damages, losses, penalties, fines, liabilities, encumbrances, liens, costs and expenses of investigation and defense of any claim, including, without limitation, attorney's fees, which are incurred at any time as a result of the existence of Hazardous Materials upon, about or beneath the Site or migrating or threatening to migrate to or from the Site, and including, without limitation:

1.4.1 damages for personal injury, or injury to property or to natural resources occurring upon or off the Site;

1.4.2 fees incurred for the services of attorneys, consultants, CONTRACTOR, experts, laboratories and all other costs incurred in connection with the investigation or remediation of such Hazardous Materials or violation of Environmental Requirements; and

1.4.3 liability to any third party or governmental agency or political subdivision to indemnify such party, agency or political subdivision for costs expended in connection with the items listed in subparagraph 1.4.2.

1.5 "Environmental Conditions" means collectively, Hazardous Materials and Underground Storage Tanks existing on the Site and not brought there by CONTRACTOR or any Subcontractor.

2. Investigation of Site.

2.1 Upon written notice from CITY, CONTRACTOR shall prepare for approval and execution by CITY, one or more contracts ("Environmental Contracts") with suitably qualified consultants and/or engineers ("Environmental Engineers"), for purposes of performing an investigation and analysis of the Site prior to demolition and excavation activities, to determine the presence of any Environmental Conditions on, in or under the Site. The Environmental Contracts shall provide for a commercially reasonable scope of investigation approved by CITY, and may provide for conducting the investigation and testing in phases acceptable to CITY. The Environmental Contracts shall also provide that the Environmental Engineers shall begin their

tests and inspections at the Site as soon as CITY is able to arrange access to the Site, or any portions thereof, for such purposes. The Environmental Contracts shall provide that CONTRACTOR, acting as agent of CITY, shall coordinate the activities of the Environmental Engineers.

2.2 The Environmental Contracts shall provide that the Environmental Engineers shall prepare such reports, feasibility studies and remedial plans ("Environmental Assessments") as may be reasonably necessary in order to identify and explain the quantity, scope and nature of the Environmental Conditions found to exist at the Site. The Environmental Assessments shall contain a detailed analysis of the Environmental Conditions discovered, and the actions ("Remedial Actions") required for the response, removal, cleanup or remediation of such Environmental Conditions (i) which are required by Environmental Requirements, or (ii) which are reasonably necessary to mitigate Environmental Damages.

2.3 The Environmental Contracts shall provide that the Environmental Engineers shall promptly provide CITY and CONTRACTOR with a copy of each Environmental Assessment, together with any other reports and test results generated pursuant to the Environmental Contracts. CONTRACTOR shall, promptly after receipt of the foregoing matters from the Environmental Engineers, prepare and submit to CITY a written report setting forth CONTRACTOR's understanding of whether and to what extent any recommended Remedial Actions may result in an amendment to the Schedule and the progress of the Work.

2.4 The Environmental Contracts shall provide that it shall be the responsibility of the Environmental Engineers to give any necessary notice to the appropriate regulatory agency or agencies of the presence of any Environmental Conditions; to pursue all necessary negotiations with such agencies concerning preparation and approval of a plan for clean-up to the extent required; and to obtain all necessary permits to perform any Remedial Actions.

3. Remedial Actions.

3.1 If so instructed by CITY, based upon the results of the Environmental Assessments, CONTRACTOR shall, as agent for CITY, obtain bids from remediation contractors ("Remediation Contractors") suitably qualified and approved by CITY, to perform the Remedial Actions selected by CITY and shall submit such bids to CITY, together with CONTRACTOR's recommendation of the Remediation Contractor(s) to be retained. If CITY elects to go forward with all or any portion of the Remedial Actions covered by the bids submitted, CITY will so advise CONTRACTOR in a written notice on or before the date which is sixty (60) Days after receipt of the foregoing matters from CONTRACTOR. Promptly after receipt of such notice, CONTRACTOR shall prepare for CITY's execution remediation contracts ("Remediation Contracts") with the Remediation Contractors identified in such notice.

3.2 CONTRACTOR, as agent for CITY, shall be responsible for coordinating the work and services performed by the Remediation Contractors, and coordinating such remediation work with the Work.

3.3 If in the course of performance of the Work, CONTRACTOR encounters on the Site any Hazardous Materials not previously disclosed and remediated by the Environmental Engineers or the Remediation Contractors, CONTRACTOR shall immediately suspend the Work in the area affected and promptly thereafter report the condition to CITY.

4. Payments: Liability of CONTRACTOR.

4.1 All payments due under the Environmental Contracts and the Remediation Contracts shall be made by CITY directly to the Environmental Engineers and the Remediation Contractors. Such payments will be based on requisitions, which requisitions shall be approved by CONTRACTOR prior to submission to CITY.

4.2 All payments due under the Environmental Contracts, the Remediation Contracts and for Environmental Damages, shall not be a part of the GMP, and shall be the sole responsibility of CITY, except as expressly provided otherwise in Section 5 hereof.

4.3 It is understood and agreed that with respect to any Environmental Conditions existing on the Site, CONTRACTOR is not, and shall not be deemed to be, a generator, arranger, operator, treater, storer, transporter or disposer of, or otherwise responsible for, any such Environmental Conditions. It is understood and agreed that CONTRACTOR shall have no right to direct the means or methods of performance of any Environmental Engineer or Remediation Contractor.

4.4 CITY shall indemnify, defend and hold harmless CONTRACTOR, from and against any Environmental Damages asserted against or sustained by CONTRACTOR as a result of CONTRACTOR being deemed or determined to be a generator, arranger, operator, treater, storer, transporter or disposer of, or otherwise responsible for, any such Environmental Conditions.

5. Environmental Responsibilities of CONTRACTOR.

5.1 CITY acknowledges and agrees that CONTRACTOR shall not commence or continue any demolition or construction activities on any portion of the Site on or in which Remedial Actions are to be performed until such Remedial Actions are to the point where construction activities will not interfere with such Remedial Actions, as evidenced by appropriate certification by the applicable Environmental Engineer and/or Remediation CONTRACTOR and any required approval of any applicable government agency. CONTRACTOR agrees to use good faith diligent efforts to adjust and reschedule its activities at the Site so as to minimize, to the extent reasonably practical, the adverse effect on the progress of the Work resulting from any Remedial Actions.

5.2 CONTRACTOR shall not bring Hazardous Materials to the Site, and shall not include Hazardous Materials in any construction materials, unless permitted by Environmental Requirements. CONTRACTOR shall comply, and shall cause all Subcontractors to comply, with all Environmental Requirements regarding the generation, handling, storage, treatment and disposal of Hazardous Materials.

5.3 CONTRACTOR shall indemnify, defend and hold harmless the Indemnified Parties from and against any Environmental Damages asserted against or sustained by such parties as a result of any Environmental Conditions caused or created by CONTRACTOR or any Subcontractor, or of any violation by CONTRACTOR or the Subcontractors, of any Environmental Requirement arising out of the performance of the Work.

EXHIBIT D

IN LIEU OF SECURITIES ESCROW AGREEMENT

**(form of agreement follows this page)
(use is optional by Contractor)**

ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

(Project: West Side Tanks and Pump Station Operations Crew Facility)

THIS ESCROW AGREEMENT is made and entered into on this ____ day of _____, 20__ by and between the:

City of Roseville, whose address is:

311 Vernon Street
Roseville, CA 95678

(hereinafter called "CITY"); and

Diede Construction, Inc., whose address is:

P.O. Box 1007
Woodbridge, CA 95258

(hereinafter called "CONTRACTOR"); and

_____, whose address is:

(hereinafter called "ESCROW AGENT").

For the consideration hereinafter set forth, CITY, CONTRACTOR, and ESCROW AGENT agree as follows:

1. Pursuant to Section 22300 of the Public Contract Code of the State of California, CONTRACTOR has the option to deposit securities, subject to prior approval of CITY, with ESCROW AGENT, as a substitute for retention earnings required to be withheld by CITY pursuant to the contract for public works entered into between the CITY and CONTRACTOR for the Project in the amount of two million, nine hundred ninety-eight thousand, seven hundred

dollars (\$2,998,700) dated _____, (hereinafter referred to as the "Contract"). Alternatively, on written request of CONTRACTOR, CITY shall make payments of the retention earnings directly to the ESCROW AGENT.

When CONTRACTOR deposits the securities as a substitute for Contract earnings, the ESCROW AGENT shall notify CITY within ten (10) days of the deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as retention under the terms of the Contract between CITY and CONTRACTOR. Securities shall be held in the name of ESCROW AGENT, and shall designate CONTRACTOR as the beneficial owner, and shall be limited to those types of acceptable securities as described in Public Contract Code Section 22300.

2. CITY shall make progress payments to CONTRACTOR for those funds which otherwise would be withheld from progress payments pursuant to the Contract provisions, provided that ESCROW AGENT holds securities in the form and amount specified above.

3. When CITY makes payment of retentions earned directly to ESCROW AGENT, ESCROW AGENT shall hold them for the benefit of CONTRACTOR until the time that the escrow created under this Agreement is terminated. CONTRACTOR may direct the investment of the payments into securities. All terms and conditions of this Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when CITY pays ESCROW AGENT directly.

4. CONTRACTOR shall be responsible for paying all fees for the expenses incurred by ESCROW AGENT in administering the Escrow Account and all expenses of CITY. These expenses and payment terms shall be determined by CITY, CONTRACTOR, and ESCROW AGENT.

5. The interest earned on the securities or the money market accounts held in escrow and all interest earning on that interest shall be for the sole account of CONTRACTOR and shall be subject to withdrawal by CONTRACTOR at any time and from time to time without notice to CITY.

6. CONTRACTOR shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to ESCROW AGENT accompanied by written authorization from CITY to ESCROW AGENT that CITY consents to the withdrawal of the amount sought to be withdrawn by CONTRACTOR.

7. CITY shall have a right to draw upon the securities in the event of default by CONTRACTOR. Upon seven (7) days' written notice to ESCROW AGENT from CITY of the default, ESCROW AGENT shall immediately convert the securities to cash and shall distribute the cash as instructed by CITY.

8. Only upon receipt of written notification from CITY certifying that the Contract is final and complete, and that CONTRACTOR has complied with all requirements and procedures applicable to the Contract, ESCROW AGENT shall release to CONTRACTOR all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payments of fees and charges.

9. ESCROW AGENT shall rely on the written notifications from CITY and CONTRACTOR pursuant to Sections (5) to (8), inclusive, of this Agreement and CONTRACTOR shall hold ESCROW AGENT harmless from ESCROW AGENT's release and disbursement of the securities and interest as set forth above.

10. The parties hereto mutually agree that this Agreement is substantially similar to the form under Public Contracts Code Section 22300.

11. The names of the persons who are authorized to give written notice or to receive written notice on behalf of CITY and on behalf of CONTRACTOR in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of CITY:

Title

Name

Signature

Address

On behalf of CONTRACTOR:

Title

Name

Signature

Address

On behalf of ESCROW AGENT:

Title

Name

Signature

Address

12. At the time the Escrow Account is opened, CITY and CONTRACTOR shall deliver to ESCROW AGENT a fully executed counterpart of this Agreement.

IN WITNESS WHEREOF, the City of Roseville, a municipal corporation, has authorized the execution of this Agreement by its City Manager and attestation by its City Clerk under the authority of Resolution No. 87-141, adopted by the Council of the City of Roseville on the 5th day of August, 1987, and CONTRACTOR and ESCROW AGENT have authorized the execution of this Agreement.

CITY OF ROSEVILLE, a
municipal corporation:

CONTRACTOR:
DIEDE CONSTRUCTION, INC., a
California corporation

BY: _____
DOMINICK CASEY
City Manager

BY: _____
its: _____

and

ATTEST:

BY: _____

BY: _____
SONIA OROZCO
City Clerk

its: _____

ESCROW AGENT:

APPROVED AS TO FORM:

BY: _____

its: _____

BY: _____
MICHELLE SHEIDENBERGER
City Attorney

and

BY: _____

APPROVED AS TO SUBSTANCE:

its: _____

BY: _____
DENNIS KAUFFMAN
Assistant City Manager/Chief Financial Officer

ACKNOWLEDGED BY ADMINISTERING DEPARTMENT:

BY: _____
RICHARD D. PLECKER
Environmental Utilities Director

EXHIBIT E

BOND FORMS

Bond No. _____
Premium \$ _____

PERFORMANCE BOND

This Performance Bond ("Performance Bond"), dated _____, 20____, is in the penal sum of _____ Dollars (\$ _____), which is an amount not less than one hundred percent (100%) of the Total Contract Price, and is entered into by and between the undersigned _____ ("Principal" or "Contractor") and the undersigned _____ ("Surety") to ensure the Principal's faithful performance of the Design Build Construction Agreement for the _____ project ("Design Build Contract"). This Performance Bond consists of this page and the following Performance Bond Terms and Conditions, Paragraphs 1 through 12. Any singular reference to the Principal, the Surety, the City of Roseville, California ("City") or other party shall be considered plural where applicable.

BOND TERMS AND CONDITIONS

1. The Principal and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the City for the complete and proper performance of the Design Build Contract, which is incorporated herein by reference.
2. If the Principal completely and properly performs all of its obligations under the Design Build Contract, the Surety and the Principal shall have no further obligation under this Performance Bond, except to participate in conferences as provided in Paragraph 3.1 below.
3. If there is no City Default, the Surety's obligation under this Performance Bond shall arise after:
 - 3.1 The City has notified the Contractor and the Surety at their respective addresses described in Paragraph 10 below, that the City is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen (15) days after receipt of such notice to discuss methods of performing the Design Build Contract. If the City, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Design Build Agreement, but such a mutual agreement shall not waive the City's right, if any, subsequently to declare a Contractor Default; and
 - 3.2 The City has declared a Contractor Default and formally terminated the Contractor's right to complete the Design Build Contract. Such Contractor Default shall not be declared earlier than twenty (20) days after the Contractor and the Surety have received notice as provided in Paragraph 3.1 above.
 - 3.3 The City has agreed to pay the Balance of the Total Contract Price to:
 - 3.3.1 The Surety in accordance with the terms of this Performance Bond and the Design Build Contract; or

3.3.2 To a contractor selected to perform the Design Build Contract in accordance with the terms of this Performance Bond and the Design Build Contract.

4. When the City has satisfied the conditions of Paragraph 3 above, the Surety shall promptly (within thirty (30) days) and at the Surety's expense elect to take one of the following actions:
 - 4.1 Arrange for the Contractor, with the City's consent, such consent to be in the City's sole discretion, to perform and complete the Design Build Contract. If the City withholds its consent, the Surety must elect an option described in Paragraphs 4.2, 4.3 or 4.4, below; or
 - 4.2 Undertake to perform and complete the Design Build Contract itself, through its agents or through independent contractors; or
 - 4.3 Obtain proposals from qualified contractors acceptable to the City for a contract for performance and completion of the Design Build Contract, and, upon determination by the City of the best value for the City, arrange for a contract to be prepared for execution by the City and the contractor selected, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Design Build Contract; and, if the Surety's obligations defined in Paragraph 6 below exceed the Balance of the Total Contract Price, then the Surety shall pay to the City the amount of such excess; or
 - 4.4 Waive its right to perform and complete the Design Build Contract, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances, and, after investigation and consultation with the City, determine in good faith the amount for which it may then be liable to the City under Paragraph 6, below, for the performance and completion of the Design Build Contract and, as soon as practicable after the amount is determined, tender payment therefor to the City with full explanation of the payment's calculation. If the City accepts the Surety's tender under this Paragraph 4.4, the City may still hold Surety liable for future damages then unknown or unliquidated resulting from the Seller Default. If the City disputes the amount of Surety's tender under this Paragraph 4.4, the City may exercise all remedies available to it at law to enforce the Surety's liability under Paragraph 6, below.
5. If the Surety does not proceed as provided in Paragraph 4, above, then the Surety shall be deemed to be in default on this Performance Bond ten (10) calendar days after receipt of an additional written notice from City to the Surety demanding that the Surety perform its obligations under this Performance Bond. At all times the City shall be entitled to enforce any remedy available to the City at law or under the Design Build Contract including, without limitation, and by way of example only, rights to perform work, protect work, mitigate damages, or coordinate work with other consultants or contractors at Surety's sole expense.
6. The Surety's monetary obligation under this Performance Bond is limited by the amount of this Performance Bond. Subject to these limits, the Surety's obligations under this Bond are commensurate with the obligations of the Seller under the Design Build Contract. The Surety's obligations shall include, but are not limited to:
 - 6.1 The responsibilities of the Seller under the Design Build Contract for completion of the Design Build Contract and correction of defective work;

- 6.2 The responsibilities of the Seller under the Design Build Contract to pay liquidated damages, and damages for which no liquidated damages are specified in the Design Build Contract, including but not limited to, all valid and proper back charges, offsets, payments, indemnities, defense costs or other damages; and
- 6.3 Additional legal, design professional and delay costs resulting from the Seller Default or resulting from the actions or failure to act of the Surety under Paragraph 4, above.
7. The Surety shall not be liable to the City or others for the obligations of the Contractor that are unrelated to the Design Build Contract, and the Balance of the Total Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Performance Bond to any person or entity other than the City or its heirs, executors, administrators, or successors.
8. The Surety hereby waives notice of any change, alteration or addition to the Design Build Contract or to related subcontracts, purchase orders and other obligations, including but not limited to changes of time. The Surety consents to all terms of the Design Build Contract, including provisions on changes to the Contract Documents. No extension of time, Change Order, alteration, Modification, deletion, or addition to the Contract Documents, or of the work required thereunder, shall release or exonerate Surety on this Performance Bond or in any way affect the obligations of Surety on this Performance Bond.
9. Any proceeding, legal or equitable, under this Performance Bond shall be instituted in any court of competent jurisdiction in Placer County, California within two (2) years after the Contractor Default or within two (2) years after the Contractor ceased working or within two (2) years after the Surety refuses or fails to perform its obligations under this Performance Bond, whichever occurs first. If the provisions of this Paragraph 9 are void or prohibited by law, the minimum period of limitation available to sureties as a defense in Placer County shall be applicable.
10. Notice to the Surety, the City or the Principal shall be mailed or delivered to the address shown on the signature page.
11. Any provision in this Performance Bond conflicting with any statutory or regulatory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Performance Bond shall be construed as a statutory bond and not as a common law bond.
12. Definitions.
- 12.1 Balance of the Total Contract Price: The total amount payable by the City to the Contractor pursuant to the terms of the Design Build Contract after all proper adjustments have been made under the Design Build Contract, including, for example, deductions for progress payments made, deductions for liquidated damages owed, and increases/decreases for approved modifications to the Design Build Contract.
- 12.2 Design Build Contract: The documents between the City and the Principal identified as the Contract Documents in that certain first above-mentioned Design Build Construction Agreement, including all changes, Addenda and modifications thereto.

- 12.3 Contractor Default: Material failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Design Build Contract.
- 12.4 City Default: Material failure of the City, which has neither been remedied nor waived, to pay the Contractor progress payments due under the Design Build Contract or to perform other material terms of the Design Build Contract, provided such failure is the cause of the asserted Contractor Default and is sufficient to justify Contractor termination of the Design Build Contract.

IN WITNESS WHEREOF, the undersigned obligated parties have executed this instrument.

(Corp. Seal)

Principal:

Signature:

Name & Title:

Address:

(Corp. Seal)

Surety:

Signature:

Name & Title:

Address:

Attorney in Fact: _____

Surety shall submit the following documents along with this Performance Bond:

1. Verification that Surety is admitted to transact surety business in the State of California; and
2. Copy of Surety's Certificate of Authority, issued by the Insurance Commissioner of the State of California, along with a statement that said Certificate has not been surrendered, revoked, cancelled, annulled or suspended.

Approved: _____, City Attorney

END OF DOCUMENT

Bond No. _____
Premium \$ _____

LABOR AND MATERIAL BOND

This Labor and Material Bond ("Labor and Material Bond") dated _____, 20____, is in the penal sum of _____ Dollars (\$ _____), which is an amount not less than one hundred percent (100%) of the Total Contract Price, and is entered into by and between the undersigned _____ ("Principal" or "Contractor") and the undersigned _____ ("Surety") to ensure the Principal's payment of claimants pursuant to the Design Build Construction Agreement for the _____ project ("Design Build Contract"). This Labor and Material Bond consists of this page and the following Labor and Material Bond Terms and Conditions, Paragraphs 1 through 15. Any singular reference to the Principal, the Surety, the City of Roseville, California ("City") or other party shall be considered plural where applicable.

BOND TERMS AND CONDITIONS

1. The Principal and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the City and to Claimants, to pay for labor, materials, Equipment furnished and Services provided in the performance of the Design Build Contract, which is incorporated herein by reference.
2. With respect to the City, this obligation shall become null and void if and when the Principal:
 - 2.1 Promptly and fully makes payment, directly or indirectly, for all sums due Claimants, and
 - 2.2 Fully defends, indemnifies and holds harmless the City from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Design Build Contract, provided the City has promptly notified the Principal and the Surety (at the address described in Paragraph 10 below) of any claims, demands, liens or suits and has tendered defense of such claims, demands, liens or suits to the Principal and the Surety, and provided there is no City Default.Otherwise, this Labor and Material Bond shall be, and remain, in full force and effect.
3. With respect to Claimants, this obligation shall become null and void if and when the Principal promptly and fully makes payment, directly or indirectly through its Subcontractors, for all sums due Claimants; otherwise, this Labor and Material Bond shall be, and remain, in full force and effect.
4. The Surety shall have no obligation to Claimants under this Labor and Material Bond until:
 - 4.1 Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the City, stating that a claim is being made under this Labor and Material Bond and, with substantial accuracy, the amount of the claim.

- 4.2 Claimants who do not have a direct contract with the Contractor:
- 4.2.1 Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the City, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and
 - 4.2.2 Have either received a rejection in whole or in part from the Contractor, or have not received within thirty (30) days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and
 - 4.3.3 Not having been paid within the above thirty (30) days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the City, stating that a claim is being made under this Labor and Material Bond and enclosing a copy of the previous written notice furnished to the Contractor.
5. If a notice required by Paragraph 4 above is given by the City to the Contractor or to the Surety, that is sufficient compliance.
6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:
- 6.1 Send an answer to the Claimant, with a copy to the City, within forty-five (45) days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
 - 6.2 Pay or arrange for payment of any undisputed amounts.
7. The Surety's total obligation shall not exceed the amount of this Labor and Material Bond, and the amount of this Labor and Material Bond shall be credited for any payments made in good faith by the Surety under this Labor and Material Bond.
8. Amounts due the Contractor under the Design Build Contract shall be applied to satisfy claims, if any, under this Labor and Material Bond.
9. The Surety shall not be liable to the City, Claimants or others for obligations of the Contractor that are unrelated to the Design Build Contract. The City shall not be liable for payment of any costs, expenses, or attorney's fees of any Claimant under this Labor and Material Bond, and shall have no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Labor and Material Bond.
10. The Surety hereby waives notice of any change, alteration or addition to the Design Build Contract or to related subcontracts, purchase orders and other obligations, including but not limited to changes of time. The Surety consents to all terms of the Design Build Contract, including provisions on changes to the Contract Documents. No extension of time, Change Order, alteration, modification, deletion, or addition to the Contract Documents, or of the work required thereunder,

shall release or exonerate Surety on this Labor and Material Bond or in any way affect the obligations of Surety on this Labor and Material Bond.

11. Any proceeding, legal or equitable, under this Labor and Material Bond shall be instituted in any court of competent jurisdiction in Placer County, California within one (1) year from the date on which (i) the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.3.3, or (ii) the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Design Build Contract, whichever of (i) or (ii) first occurs. If the provisions of this Paragraph 11 are void or prohibited by law, the minimum period of limitation available to sureties as a defense in Placer County shall be applicable.
12. Notice to the Surety, the City or the Principal shall be mailed or delivered to the address shown on the signature page below. Actual receipt of notice by the Surety, the City or the Principal, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page below.
13. Any provision in this Labor and Material Bond conflicting with any statutory or regulatory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein.
The intent is that this Labor and Material Bond shall be construed as a statutory bond and not as a common law bond.
14. Upon request by any person or entity appearing to be a potential beneficiary of this Labor and Material Bond, the Principal shall promptly furnish a copy of this Labor and Material Bond or shall permit a copy to be made.
15. DEFINITIONS
 - 15.1 CLAIMANT: An individual or entity having a direct contract with the Contractor or with a subcontractor (of any tier) of the Contractor to furnish labor, materials or equipment for use in the performance of the Design Build Contract. The intent of this Labor and Material Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Design Build Contract, architectural and engineering services used or reasonably required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien or stop payment notice might be asserted.
 - 15.2 DESIGN BUILD CONTRACT: The documents between the City and the Contractor identified as the Contract Documents in that certain first above-mentioned Design Build Contract, including all changes, Addenda and modifications thereto.
 - 15.3 CITY DEFAULT: Material failure of the City, which has neither been remedied nor waived, to pay the Contractor as required by the Design Build Contract, provided such failure is the cause of the failure of Principal to pay the Claimants and is sufficient to justify Contractor termination of the Design Build Contract.

IN WITNESS WHEREOF, the undersigned obligated parties have executed this security instrument.

(Corp. Seal)

Principal: _____

Signature: _____

Name & Title:

Address:

(Corp. Seal)

Surety: _____

Signature: _____

Name & Title:

Address:

Attorney in Fact: _____

Surety shall submit the following documents along with this Labor and Material Bond:

1. Verification that Surety is admitted to transact surety business in the State of California; and
2. Copy of Surety's Certificate of Authority, issued by the Insurance Commissioner of the State of California, along with a statement that said Certificate has not been surrendered, revoked, cancelled, annulled or suspended.

Approved: _____, City Attorney

END OF DOCUMENT

Bond No. _____
Premium \$ _____

WARRANTY BOND

This Warranty Bond ("Warranty Bond"), dated _____, 20____, is in the penal sum of _____ for under the Design-Build Construction Agreement for the _____ project, and is entered into by and between the undersigned _____ ("Principal" or "Contractor") and the undersigned _____ ("Surety") to guaranty that all Equipment and Services provided by Seller under the above-mentioned Design Build Contract will fulfill the requirements of Principal's warranties and guarantees included in the Contract Documents. This Warranty Bond consists of this page and the following Warranty Bond Terms and Conditions, Paragraphs 1 through 7. Any singular reference to the Principal, the Surety, the City of Roseville, California ("City") or other party shall be considered plural where applicable.

BOND TERMS AND CONDITIONS

1. The Principal and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the City for a period of one (1) year following the date of Final Acceptance, or such longer period specified in the Contract Documents, its unconditional warranty of the quality and adequacy of all of the work including, without limitation, all equipment and work provided by Contractor and its subcontractors and subvendors of all tiers in connection with the Design Assist Contract.
2. Neither final payment nor use or occupancy of the Equipment or Services performed by the Contractor shall constitute an acceptance of such Equipment or Services not done in accordance with this Warranty Bond or relieve Contractor of liability in respect to any express guarantees, warranties or responsibilities for faulty materials or workmanship, ordinary wear and tear excepted. If within one (1) year after the date of Final Acceptance, or such longer period of time as may be prescribed the terms of the Contract Documents, any Equipment or Services is found to be defective, Contractor and Surety shall promptly, without cost to City and in accordance with City's written instructions, correct such defective Equipment or Services. Contractor and Surety shall remove any defective Equipment rejected by City and replace it with Equipment that is not defective. If Contractor or Surety fails to promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, City may have the defective Equipment or Services corrected or removed and replaced. Contractor and Surety shall pay for all claims, costs, losses and damages caused by or resulting from such removal and replacement. Where Contractor and Surety fail to correct defective Equipment or Services, or defects are discovered outside the correction period, City shall have all rights and remedies granted by law.
3. As part of the obligation secured hereby and in addition to the face amount specified therefor, there shall be included costs and reasonable expenses and fees, including reasonable attorney's fees, incurred by City.
4. The Surety hereby waives notice of any change, alteration or addition to the Design Assist Contract or to related subcontracts, purchase orders and other obligations, including but not limited to changes of time. The Surety consents to all terms of the Design Assist Contract, including provisions on changes to the Contract Documents. No extension of time, Change Order, alteration, Modification, deletion, or addition to the Contract Documents, or of the work required thereunder, shall release or exonerate Surety on this Warranty Bond or in any way affect the obligations of Surety on this Warranty Bond.

5. If the Surety does not proceed as provided in Paragraph 2 above, then the Surety shall be deemed to be in default on this Warranty Bond ten (10) calendar days after receipt of an additional written notice from City to the Surety demanding that the Surety perform its obligations under this Warranty Bond. At all times the City shall be entitled to enforce any remedy available to the City at law or under the Design Assist Contract including, without limitation, and by way of example only, rights to perform work as Surety's expense, protect work, mitigate damages, or coordinate work with other consultants or contractors.
6. All abbreviations and definitions of terms used in this Warranty Bond shall have the meanings set forth in the Contract Documents, including, without means of limitation, the Design Assist Contract.
7. The foregoing Warranty Bond is in addition to any other guarantees and warranties of Contractor contained in the Contract Documents, and not in lieu of, any and all other liability imposed on Contractor under the Contract Documents and at law with respect to Contractor's duties, obligations, and performance under the Contract Documents. In the event of any conflict or inconsistency between the terms of this Warranty Bond and any guaranty, warranty or obligation of the Seller under the Contract Documents or at law, such inconsistency or conflict shall be resolved in favor of the higher level of obligation of the Contractor and Surety.

IN WITNESS WHEREOF, the undersigned obligated parties have executed this instrument.

(Corp. Seal)

Principal: _____

Signature: _____

Name & Title:

Address:

(Corp. Seal)

Surety: _____

Signature: _____

Name & Title:

Address:

Attorney in Fact: _____

Surety shall submit the following documents along with this Warranty Bond:

1. Verification that Surety is admitted to transact surety business in the State of California; and
2. Copy of Surety's Certificate of Authority, issued by the Insurance Commissioner of the State of California, along with a statement that said Certificate has not been surrendered, revoked, cancelled, annulled or suspended.

Approved: _____, City Attorney

END OF DOCUMENT

EXHIBIT F
CONTRACTOR'S PROPOSAL

SCOPE OF WORK from CONTRACTOR'S TECHNICAL PROPOSAL

The following sections from Contractor's Part 1-Technical Proposal are included here as Scope of Work

Tab A – Firm & Team Qualifications (Excluding Attached Resumes)

Tab B – Project Understanding

Tab C – Project Approach

Tab E – Required Statements/Documents

Tab F – Exceptions

Tab G – Legal & Financials

Tab H – GMP, Cost of Work & Fee

Tab I – Preliminary Drawings & Preliminary Materials & Finishes

Tab J – Addenda Acknowledgement(s)



REQUEST FOR PROPOSAL

City of Roseville

West Side Tanks & Pump Station

Operations Crew Facility

RFP #08-089

Submission Date: June 10, 2021

Table of Contents

TAB A	Firm & Team Qualifications
TAB B	Project Understanding
TAB C	Project Approach
TAB D	Experience & Reerences
TAB E	Required Statements/Documents
TAB F	Exceptions
TAB G	Legal & Financials
TAB H	GMP, Cost of Work & Fee
TAB I	Preliminary Drawings & Preliminary Materials & Finishes
TAB J	Addenda Acknowledgement(s)



COMMERCIAL INDUSTRIAL DESIGN BUILD

CALIFORNIA
P.O. Box 1007
Woodbridge, CA. 95258
p: (209) 369-8255
f: (209) 368-0600

HAWAII
517 Ahui Street
Honolulu, HI. 96813
p: (808) 777-6290
f: (808) 777-6295

CA License No. 632669
HI License No. 30496



June 10, 2021

City of Roseville
Attn: City Clerk Department
311 Vernon Street
Roseville, CA 95678
RE: RFP #08-089 – City of Roseville West Side Tanks and Pump Station Operations Crew Facility Project

Dear Esteemed Panel,

I am pleased to present our qualifications for Design Build Services for the City of Roseville West Side Tanks and Pump Station Operations Crew Facility Project. Founded in 1978 as a family owned and operated business, Diede Construction, Inc. has grown into one of the leading general contractors in Central and Northern California.

We recognize that design and construction are different processes that require different skills. What sets Diede Construction apart from other general contractors is our integrated design-assist approach whereby our projects get managed by staff who specialize in design and construction. Our preconstruction process is integrated with our construction department, and, if selected, the City would benefit from close collaboration with project managers who have relevant expertise in each area.

By having preconstruction staff dedicated to the design phase of the project, we can assure a knowledgeable and professional process that will result in a design that meets your programmatic needs and has been thoroughly evaluated as to budget and constructability concerns. Similarly, having construction staff involved with the project from the very beginning creates an efficient construction process that is well-prepared to foresee possible delays and identify the best way to resolve them.

Enclosed you will find information on our project team, experience, expertise, and our statement of qualifications in response to this Request for Proposal. Your point of contact will be Brett Diede, who can be reached at 209.369.8255 or by email at estimating@diedeconstruction.com. Our physical address is 12393 N. Highway 99, Lodi, CA 95240 and our mailing address is P.O.Box 1007, Woodbridge, CA 95258.

I give you my personal assurance your project will be constructed with integrity and the best skills of our firm.

Sincerely,

Steven L. Diede
President

TAB A

Firm & Team Qualifications

DIEDE'S QUALIFICATIONS

Diede Construction, Inc. has over forty years of experience working on projects within Public Works and Metal Building sectors while utilizing the design build delivery method. The quality of our work and collaboration speaks to our ability to perform the Scope of Work outlined within this RFP. Additionally, we have partnered with LDA Partners as the Architect and have developed a professional relationship that spans more than two decades. We are confident that the contents of this proposal will further demonstrate our entire team's capacity our ability to collaborate, and professionalism, which will ultimately deliver unrivaled results.

KEY PROJECT TEAM MEMBERS & ORGANIZATIONAL CHART

Diede Construction is comprised of experienced individuals with specialized roles. The team consists of the chief estimator, construction project manager, assistant project manager, and site superintendent and their resumes are included with our proposal. When assigning projects to staff, Diede Construction takes current and future workload into account, ensuring we do not adversely impact our project managers existing schedules. This review certifies our projects receive the attention they deserve as Diede strives to always deliver on time and within budget, while meeting, or ideally exceeding, the Owner's expectations.

The staff named below all work closely with various office support staff, such as a submittals specialist, contract compliance personnel, and accounts payable personnel.

The following Key Team Members' Resumes are **attached**:

- Steve Diede, Chief Estimator,
- Brett Diede, Pre-Construction Director,
- Blaine Vernon, Project Manager,
- Ashlie Ringeisen, Assistant Project Manager,
- TBD, Superintendent,
- Eric Wohle, Architect of Record,
- Martin Gee, Civil Engineer,
- Mike Smith, Structural Engineer,

Diede Construction, Inc. will be the lead team member and primary point of contact for this project. The team will be contracted directly under Diede to streamline communication during the design process. These lines of communication will persist through to the construction team once the project begins

construction. Keeping a single point of contact ensures proper communication throughout construction to project completion.

The Diede Construction Project Manager, Blaine Vernon, will oversee all the aspects of the project. He will communicate with the Superintendent regarding project progress, schedules, administrative duties, safety, quality control oversight, as well as communicating with the subcontractors for the project. He will regularly visit the construction site and attend coordination meetings. Blaine will be the primary point of contact for all parties. He will coordinate with the Owner through design and construction administration and attend all coordination meetings.

The on-site Superintendent will be responsible for supervising all construction activities, site management, and has been designated as the Quality Control Manager for the project.

The Superintendent will ensure that:

- Appropriate resources are allocated to the project,
- All activities are conducted in accordance with the Diede Construction, Inc. safety policy and project specifications,
- Contractor and Subcontractor resources are assigned to the project and balanced to ensure tasks are aligned with project needs,
- The site is maintained and secure.

His responsibilities include:

- Contractor coordination including supervision of the craft labor (equipment operators, carpenters, masons, and laborers), and all Subcontractors,
- Acting as site liaison between the Contractor and Owner,
- Maintaining charge of all field operations,
- Performing and documents field inspections,
- Preparing daily reports,
- Providing coordination of required inspections and testing,
- Tracking construction deficiencies and ensuring timely corrective action,
- Coordinating field sampling activities (as required).

LOWER-TIER SUBCONTRACTORS

One of the most important aspects of our Estimating Department process is the establishment of an advantageous project procurement strategy. The driving factor in our strategy is selecting

subcontractors/vendors who can deliver the best value for each scope of work while meeting project goals.

The Diede estimating team collaborates with the Owner to identify ideal, and local subcontractor considerations. Determined by the Scope of Work of the project, the Diede team solicited to a subcontractor marketplace, outreached to specific subcontractors, select subcontractor bids based on their price value, and then award subcontractors that fit the Scope of Work. Our goal is to identify financially stable firms providing the highest quality management, safety, products and installation available in the market to achieve the high value of our clients.

The procurement strategy and development of bid packages for our projects are driven by numerous factors:

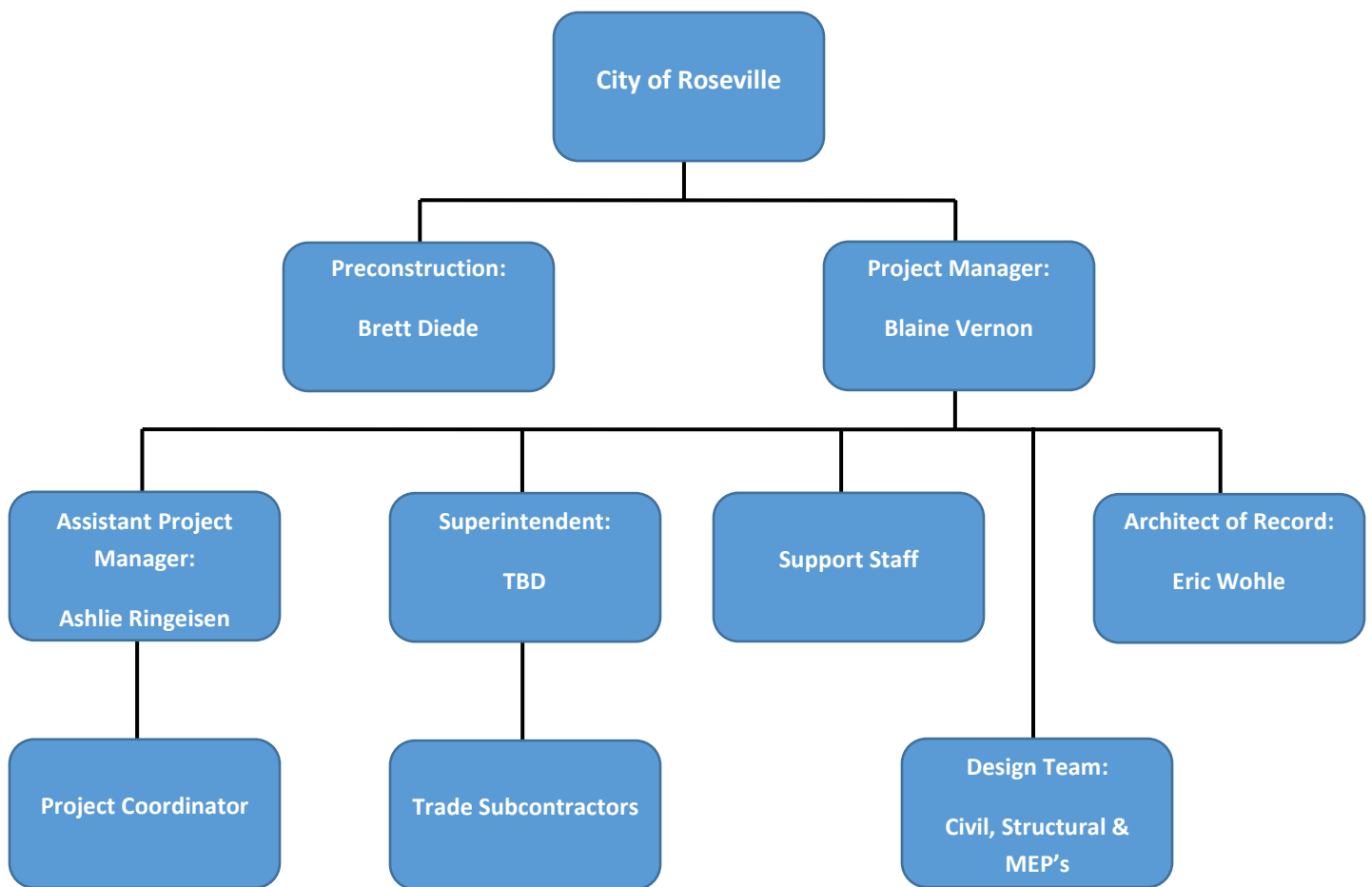
- Nature of the work requirements,
- Maximizing/enhancing schedule delivery,
- Packaging or scope separation to encourage proper subcontractor participation,
- Reduction of overall project cost,
- Subcontractor and vendor capabilities,
- Scope alignment of the detailed cost estimate,
- Identification of long lead items and early procurement goals.

WHAT YOU CAN EXPECT

Bid Packaging & Procurement Strategy:

- Develop bid packages to meet project goals and ensure best value for Department of Education,
- Analyze Vendor and Subcontractor capabilities implemented in an overall project award strategy,
- Define trade responsibilities to ensure with no scope overlap or gaps,
- Identify direct material/equipment purchasing opportunities from vendors to maximize project savings,
- Implement advance purchase of materials for off-site storage to capitalize early procurement savings and/or accelerate schedule,
- Review opportunities incorporate Diede self-perform work (earthwork, underground, concrete, rebar, rough and finish carpentry, metal studs, metal siding, pre-manufactured buildings, and metal roof erections) to control schedule and save cost.

Please see the organizational chart on the following page for how the flow of responsibility and primary lines of communication will be arranged.



TAB B

Project Understanding

PROJECT UNDERSTANDING

General Contractor Project Understanding

The City has made it easy to understand the project as the West Side Tanks and Pump Station Operations Crew Facility. The RFP contains clear designation of deliverables and provides ample supplemental information to frame the intent of the project. Some RFP's we participate in, for both municipal and private clients, are not assembled as effectively.

Diede recognizes the following as overall macro-level objectives, project specific deliverables, contractor means and methods:

Objectives

- Utilize design-build delivery to realize efficiencies in use of limited space and budget,
- Design-build team to operate collaboratively and transparently,
- Team to function coordination required with Tanks and Pump Station team,
- Aesthetic of Operation Crew Facility to unify with Tanks and Pump Station project,
- Maintain excellent health and safety protocols across all phases of design-build delivery.

Deliverables

- Design-Build procurement and construction,
- City expecting 60/90/100 design development intervals,
- Develop current scope per preliminary drawings to completion while ensuring compliance with technical specifications,
- Securing Permits,
- Performing construction of the work,
- Maintaining quality assurance and quality control of said work,
- Commissioning of the facility and building systems.

Contractor Means & Methods

- Select best value design-build partners,
- Select best value metal building system,

- Select best value subcontractors,
- Provide quality building assemblies, building systems, equipment and finishes with emphasis on reliable function and excellent life-cycle cost and performance.

Architect of Record Project Understanding

Our project architects and project managers bring highly developed leadership and organizational skills to the project as well as a thorough understanding of building design and functionality, specifically for public facilities. This project demands the highest standards in terms of design excellence in operations and functionality. The best way to “get more for the money” is through good design, followed by construction efficiency. Our team has built its record of success in developing unique solutions to complex problems by turning various constraints into opportunities. To truly accomplish a project design that is safe, secure and responsive to user needs, a number of concepts must be generated and evaluated. Typically, there are no “off-the-shelf” solution that will meet the unique needs of the City.

MAJOR CHALLENGES

General Contractor Major Challenges

It appears that the City has already performed substantive programming of the project as represented by the preliminary drawings and specifications. If this assumption is correct, and the City intends to continue with the RFP documents as the basis-of-design, this mitigates a common “first things first” challenge of design-build delivery; specifically, the bidding or bridging documents were developed with a group of end users that are no longer affiliated with the project. Subsequently, the design development will commence by going backwards in terms of conceptual development prior to advancement of design development. This topic will need to be addressed immediately upon award.

Challenges associated with execution of the items listed in the Project Understanding section are mostly in the purview of the Contractor and pertain to diligence and expediency. The design-build team will need to ensure we adhere to and comprehensively include all scope of work components included with the preliminary plans and specs. Additionally, we will need to scrub the current project scope to identify intent that may be lacking as well as identify any discrepancies that need to be clarified in the current project scope. We will pose pertinent questions for stakeholders and generate dialogues that will produce the information required to continue development of the project. We will expeditiously pursue development of the project and incorporation of the City’s review comments until construction documents are deemed adequate for permit submission. While we want to submit for permit as soon as possible. We also want to make sure the documents are complete and concise to mitigate review times and the scope and breadth of plan check comments.

The permit review process will allow time for contractor to take advantage of one of the intents of the design-build process, securing critical materials and equipment in advance of incorporation into the work. This process is more critical than any time in recent past, as the current state of the material and equipment market is extremely volatile and currently subject to inordinate difficulties in the acquisition of even basic materials. Expediency in completing the design and securing permit approvals is great, but all for not if the construction delivery is addled by lack of items required to perform the work in proper sequence.

We are confident we can execute the deliverables listed in the previous section without major disruption or delay. Our confidence is based on our substantial experience with design-build delivery of this particular function, type and size. We have recently completed, or are nearing completion, on several facilities of similar nature; housing administrative as well as operational personnel and associated equipment, built specifically to support a broader operation at large; in this case the tanks and pump station as a component of the City's strategic goal of well-planned infrastructure. Please see specific project references in response to Section 7.1.1D – Experience and References.

Architect of Record Major Challenges

Our team brings a unique understanding of functionality, finance, program, and budget, while still being able to focus on the aesthetic. We are recognized as experts in marrying all of these seemingly contradicting components into a cohesive building element. The key is to understand that each different segment of users has a different need that is “most important” to their individual needs and having the ability to bring people together for a common purpose.

One of the biggest struggles with public projects is the ever-increasing strain of the budgetary coffers. Our team brings a unique understanding of financing and funding, so much so, that Eric Wohle has served on the City of Manteca municipal finance committee reviewing the ins and outs of public funding. We realize that in many cases the hardest part of securing funding for a project happens after the project is finished. In the scenario, the most difficult part of project funding becomes the cost of annual upkeep and staffing.

This leads to the other element related to capital projects; the operation of individual facilities after the building is complete. LDA addresses the annual upkeep and O&M staffing and equipment requirements during the initial planning and design process. We pride ourselves in creating spaces that minimize maintenance staffing requirements through the use of highly durable materials that stand the test of time and public wear and tear.

We also address building systems examining first vs. life cycle costs, the payback of those systems and impact that they will have on monthly operational costs. This starts with the initial planning on a site to address building orientation to reduce heat loads and integrate the use of natural light and ventilation systems. We discuss with the City their goals for sustainability, not only for the economic impact on their operations, but goals they may have to utilize the building as a teaching tool.

Key points and techniques that are utilized to enhance the cost estimating/control function include:

- Understanding of Site Conditions,
- Value Engineering for Building Systems,
- Well-Coordinated Documents among Disciplines,
- Proper Specification of Building Materials.

TAB C

Project Approach




PROJECT APPROACH

DIEDE SPRINGBOARD: Preconstruction System

The ***Diede Springboard: Pre-Construction System*** is a collaborative, robust, and resource rich program that facilitates effective communication between project stakeholders to launch timely informed decisions. This process ensures an effective and efficient use of energy and effort that culminates in meeting project goals and expectations of our clients.

The traditional approach to pre-construction typically offers clients services limited to an estimate, a schedule, and a logistics plan. Our approach extends these into a system of tools that defines more holistic and predictable pre-construction process that achieves better results and generates value. In addition to developing the typical estimating, scheduling, and logistic plans, our system involves analyzing historical benchmarking to inform program development, real time estimating, coordinating design and construction efforts, determining approach to sustainability, value, and life cycle cost, and executing procurement planning and subcontractor qualification.

- Collaborative
- Integrated Team
- Focused
- Efficient
- Proactive
- Predictable
- Enhanced Value
- High Assurance of Meeting GMP

	ANALYZING HISTORICAL BENCHMARK TO INFORM PROGRAM DEVELOPMENT
	<ul style="list-style-type: none"> • Programming Analysis • Cost Benchmarking • Schedule Benchmarking
	REAL TIME ESTIMATING
	<ul style="list-style-type: none"> • Developing Cost Modeling • Control Estimate • Contingency Development
	COORDINATION DESIGN & CONSTRUCTION EFFORTS
	<ul style="list-style-type: none"> • Safety Plan Development • Design & Constructability Review Services • Quality Control & Quality Assurance Reviews

	<ul style="list-style-type: none"> • Logistics & Phasing Development • Document Control • Schedule Sequencing & Development
	DETERMINING APPROACH TO SUSTAINABILITY, VALUE & LIFE CYCLE COST
	<ul style="list-style-type: none"> • Sustainability & Life Cycle Cost • Value Analysis & Value Enhancement
	EXECUTING PROCUREMENT PLANNING & SUBCONTRACTOR QUALIFICATION
	<ul style="list-style-type: none"> • Bid Packaging & Procurement Strategy • Subcontractor Qualification

COMMUNICATIONS

From start to finish, the City of Roseville will be an integral part of our project team. Together – and with all subcontractors – we will implement our Three C's: Communication, Collaboration, and Cooperation. Diede construction's staff and subcontractors work as a cohesive team demonstrating their partnering experience by maintaining clear communication and providing effective issue resolutions. Our process is flexible and interactive. Managing this project will be like the projects that we have successfully completed in our 40 plus year history in construction. If awarded the contract, we would get started with a series of meetings to help gain a deeper understanding of the City's goals and intentions for the project. This entire process is done in close collaboration with the City and the project's end users through the following initial actions to help us deliver project goals:

- Tour current facilities to see what works and what can be improved,
- Discuss current and future needs,
- Listen to input from the end users and other City Stakeholder's,
- Review project documents, such as drawings and specifications (if available),
- Bring field experts in as necessary to discuss key points,
- Make suggestions based upon our experience on similar projects.

These first meetings establish collaborative team relationships that bring key decision makers and the construction team together to set expectations and review areas of the design that require modification or extra attention. Diede Construction recognizes that the City is making a significant investment in the community's future with this facility. If selected for this project, we would dedicate ourselves to that same goal.

Communication	Collaboration	Cooperation
<ul style="list-style-type: none"> • Listen to ideas and critiques • Record meetings with minutes and distribute widely • Hold regular conference calls/meetings • Utilize agendas to keep meetings efficient and effective 	<ul style="list-style-type: none"> • Work together towards a common goal • Everyone brings ideas and expertise to the table • Ask questions • Hold ourselves and each other accountable for deadlines and deliverables 	<ul style="list-style-type: none"> • All problems are job problems • Success of each individual depends on the success of the project as a whole • Avoid blame • Bring issues to attention as soon as they are identified • Seek assistance when needed

In this manner we also address all concerns that may arise during any part of the effort from design through to completion while keeping our focus on the final delivery.

TECHNICAL & MANAGERIAL APPROACH

Diede's project methodology comprises an effective three-pronged approach which includes Communication, Implementation, and Management. This approach allows us to identify project needs and potential issues prior to them incurring unnecessary costs or delays. These approaches start early on with our pre-construction teams and carries through until the project is handed off to the end users.

We evaluate the project from all aspects on a regular basis. Some of these aspects include constructability, budget, schedule, conformance to design criteria, critical path elements, and the clients' preferences. This regular and comprehensive overview allows Diede staff to set and maintain deliverables to the project.

Weekly (or as required by our clients) we hold OAC (Owner Architect and Contractor) meetings. These meetings can be held in person or virtually (if necessary). The goal of these meetings is to keep the City informed regarding project process, solicit feedback, coordinate processes, and discuss issues and questions. These meetings bring the field, office, client, and end-user together to discuss the current project as well as the upcoming schedule. We use these meetings to discuss constructability, impacts to the local area, budgetary costs, discuss deliverables, and to help resolve any issues.

The most critical tool to our approach is the project schedule. It is the key to both Implementation and Management of the project. To this end we provide three different schedules. At the beginning of the project there is an overall project schedule that is provided at the beginning. This schedule identifies early on where we will be at specific times during the project so that coordination between various DOE elements can be made. Each Friday there is also a 5-week look-ahead schedule that is provided to everyone involved in the project. This schedule dials in a little more closely than the CPM schedule so that specific responsibilities can be identified and coordinated with. Then at each OAC, or as needed, an updated project schedule is provided that includes actual start and completion dates of original

tasks/activities. Through this schedule we can identify any gains or slips in the project schedule. This helps everyone to understand any movement in the schedule that should be discussed or re-planned to fit the project's needs.

In addition to continuing the close collaboration that characterizes our process, we vigilantly maintain a safe project site and carefully implement quality control measures. Construction is inherently a hazardous activity, and we do everything we can to avoid work-related accidents, injuries, and heat-related illnesses. Diede's dedicated Safety Program Manager closely monitors the activities on-site, and we hold all our subcontractors to the same safety standards.

Diede Construction's resources include several key personnel that hold administrative and field functions. Some of these roles are Labor Administrator, Contract Compliance Administrator, Submittal Administrator, Accounts Receivable Administrator, Accounts Payable Administrator, Pre-Construction Manager, Safety Manager, Project Manager, Assistant Project Manager, and Superintendent. Each of those roles is staffed by a separate individual's whose responsibility is specific to only that role within the team. By having such a large pool of personnel available we are able to handle projects big and small.

These resources are employed in succession and work very well together internally, with our subs, and with our clients. Teaming starts right from the beginning as we write our subcontracts, discuss expectations/procedures with our subcontractors (partners on the project), and begin to provide submittals for review to our clients. Everything is fluid and flows naturally through to project startup. Once the project starts up much of the administrative elements in our team take a more supportive role to the field team while the field team take the lead.

PERMITTING

By involving permitting agencies early into the process, and communicating effectively, we can "head off" potential red tape issues. This can mean starting with a simple phone call outlining the project and potential building systems and concerns, as well as meeting with building or planning representatives face to face before a project gets off the ground. We set up an initial meeting to go over the project parameters and discuss potential issues. While navigating the permitting process, it is imperative to track and include other potential local agencies such as Fire, Public Works, Public Health, or community design review, as their concerns can potentially add time or costs to the project. Schedules are outlined to have sufficient time allocated for agency review. The key to successful and expeditious sign off from these types of agencies is to understand their concerns and to not be disagreeable in the review process.

PRELIMINARY SCHEDULE

For this proposal, Diede Construction has **attached** a preliminary Critical Path Management (CPM) Schedule based on information in the RFP.

	<p>Page 1 of 2</p> <p>Roseville Pump Station Operations Crew Facility</p>	
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Roseville Pump Station Operations Crew Facility

[illegible]

TAB E

Required Statements/Documents



COMMERCIAL INDUSTRIAL DESIGN BUILD

CALIFORNIA
P.O. Box 1007
Woodbridge, CA. 95258
p: (209) 369-8255
f: (209) 368-0600

HAWAII
517 Ahui Street
Honolulu, HI. 96813
p: (808) 777-6290
f: (808) 777-6295

CA License No. 632669
HI License No. 30496



Non-Substitution Statement

Diede Construction, Inc. assures that the designated project team, including sub-consultants or sub-contractors (if any), are used for this project. Departure or reassignment of, or substitution for, any member of the designated project team, sub-consultant(s) or sub-contractor(s) will not be made without the prior written approval of the City.



COMMERCIAL INDUSTRIAL DESIGN BUILD

CALIFORNIA
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f: (209) 368-0600

HAWAII
517 Ahui Street
Honolulu, HI. 96813
p: (808) 777-6290
f: (808) 777-6295

CA License No. 632669
HI License No. 30496



Conflict of Interest Statement

Diede Construction, Inc. warrants that no official or employee of the City has an interest, has been employed or retained to solicit or aid in the procuring of the resulting contract, nor that any such person will be employed in the performance of such contract without immediate divulgence of such fact to the City.



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517 Ahui Street
Honolulu, HI. 96813
p: (808) 777-6290
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HI License No. 30496



Indemnification and Insurance Statement

Diede Construction, Inc. has the ability and agrees to fulfill the indemnification and insurance requirements of the RFP.



COMMERCIAL INDUSTRIAL DESIGN BUILD

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CA License No. 632669
HI License No. 30496



Proprietary Statement

Diede Construction, Inc. agrees that nothing in the submitted proposal is proprietary.

ATTACHMENT F - PROPRIETARY INFORMATION STATEMENT

Complete and sign one of the following statements.

No Proprietary Information

Contractor hereby certifies that nothing contained in the submitted Proposal is to be proprietary information.

Diede Construction, Inc.
NAME OF BUSINESS

SIGNATURE

Steven L. Diede , President
NAME & TITLE, TYPED OR PRINTED

Existence of Proprietary Information.

Contractor desires to claim a privilege against public disclosure for a trade secret or other proprietary information.

NAME OF BUSINESS

SIGNATURE

NAME & TITLE, TYPED OR PRINTED

****END OF ATTACHMENT F***

*

ATTACHMENT A - PROPOSER'S CERTIFICATION

I hereby propose to furnish the goods or services specified in the Request for Proposals ("RFP"). I agree that my proposal will remain firm for a period of up to ninety (90) days in order to allow the City of Roseville ("City") adequate time to evaluate the qualifications submitted.

I have carefully examined the Request for Proposals and any other documents accompanying or made a part of this RFP. The information contained in this proposal is true and correct to the best of my knowledge and is signed under penalty of perjury under the laws of the State of California. I further certify that I am duly authorized to submit this proposal on behalf of the firm as its authorized agent and that the firm is ready, willing and able to perform if awarded the contract.

I further certify that this proposal is made without prior understanding, agreement, connection, discussion, or conspiracy with any other person, firm or corporation submitting a proposal for the same product or service; that this proposal is fair and made without outside control, collusion, fraud or illegal action; that no officer, employee or agent of the City or any other proposer is financially interested in said proposal; that no undue influence or pressure was used against or in concert with any officer, employee or agent of the City in connection with the award or terms of the contract that will be executed as a result of this RFP; and that the undersigned executed this Proposer's Certification with full knowledge and understanding of the matters therein contained and was duly authorized to do so.

Dieede Construction, Inc.

NAME OF BUSINESS

SIGNATURE

Steven L. Dieede, President

NAME & TITLE, TYPED OR PRINTED

P.O. Box 1007, Woodbridge, CA 95258

MAILING ADDRESS

(209) 369-8255

TELEPHONE NUMBER

estimating@dieedeconstruction.com

EMAIL

Type of Organization:

 Sole Proprietorship

 X Corporation

 Partnership

 Limited Liability Company

 CA State of Incorporation

The undersigned Proposer acknowledges receipt, understanding, and full consideration of the following Addenda:

Table A.1 – Acknowledgement of Addenda


Addendum Number	Addendum Date	Signature of Proposer
1	4/21/21	
2	4/26/21	
3	4/29/21	
4	5/13/21	
5	5/27/21	

Table A.2 - Certification if proposing firm is a Sole Proprietorship:


Name (typed or printed):			
By:			
		(Individual's signature)	
Doing business as:			
Business Address:			
Phone Number:	()	FAX Number:	()
Email Address of Authorized Representative:			

Table A.3 - Certification if proposing firm is a Partnership

Partnership Name (typed or printed):			
By:			
		(Signature of general partner- attach evidence of authority to sign)	
Name (typed or printed):			
Business Address:			
Phone Number:	()	FAX Number:	()
Email Address of Authorized Representative:			

Table A.4 - Certification if proposing firm is a Corporation:

Corporation Name (typed or printed):	Diede Construction, Inc.
State of Incorporation:	California
By:	
	(Signature - attach evidence of authority to sign – Board Resolution)
Name (typed or printed):	Steven L. Diede
Title:	President
(CORPORATE SEAL)	

Attest:			
		(Signature of Corporate Secretary)	
Name:		Lillian K. Diede	
Date of Qualification to do business:		6/10/2021	
Business Address:		12393 N. Highway 99 Lodi, CA 95240	
Phone Number:	() (209) 369-8255	FAX Number:	() (209) 368-0600
Email Address of Authorized Representative:		estimating@diedeconstruction.com	

***If person executing on behalf of a Corporation is not the President or Vice President, evidence of authority to sign on behalf of Corporation must be attached.**

Table A.5 - Certification if proposing firm is a Limited Liability Company:

Limited Liability Company Name:			
By:			
		(Signature of Managing Member - attach evidence of authority to bind the LLC under the LLC's articles of organization)	
Name (typed or printed):			
Title:			
Business Address:			
Phone Number:	()	FAX Number:	()
Email Address of Authorized Representative:			

****END OF ATTACHMENT A****



COMMERCIAL INDUSTRIAL DESIGN BUILD

CALIFORNIA
P.O. Box 1007
Woodbridge, CA. 95258
p: (209) 369-8255
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HAWAII
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f: (808) 777-6295

CA License No. 632669
HI License No. 30496



Corporate Resolution Diede Construction, Inc.

Officers Authorized to Contract

To authorize the officers to contract and obligate the corporation, in the ordinary course of business, the following resolution was, upon motion duly made, seconded and carried, adopted:

RESOLVED: That the following officers or either of them acting alone is, and the same hereby are, authorized to sign contracts, bind the corporation, submit proposals and bids and otherwise enter obligations for and on behalf of the corporation:

President – Steven L. Diede
Director of Pre-Construction – Brett Diede

I, Lillian Diede, Secretary / Treasurer of the Board of Directors of Diede Construction, Inc., do hereby declare and attest that the above resolution of Diede Construction, Inc. is true and correct and was passed unanimously by the Board of Directors of Diede Construction, Inc. at its meeting on January 15, 2021.

Lillian Diede
Secretary / Treasurer

Diede Construction Inc.'s Corporate Officers Names and Residence Addresses are as follows:

President	Steven L. Diede	6300 Hogan Lane, Lodi, CA 95240
Director of Pre-Construction	Brett Diede	12445 Curry Ave., Lodi, CA 95240
Secretary	Lillian K. Diede	6300 Hogan Lane, Lodi, CA 95240

ATTACHMENT B - LICENSES AND DIR REGISTRATION

List the licenses held by your company and/or employees. The following representations are made under penalty of perjury.

A. CONTRACTOR'S LICENSES

CA State License No.	Name on License	Class/Type	Expiration Date
632667	Steven L. Diede	A,B	12/31/21

B. CITY OF ROSEVILLE BUSINESS LICENSE

Contractors are not required to have a City of Roseville Business license to submit a proposal; however, it will be required before executing a contract. Contractors may apply for a business license at:

<https://www.roseville.ca.us/government/departments/finance/licensing/business>

Do you currently have a City of Roseville Business License? _____ Yes X No

License No. _____

C. DEPARTMENT OF INDUSTRIAL RELATIONS CONTRACTOR REGISTRATION

***For Public Works Projects (SB854):** Contractors must register with the Department of Industrial Relations (DIR) pursuant to Labor Code section 1725.5. The Contractor shall provide proof of current registration with the Department of Industrial Relations for both itself and all listed subcontractors with their proposal. Contractors may register at:

<http://www.dir.ca.gov/public-works/publicworks.html>

DIR contractor registration number and expiration date:

No.: 1000002716 Expiration Date: 6/30/2022

****END OF ATTACHMENT B****

Contractor Information

Registration History

Legal Entity Name

DIEDE CONSTRUCTION INC.

Legal Entity Type

Corporation

Status

Active

Registration Number

1000002716

Registration effective date

7/1/2019

Registration expiration date

6/30/2022

Mailing Address

P.O. BOX 1007 WOODBRIDGE 95258 CA United ...

Physical Address

12393 N. HIGHWAY 99 LODI 95240 CA United S...

Email Address**Trade Name/DBA****License Number(s)**

CSLB:632667

Effective Date

Expiration Date

5/4/2018

6/30/2019

6/5/2017

6/30/2018

6/8/2016

6/30/2017

6/17/2015

6/30/2016

11/12/2014

6/30/2015

7/1/2019

6/30/2022

Legal Entity Information

Corporation Number:

C1801825

Federal Employment Identification Number:**President Name:**

STEVEN LLOYD DIEDE

Vice President Name:

WAYNE JACOB DIEDE

Treasurer Name:

LILLIAN KATRINA DIEDE

Secretary Name:**CEO Name:****Agent of Service Name:**

STEVEN LLOYD DIEDE

Agent of Service Mailing Address:

P.O. BOX 1007 WOODBRIDGE 95258 CA United States of America

Workers Compensation

Do you lease employees No
through Professional

**Employer Organization
(PEO)?:**

**Please provide your
current workers**

**compensation insurance
information below:**

PEO	PEO	PEO
PEO InformationName	Phone	Email

Insured by Carrier

Policy Holder Name:DIEDE CONSTRUCTION INC.**Insurance Carrier:**
ZURICH AMERICAN INSURANCE COMPANY**Policy Number:**WC581799206**Inception date:**
2/28/2019**Expiration Date:**2/29/2020

Contractor Information

Registration History

Legal Entity Name

AMS HEATING,INC.

Legal Entity Type

Corporation

Status

Active

Registration Number

1000002189

Registration effective date

7/1/2019

Registration expiration date

6/30/2022

Mailing Address

3602 MUNFORD AVE STOCKTON 95215 CA Unit...

Physical Address

3602 MUNFORD AVE STOCKTON 95215 CA Unit...

Email Address**Trade Name/DBA****License Number(s)**

CSLB:767349

Effective Date

Expiration Date

5/11/2018

6/30/2019

5/18/2017

6/30/2018

5/9/2016

6/30/2017

7/6/2015

6/30/2016

10/28/2014

6/30/2015

7/1/2019

6/30/2022

Legal Entity Information

Corporation Number:

2561961

Federal Employment Identification Number:**President Name:**

ARTHUR DEAN SANDERS

Vice President Name:**Treasurer Name:****Secretary Name:**

MELISSA SANDERS

CEO Name:**Agent of Service Name:**

JERRY D HALL

Agent of Service Mailing Address:

3031 WEST MARCH LANE, SUITE 230W STOCKTON 95219 CA United States of America

Workers Compensation

Do you lease employees No
through Professional

Employer Organization (PEO)?:

Please provide your
current workers
compensation insurance
information below:

PEO	PEO	PEO
PEO InformationName	Phone	Email

Insured by Carrier

Policy Holder Name:AMS HEATING,INC.**Insurance Carrier:**

INSURANCE COMPANY OF THE WEST**Policy Number:**WSA503779700**Inception date:**

9/30/2018**Expiration Date:**9/30/2019

Contractor Information

Legal Entity Name

BAY CITIES FIRE PROTECTION, INC.

Legal Entity Type

Corporation

Status

Active

Registration Number

1000045613

Registration effective date

7/1/2019

Registration expiration date

6/30/2022

Mailing Address

51 FOLEY STREET SANTA ROSA 95401 CA United...

Physical Address

51 FOLEY STREET SANTA ROSA 95401 CA United...

Email Address

Trade Name/DBA

BAY CITIES FIRE PROTECTION, INC.

License Number(s)

CSLB:731222

Registration History

Effective Date	Expiration Date
6/13/2018	6/30/2019
5/19/2017	6/30/2018
1/4/2017	6/30/2017
7/1/2019	6/30/2022

Legal Entity Information

Corporation Number:
C3856691

Federal Employment Identification Number:

President Name:
JOHN ALFRED HESS

Vice President Name:
Leon Kresheck

Treasurer Name:

Secretary Name:
ANGELA ELIZABETH HESS

CEO Name:

Agent of Service Name:
JOHN A. HESS

Agent of Service Mailing Address:
51 FOLEY STREET SANTA ROSA 95401 CA United States of America

Workers Compensation

Do you lease employees No
through Professional Employer Organization (PEO)?:

Please provide your current workers compensation insurance information below:

PEO Information	PEO Name	PEO Phone	PEO Email

Insured by Carrier

Policy Holder Name:BAY CITIES FIRE PROTECTION, INC.**Insurance Carrier:** Insurance Company of the West**Policy Number:**WPL504350600**Inception date:**9/30/2018
Expiration Date:9/29/2019

Contractor Information

Registration History

Effective Date	Expiration Date
6/18/2018	6/30/2019
7/19/2017	6/30/2018
5/31/2016	6/30/2017
6/24/2015	6/30/2016
1/11/2015	6/30/2015
7/1/2019	6/30/2022

Legal Entity Name

B & H ELECTRIC, INC.

Legal Entity Type

Corporation

Status

Active

Registration Number

1000005135

Registration effective date

7/1/2019

Registration expiration date

6/30/2022

Mailing Address

1122 BLACK DIAMOND WAY LODI 95240 CA Un...

Physical Address

1122 BLACK DIAMOND WAY LODI 95240 CA Un...

Email Address**Trade Name/DBA**

B & H ELECTRIC, INC.

License Number(s)

CSLB:678435

Legal Entity Information

Corporation Number:

C1860111

Federal Employment Identification Number:**President Name:**

TIM FINCH

Vice President Name:

RAELYNN FINCH

Treasurer Name:

TIM FINCH

Secretary Name:

RAELYNN FINCH

CEO Name:

TIM FINCH

Agent of Service Name:

TIM FINCH

Agent of Service Mailing Address:

1122 BLACK DIAMOND WAY LODI 95240 CA United States of America

Workers Compensation

Do you lease employees Yes
through Professional

Employer Organization (PEO)?:

Please provide your
current workers
compensation insurance
information below:

PEO Beneco PEO (800) 965-2702 PEO prc@beneco.com
PEO InformationName Phone Email

Insured by Carrier

Policy Holder Name:B & H ELECTRIC, INC.**Insurance Carrier:**ICW Group**Policy Number:**
WSA504357600**Inception date:**9/30/2018**Expiration Date:**9/30/2019

Contractor Information

Registration History

Legal Entity Name

DOOR SYSTEM DESIGN, INC.

Legal Entity Type

Corporation

Status

Active

Registration Number

1000000997

Registration effective date

7/1/2019

Registration expiration date

6/30/2021

Mailing Address

P.O. BOX 3313 CHICO 95927 CA United States o...

Physical Address

2251 IVY STREET CHICO 95928 CA United State...

Email Address

Trade Name/DBA

DBA THE DOOR COMPANY

License Number(s)

CSLB:496225

Effective Date	Expiration Date
6/13/2018	6/30/2019
6/19/2017	6/30/2018
6/9/2016	6/30/2017
6/24/2015	6/30/2016
8/21/2014	6/30/2015
7/1/2019	6/30/2021

Legal Entity Information

Corporation Number:
C1192089

Federal Employment Identification Number:

President Name:
MARK S STUENKEL

Vice President Name:

Treasurer Name:
MARK S STUENKEL

Secretary Name:
MARK S STUENKEL

CEO Name:
MARK S STUENKEL

Agent of Service Name:
MARK S STUENKEL

Agent of Service Mailing Address:
2251 IVY STREET CHICO 95928 CA United States of America

Workers Compensation

Do you lease employees No
**through Professional
Employer Organization
(PEO)?:**

**Please provide your
current workers
compensation insurance
information below:**

PEO	PEO	PEO
PEO InformationName	Phone	Email

Insured by Carrier

Policy Holder Name:DOOR SYSTEM DESIGN, INC.**Insurance Carrier:**
INSURANCE COMPANY OF THE WEST**Policy Number:**WPL 5034770 02**Inception date:**
9/29/2018**Expiration Date:**9/29/2019

Contractor Information

Legal Entity Name

DELTA CITY DRYWALL, INC.

Legal Entity Type

Corporation

Status

Active

Registration Number

1000005918

Registration effective date

7/1/2021

Registration expiration date

6/30/2023

Mailing Address

7405 GREENBACK LANE #331 CITRUS HEIGHTS 95610 ...

Physical Address

7405 GREENBACK LANE #331 CITRUS HEIGHTS 95610 ...

Email Address**Trade Name/DBA**

DELTA CITY DRYWALL, INC.

License Number(s)

CSLB:853303

CSLB:853303

Registration History

Effective Date	Expiration Date
5/17/2018	6/30/2019
5/23/2017	6/30/2018
6/2/2016	6/30/2017
6/24/2015	6/30/2016
1/19/2015	6/30/2015
7/1/2019	6/30/2020
7/1/2020	6/30/2021
7/1/2021	6/30/2023

Legal Entity Information

Corporation Number:

2710272

Federal Employment Identification Number:**President Name:**

GREG MARTIN

Vice President Name:**Treasurer Name:****Secretary Name:****CEO Name:****Agent of Service Name:**

GREG MARTIN

Agent of Service Mailing Address:

7434 BREE ANN CT CITRUS HEIGHTS 95610 CA United States of America

Workers Compensation

Do you lease employees No
through Professional
Employer Organization
(PEO)?:

Please provide your
current workers
compensation insurance
information below:

PEO	PEO	PEO
PEO InformationName	Phone	Email

Insured by Carrier

Policy Holder Name:DELTA CITY DRYWALL, INC.**Insurance Carrier:**

EVEREST NATIONAL INSURANCE COMPANY**Policy Number:**7600012482191**Inception date:**
12/31/2020**Expiration Date:**12/30/2021

Contractor Information

Registration History

Legal Entity Name

PTS MASONRY INC

Legal Entity Type

Corporation

Status

Active

Registration Number

1000000391

Registration effective date

7/1/2021

Registration expiration date

6/30/2023

Mailing Address

7117 TOKAY AVENUE SACRAMENTO 95828 CA ...

Physical Address

7117 TOKAY AVENUE SACRAMENTO 95828 CA ...

Email Address

Trade Name/DBA

PTS MASONRY INC

License Number(s)

CSLB:704533

CSLB:704533

Effective Date	Expiration Date
----------------	-----------------

6/15/2018	6/30/2019
-----------	-----------

6/5/2017	6/30/2018
----------	-----------

6/3/2016	6/30/2017
----------	-----------

6/3/2015	6/30/2016
----------	-----------

7/25/2014	6/30/2015
-----------	-----------

7/1/2019	6/30/2020
----------	-----------

7/1/2020	6/30/2021
----------	-----------

7/1/2021	6/30/2023
----------	-----------

Legal Entity Information

Corporation Number:

C1919692

Federal Employment Identification Number:

President Name:

JOSHUA ESTRELLA

Vice President Name:

Treasurer Name:

Secretary Name:

CEO Name:

Agent of Service Name:

JOSHUA ESTRELLA

Agent of Service Mailing Address:

7117 TOKAY AVENUE SACRAMENTO 95828 CA United States of America

Workers Compensation

Do you lease employees No

through Professional

Employer Organization

(PEO)?:

Please provide your

current workers

compensation insurance

information below:

	PEO	PEO	PEO
PEO InformationName	Phone	Email	

Insured by Carrier

Policy Holder Name:PTS MASONRY INC**Insurance Carrier:**Owen-Dunn Insurance Services

Policy Number:PTWC126931**Inception date:**7/30/2020**Expiration Date:**7/30/2021

ATTACHMENT C - SUBCONTRACTOR LIST

In accordance with the Public Contract Code, Part 1, Chapter 4, Subletting and Subcontracting, Contractors must list the name and business address of each subcontractor who will perform work or labor or render service to the prime contractor in or about the construction of the work or improvement, or who will specially fabricate and install a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent (0.5%) of the prime contractor's total bid, or in the case of bids or offers for the construction of streets and highways, including bridges, in excess of one-half of one percent (0.5%) of the prime contractor's total bid or ten thousand dollars (\$10,000) whichever is greater. If subcontractors will not be used, proposer must write "NONE".

Company Name:	P.T.S. Masonry, Inc.
Principal:	Joshua Estrella
Address:	7117 Tokay Ave, Sacramento, CA 95828
Phone:	(916) 369-2144
Job Capacity:	Masonry
Percentage of Total Work:	1.3%
CSLB Contractor License Number:	704533
DIR Registration Number, and Expiration Date:	1000000391

Company Name:	The Door Company
Principal:	Mark Stuenkel
Address:	2251 Ivy Street, Chico, CA 95928
Phone:	(530) 345-5555
Job Capacity:	Overhead Coiling Doors
Percentage of Total Work:	1.2%
CSLB Contractor License Number:	496225
DIR Registration Number, and Expiration Date:	1000000997

Company Name:	Delta City Drywall, Inc.
Principal:	Greg Martin
Address:	7434 Bree Ann Ct., Citrus Heights, CA 95610
Phone:	(916) 205-6528
Job Capacity:	Drywall
Percentage of Total Work:	3.4%
CSLB Contractor License Number:	853303
DIR Registration Number, and Expiration Date:	1000005918

Company Name:	Bay Cities Fire Protection, Inc.
Principal:	John Hess
Address:	51 Foley Street, Santa Rosa, CA 95401
Phone:	(707) 579-8694
Job Capacity:	Fire Sprinkler Systems
Percentage of Total Work:	1.4%
CSLB Contractor License Number:	731222
DIR Registration Number, and Expiration Date:	1000045613

Reproduce this page for additional Subcontractors.

Company Name:	AMS Heating, Inc.
Principal:	Dean Sanders
Address:	3031 West March Lane, Suite 230W, Stockton, CA 95219
Phone:	(209) 466-6692
Job Capacity:	Plumbing/HVAC
Percentage of Total Work:	Plumbing: 3.0%/ HVAC: 2.9%
CSLB Contractor License Number:	767349
DIR Registration Number, and Expiration Date:	1000005135

Company Name:	B & H Electric, Inc.
Principal:	Tim Finch
Address:	1122 Black Diamond Way, Lodi, CA 95240
Phone:	(209) 334-6770
Job Capacity:	Electrical
Percentage of Total Work:	15.3%
CSLB Contractor License Number:	678435
DIR Registration Number, and Expiration Date:	1000005135

Reproduce this page for additional Subcontractors.

****END OF ATTACHMENT C****

ATTACHMENT D - NONCOLLUSION DECLARATION

NONCOLLUSION DECLARATION TO BE EXECUTED BY BIDDER AND SUBMITTED WITH PROPOSAL

The undersigned declares:

I am the President of Diede Construction, Inc., the party making the foregoing Proposal.

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

Any person executing this declaration on behalf of a Proposer that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the Proposer.

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 June 10, 2021 [date], at Lodi [city], California [state].

Steven L. Diede, President
(Signature of Declarant)

****END OF ATTACHMENT D****

ATTACHMENT G - IRAN CONTRACTING ACT DISCLOSURE FORM

GENERAL REQUIREMENTS

Pursuant to the Iran Contract Act of 2010 (California Public Contract Code, Sections 2202-2208), Proposers are ineligible to propose on projects with a public entity for goods or services of one million dollars (\$1,000,000) or more if the Proposer engages in investment activities in Iran.

Proposers must provide the below disclosure form as a mandatory submittal for all projects in excess of \$1,000,000. The Iran Contracting Act Disclosure Form shall be submitted by all Proposers as a mandatory submittal.

(California Public Contract, Sections 2202-2208)

When responding to a bid or proposal or executing a contract or renewal for a City contract for goods or services of \$1,000,000 or more, a vendor must either: a) certify it is **not** on the current list of persons engaged in investment activities in Iran created by the California Department of General Services ("DGS") pursuant to Public Contract Code section 2203(b) and is not a financial institution extending twenty million dollars (\$20,000,000) or more in credit to another person, for 45 days or more, if that other person will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS; or b) demonstrate it has been exempted from the certification requirement for that solicitation or contract pursuant to Public Contract Code Section 2203(c) or (d).

To comply with this requirement, please provide your vendor or financial institution name and complete **one** of the options on the following page. Please note: California law establishes penalties for providing false certifications, including civil penalties equal to the greater of \$250,000 or twice the amount of the contract for which the false certification was made; contract termination; and three-year ineligibility to bid on contracts. (Public Contract Code section 2205.)

OPTION #1 – CERTIFICATION

I, the official named below, certify I am duly authorized to execute this certification on behalf of the vendor/financial institution identified below, and the vendor/financial institution identified below is **not** on the current list of persons engaged in investment activities in Iran created by DGS and is not a financial institution extending twenty million (\$20,000,000) or more in credit to another person/vendor, for 45 days or more, if that other person/vendor will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS.

<i>Vendor Name/Financial Institution (Printed)</i> Diede Construction, Inc.	
<i>By (Authorized Signature)</i>	
<i>Printed Name and Title of Person Signing</i> Steven L. Diede, President	
<i>Date Executed</i> 6/10/21	<i>Executed in</i> Lodi, CA

OPTION #2 – EXEMPTION

Pursuant to Public Contract Code sections 2203(c) and (d), a public entity may permit a vendor/financial institution engaged in investment activities in Iran, on a case-by-case basis, to be eligible for, or to bid on, submit a proposal for, or enters into or renews, a contract for goods and services.

If you have obtained an exemption from the certification requirement under the Iran Contracting Act, please fill out the information below, and attach documentation demonstrating the exemption approval.

<i>Vendor Name/Financial Institution (Printed)</i>	
<i>By (Authorized Signature)</i>	
<i>Printed Name and Title of Person Signing</i>	
<i>Date Executed</i>	<i>Executed in</i>

****END OF ATTACHMENT G****

TAB F

Exceptions Statement



COMMERCIAL INDUSTRIAL DESIGN BUILD

CALIFORNIA
P.O. Box 1007
Woodbridge, CA. 95258
p: (209) 369-8255
f: (209) 368-0600

HAWAII
517 Ahui Street
Honolulu, HI. 96813
p: (808) 777-6290
f: (808) 777-6295

CA License No. 632669
HI License No. 30496



Exceptions Statement

Diede Construction, Inc. does not have any exceptions, alterations or amendments to the Scope of Services or other requirements of the RFP.

TAB G

Legal & Financials



COMMERCIAL INDUSTRIAL DESIGN BUILD

CALIFORNIA
P.O. Box 1007
Woodbridge, CA. 95258
p: (209) 369-8255
f: (209) 368-0600

HAWAII
517 Ahui Street
Honolulu, HI. 96813
p: (808) 777-6290
f: (808) 777-6295

CA License No. 632669
HI License No. 30496



Legal & Financial Statement

Diede Construction, Inc. has the necessary facilities, ability, experience, and financial resources to provide the services specified herein in a satisfactory and timely manner. Diede does not have any of the following in the last seven (7) years.

- Pending bankruptcies,
- Liens,
- Stop payment notices,
- Judgements,
- Lawsuits,
- Arbitrations,
- Foreclosures,
- And any similar actions filed or solved.

In addition, a client has never terminated a contract with our firm for breach.

TAB H

GMP, Cost of Work & Fee



COMMERCIAL INDUSTRIAL DESIGN BUILD

CALIFORNIA
P.O. Box 1007
Woodbridge, CA. 95258
p: (209) 369-8255
f: (209) 368-0600

HAWAII
517 Ahui Street
Honolulu, HI. 96813
p: (808) 777-6290
f: (808) 777-6295

CA License No. 632669
HI License No. 30496



COST PROPOSAL

We have submitted our Cost Proposal (TAB H) as the following:

- One (1) electronic copy of our Part 2 – Cost Proposal in PDF format (Attachment 2) and the Excel format (Attachment 3) as an attachment in our email submittal.

TAB I

Preliminary Drawings & Preliminary Materials & Finishes

CITY OF ROSEVILLE

WEST SIDE TANK AND PUMP STATION OPERATIONS CREW FACILITY 4501 WESTPARK DRIVE ROSEVILLE, CA 95747 VOLUME 4 OF 4 - CONCEPT DRAWINGS (RFP# 08-089)

INDEX TO DRAWINGS

SHEET NO.	DRAWING NO.	TITLE
<u>GENERAL</u>		
1	G-01	COVER SHEET
<u>CIVIL</u>		
2	C-01	OVERALL SITE PLAN
3	C-02	SITE PLAN
<u>ARCHITECTURAL/STRUCTURAL</u>		
4	AS-01	ELEVATIONS
5	AS-02	ELEVATIONS
6	AS-03	PLAN
7	AS-04	FURNISHING KEY NOTE TABLE
8	AS-05	HVAC PLAN
<u>ELECTRICAL</u>		
9	E-01	LIGHTING AND RECEPTACLE PLAN
10	E-02	DATA PLAN

LIST OF DEFERRED SUBMITTALS:

- DESIGN DRAWINGS:
 - ARCHITECTURAL
 - STRUCTURAL
 - MECHANICAL
 - ELECTRICAL
- STRUCTURAL CALCULATIONS FOR BUILDING FRAMING, INCLUDING ROOF FRAMING.
- HVAC AND LIGHTING PLAN AND FIXTURE SCHEDULE.
- PLUMBING PIPING AND FIXTURE SCHEDULE.
- FIRE SUPPRESSION SYSTEM CALCULATIONS AND PLAN AND FIRE ALARM CONTROL SYSTEM.
- FURNISHING SCHEDULE.
- FINISH SCHEDULE AND FINISH SELECTIONS.
- DOOR AND WINDOW SCHEDULE.
- ENVIRONMENTAL PROTECTION PLAN PER SPEC SECTION 01145.
- ACCESS, CONTROL AND SECURITY PLAN.
- ALL OTHER DESIGN RELATED CALCULATIONS SHALL BE SUBMITTED FOR APPROVAL.

JANUARY 2021
CONCEPT DRAWINGS



APPROVED BY EU DIRECTOR _____ DATE _____

APPROVED BY WATER UTILITY MANAGER _____ DATE _____

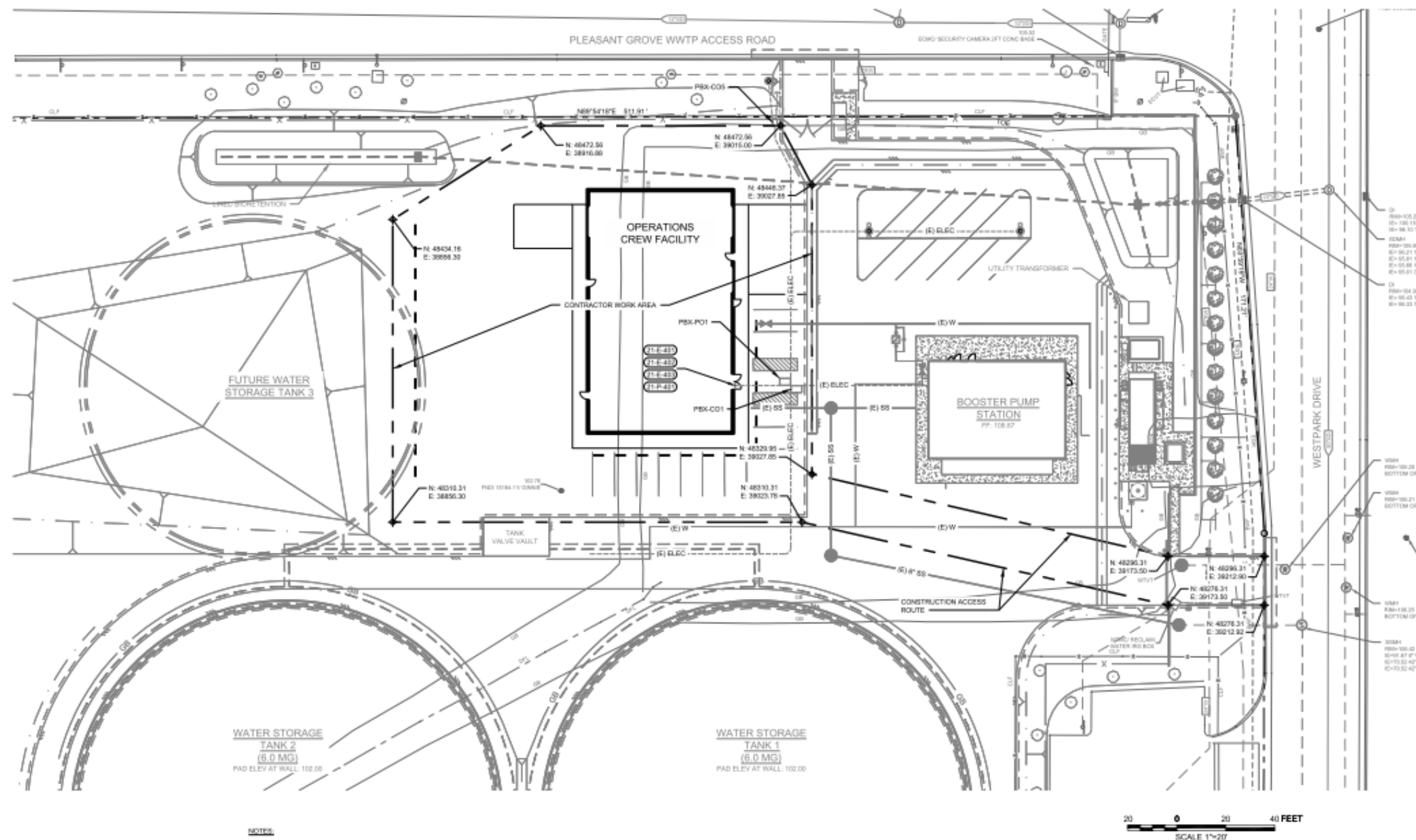
APPROVED BY SENIOR ENGINEER _____ DATE _____

SUBMITTED BY _____ DATE _____



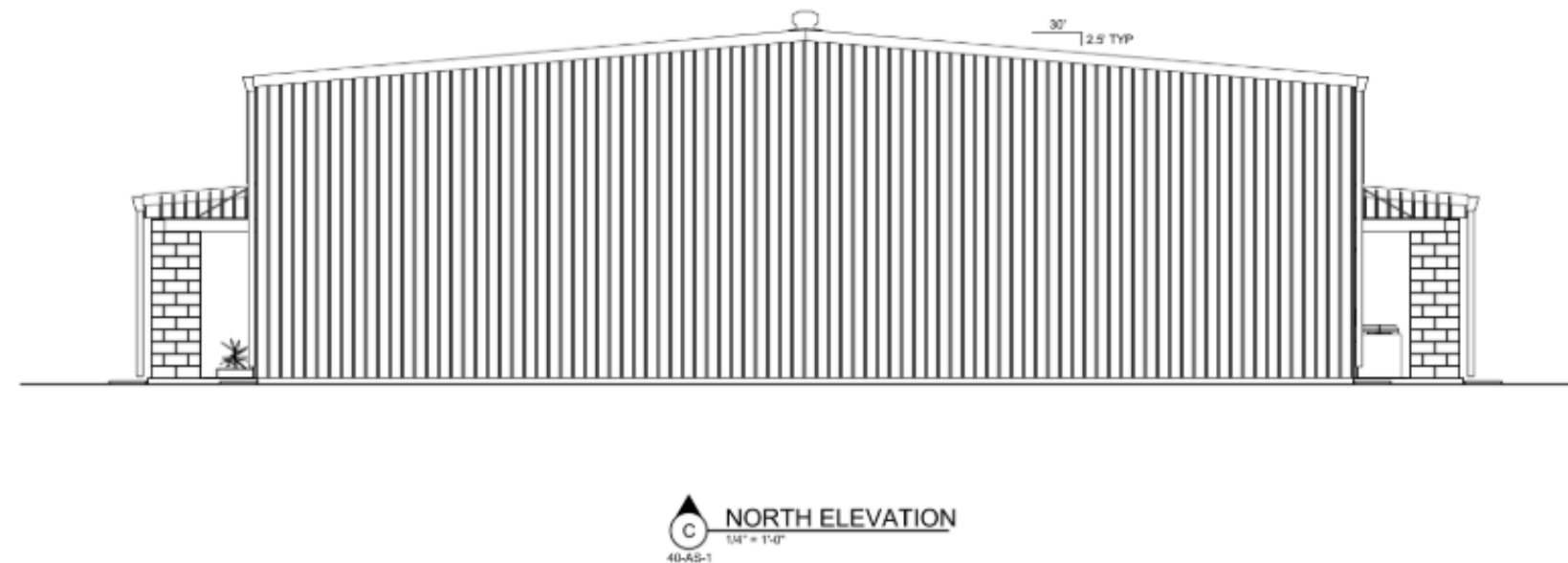
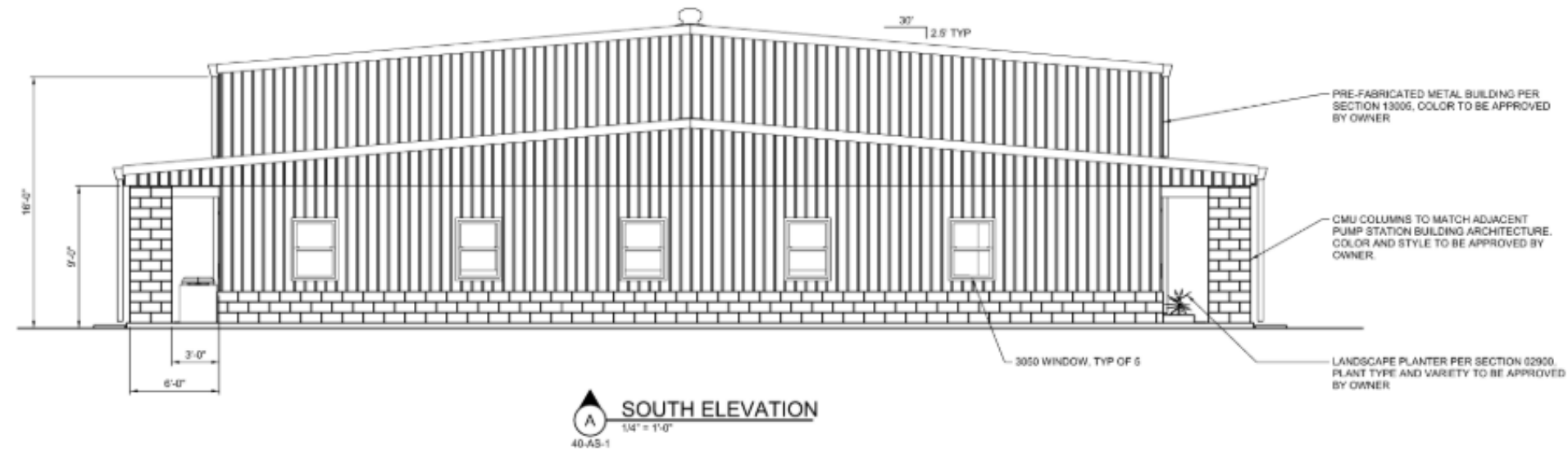
City of Roseville

LDA Partners
DESIGNERS & ARCHITECTS



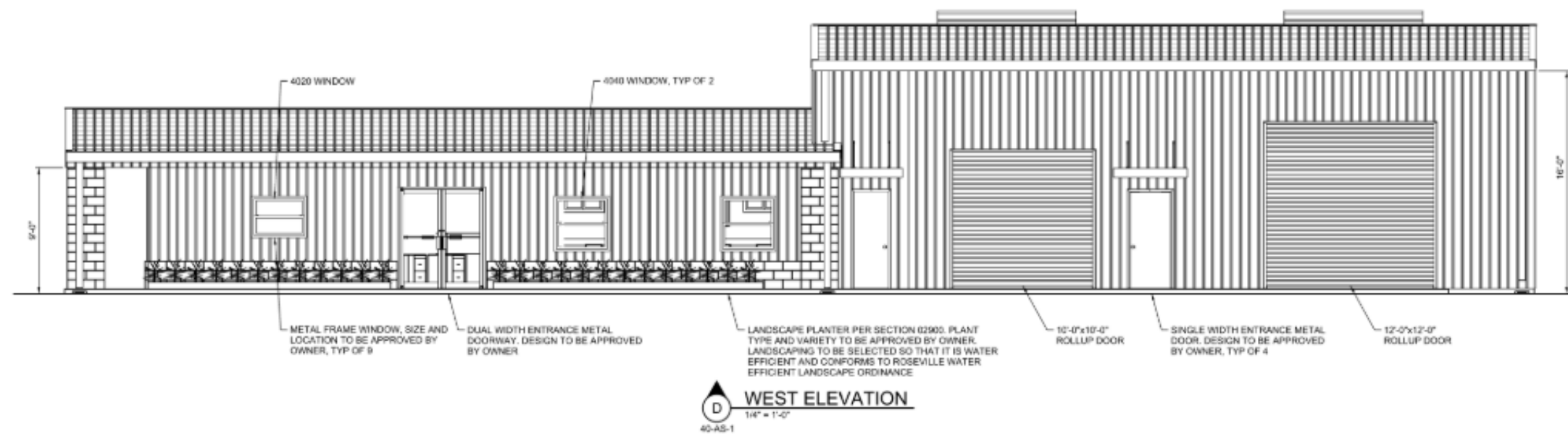
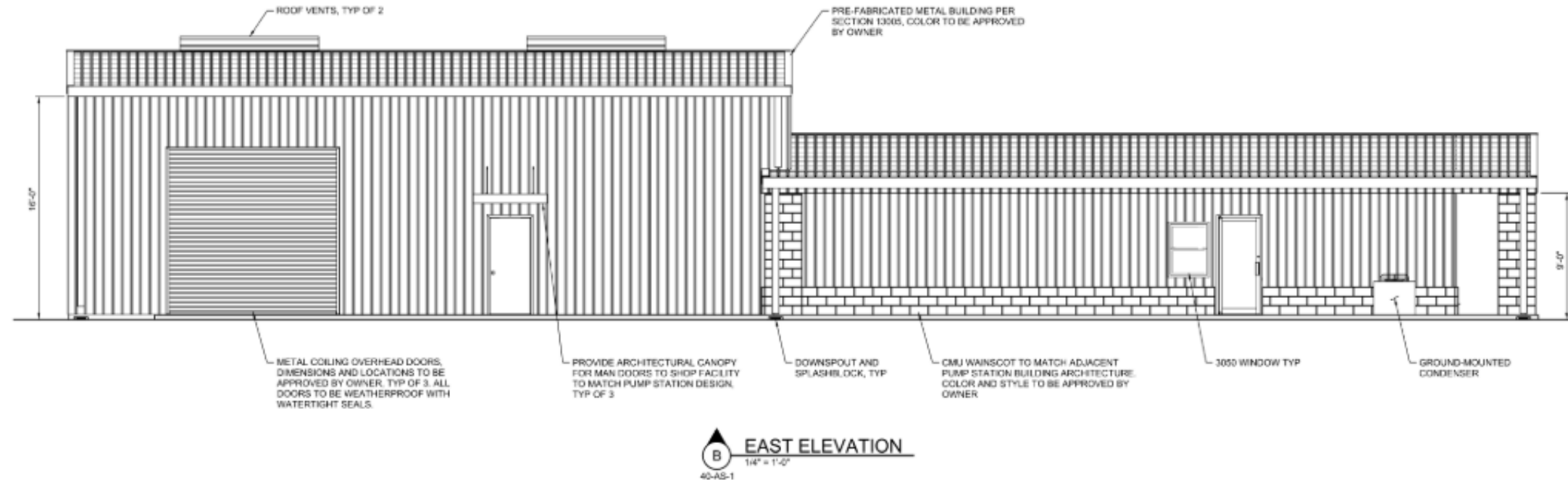
City of Roseville

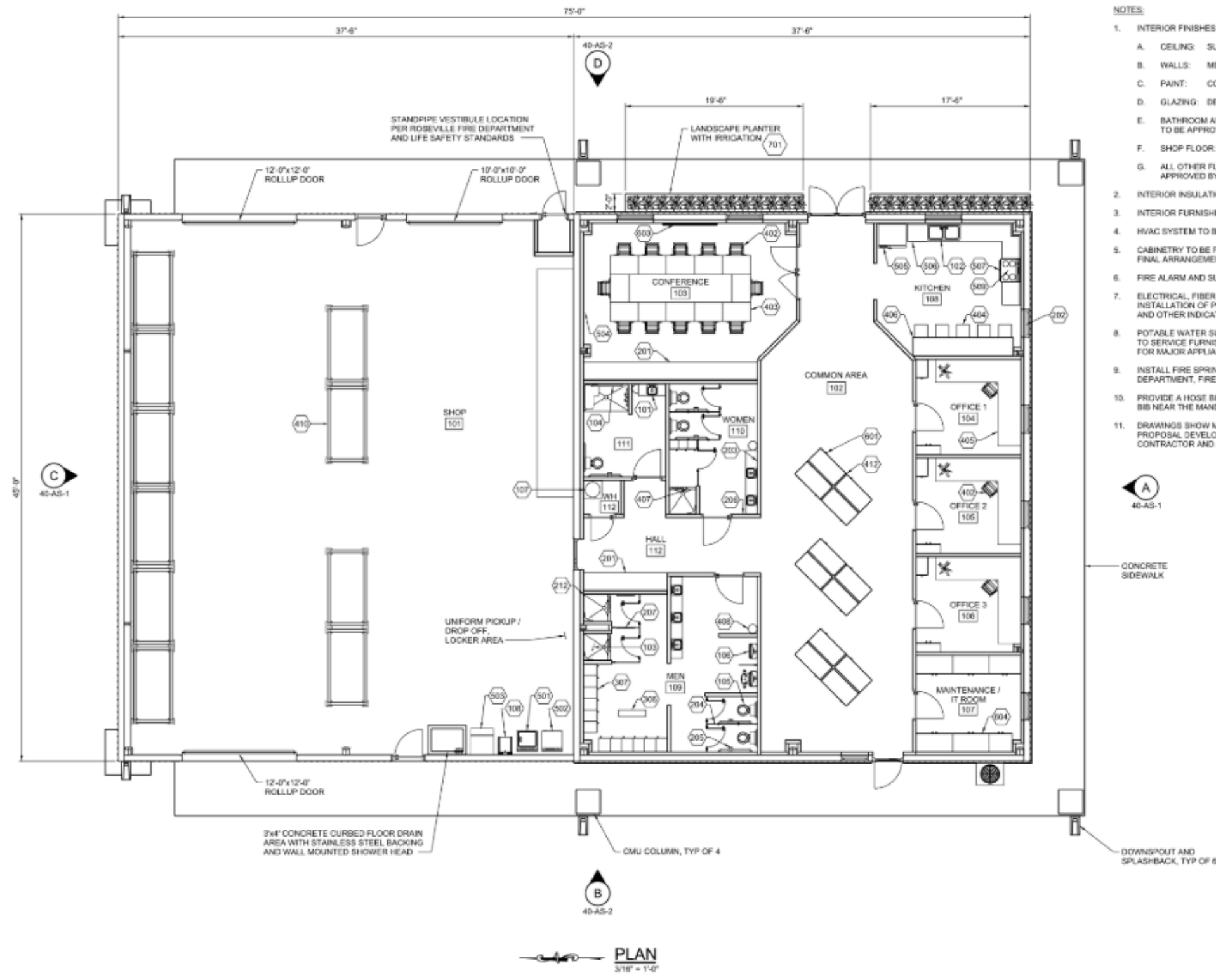
LDA Partners
DESIGNERS & ARCHITECTS



City of Roseville

LDA Partners
DESIGNERS & ARCHITECTS





NOTES:

- INTERIOR FINISHES:
 - CEILING: SUSPENDED CEILING. MATERIAL TO BE APPROVED BY OWNER.
 - WALLS: METAL STUD WALL FRAMING WITH GYPSUM WALLBOARD.
 - PAINT: COLOR TO BE APPROVED BY OWNER.
 - GLAZING: DETAILS TO BE APPROVED BY OWNER.
 - BATHROOM AND KITCHEN FLOOR: RESILIENT TILE FLOORING. MATERIAL TO BE APPROVED BY OWNER.
 - SHOP FLOOR: CONCRETE SLAB WITH SMOOTH FINISH.
 - ALL OTHER FLOOR SURFACES: RESILIENT FLOORING. MATERIAL TO BE APPROVED BY OWNER.
- INTERIOR INSULATION TO BE PROVIDED PER CBC 2016 REQUIREMENTS.
- INTERIOR FURNISHINGS TO BE PROVIDED PER SCHEDULE ON 40-AS-4.
- HVAC SYSTEM TO BE DESIGNED AND PROVIDED BY CONTRACTOR.
- CABINETRY TO BE PROVIDED FOR KITCHEN, CONFERENCE ROOM, AND HALLWAY. FINAL ARRANGEMENT AND MATERIALS TO BE APPROVED BY OWNER.
- FIRE ALARM AND SUPPRESSION SYSTEM TO BE PROVIDED PER CBC 2016.
- ELECTRICAL, FIBER AND CABLE TO BE INSTALLED TO ALLOW FOR FUTURE INSTALLATION OF PHONE SYSTEM, AND APPROPRIATE OFFICE ELECTRONICS, AND OTHER INDICATED EQUIPMENT.
- POTABLE WATER SUPPLY AND DRAIN WASTE AND VENT PIPING TO BE INSTALLED TO SERVICE FURNISHINGS AS INDICATED. FINAL OWNER APPROVAL REQUIRED FOR MAJOR APPLIANCE LOCATIONS.
- INSTALL FIRE SPRINKLER SYSTEM IN ACCORDANCE WITH ROSEVILLE FIRE DEPARTMENT, FIRE AND LIFE SAFETY STANDARD.
- PROVIDE A HOSE BIB ON EACH EXTERIOR WALL. LOCATE THE WEST WALL HOSE BIB NEAR THE MANDOR ENTRANCE TO THE SHOP.
- DRAWINGS SHOW MINIMAL REQUIREMENTS FOR THE PURPOSE OF DESIGN-BUILD PROPOSAL DEVELOPMENT. FINAL DETAILED DESIGN TO BE DEVELOPED BY CONTRACTOR AND APPROVED BY OWNER.

40-AS-1

CONCRETE SIDEWALK

DOWNSPOUT AND SPLASHBACK, TYP OF 6

SCALE 3/16"=1'-0"

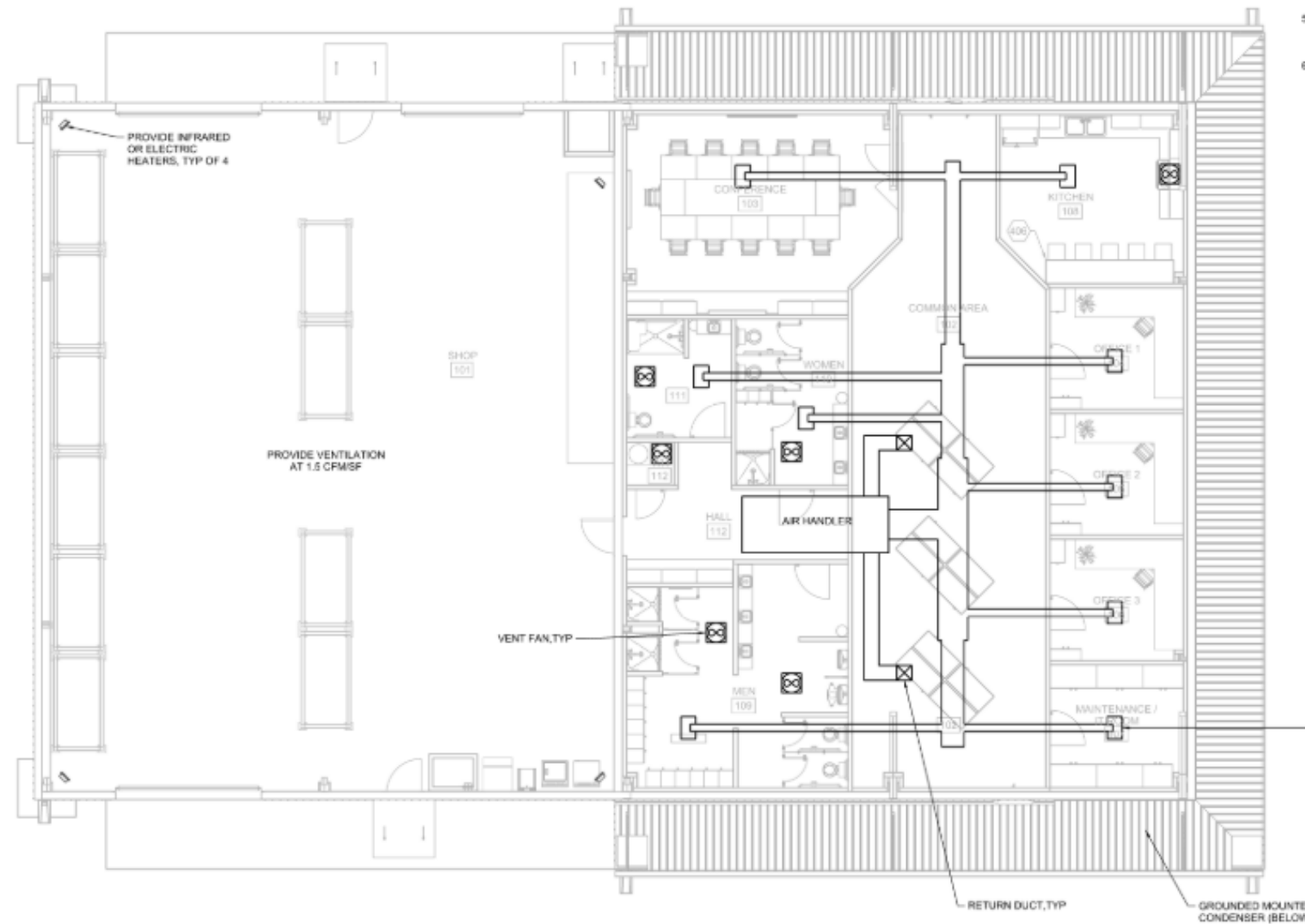
City of Roseville

LDA Partners
DESIGNERS & ARCHITECTS

CONTRACTOR SUPPLIED FURNISHINGS			
TAG	QUANTITY	NAME	DIMENSIONS (W, L/H, D)
NOTE: ALL HEAT-GENERATING FURNISHINGS ARE TO BE ELECTRICAL (WATER HEATER, STOVE, ETC.) NO GAS IS TO BE PROVIDED TO FACILITY.			
100 - PLUMBING AND SANITARY ACCESSORIES			
101	0	LAVATORY	STANDARD
102	1	KITCHEN SINK	33" X 18" SM
103	3	SHOWER STALL	32" X 72" X 32" SM
104	1	HANDICAP SHOWER STALL	60" X 77" X 32" SM
105	0	WATER CLOSET	STANDARD
106	2	URNAL	STANDARD
107	1	ELECTRIC WATER HEATER	20" X 49" X 20" SM
108	1	UTILITY SINK	40" X 34" X 24" SM
200 - CABINETRY AND BUILT-IN ACCESSORIES			
201	3	CABINETRY	VARIABLES, SEE DRAWINGS
202	0	WINDOW SHADES	VARIABLES, SEE DRAWINGS
203	3	MIRROR	COUNTER LENGTH X 30"
204	12	PARTITION DIVIDERS	STANDARD
205	5	WATER CLOSET ACCESSORIES	N/A
206	0	SINK ACCESSORIES	N/A
207	5	SHOWER ACCESSORIES	N/A
300 - FIXED FURNITURE			
308	1	BENCH	38" X 17" X 19" SM
309	12	LOCKERS	15" X 18" X 18" SM
700 - LANDSCAPING			
701	25	ORNAMENTAL PLANTS	5 GAL

OWNER SUPPLIED FURNISHINGS			
TAG	QUANTITY	NAME	DIMENSIONS (W, L/H, D)
NOTE: SHOWN ON DRAWINGS TO DEMONSTRATE INTENT AND GUIDE ELECTRICAL, PLUMBING, AND HVAC DESIGN			
400 - NON-FIXED FURNITURE			
402	TBD	OFFICE CHAIR	TBD
403	1	COLLABORATIVE TABLE	100" X 84" SM
404	5	GUEST CHAIR	TBD
405	5	OFFICE DESK	TBD
406	2	PEDESTAL TABLE	24" X 28" X 44" SM
407	4	SHOWER CURTAIN	TBD
408	3	TRASH CAN	TBD
410	50	STORAGE RACKS	TBD
412	5	CUBICLES	60" X 65" X 60" SM
500 - APPLIANCES			
501	1	WASHER	27 3/4" X 42 1/2" X 27" SM
502	1	ELECTRIC DRYER	29" X 27 3/8" X 43 4" SM
503	1	ICE MACHINE	22" X 32" X 21" SM
504	2	TV	TBD
505	1	REFRIGERATOR	33" X 60" X 27" SM
506	1	COMPACT DISH WASHER	18" X 20" X 20" SM
507	1	ELECTRIC STOVE AND RANGE	30" X 47 1/4" X 20" SM
509	1	MICROWAVE	TBD
600 - OFFICE ACCESSORIES			

FURNISHING KEY NOTE TABLE



NOTES

- COORDINATE THE INSULATION THICKNESS AS REQUIRED TO COMPLY WITH THE TITLE 24 CA 2016 BUILDING EFFICIENCY STANDARDS. IF THE BUILDING IS TO BE PERMITTED IN 2020 OR LATER, COMPLY WITH THE 2019 BUILDING ENERGY EFFICIENCY STANDARDS.
- PROVIDE 1/4" THICK FULLY TEMPERED SAFETY GLASS.
- PROVIDE A MINIMUM 17-SEER HVAC EQUIPMENT.
- PROVIDE VENTILATION RATES AND SYSTEMS IN ACCORDANCE WITH ASHRAE STANDARD 62.1, VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY PER THE OCCUPANCY RATES GIVEN.
- DRAWINGS SHOW MINIMAL REQUIREMENTS FOR THE PURPOSE OF DESIGN-BUILD PROPOSAL DEVELOPMENT, FINAL DETAILED DESIGN TO BE DEVELOPED BY CONTRACTOR AND APPROVED BY OWNER.
- DESIGN-BUILD CONTRACTOR SHALL FOLLOW ALL CITY OF ROSEVILLE ENVIRONMENTAL UTILITIES (EU) OR CCESS CONTROL STANDARDS (PCS). ALL DEVIATIONS FROM THE STANDARDS MUST BE SUBMITTED IN A VARIANCE REQUEST FORM AND APPROVED BY THE CITY OF ROSEVILLE.

FACILITY OCCUPANCY

FACILITY:	OCCUPANCY:
SHOP	GROUP F-2
OFFICE	GROUP B

OFFICE HVAC REQUIREMENTS:

- PROVIDE SPLIT SYSTEM AIR CONDITIONING AND HEAT PUMP DUCTED OR DUCTLESS WITH ZONED THERMOSTATS FOR: KITCHEN, CONFERENCE ROOM, OFFICES, BATHROOM, MEN'S, BATHROOM, WOMEN'S, MAINTENANCE/STORAGE ROOM.
- PROVIDE VENTILATION IN KITCHEN, BATHROOMS AND WATER HEATER ROOM PER CURRENT CALIFORNIA BUILDING CODE EDITION.

SHOP HVAC REQUIREMENTS:

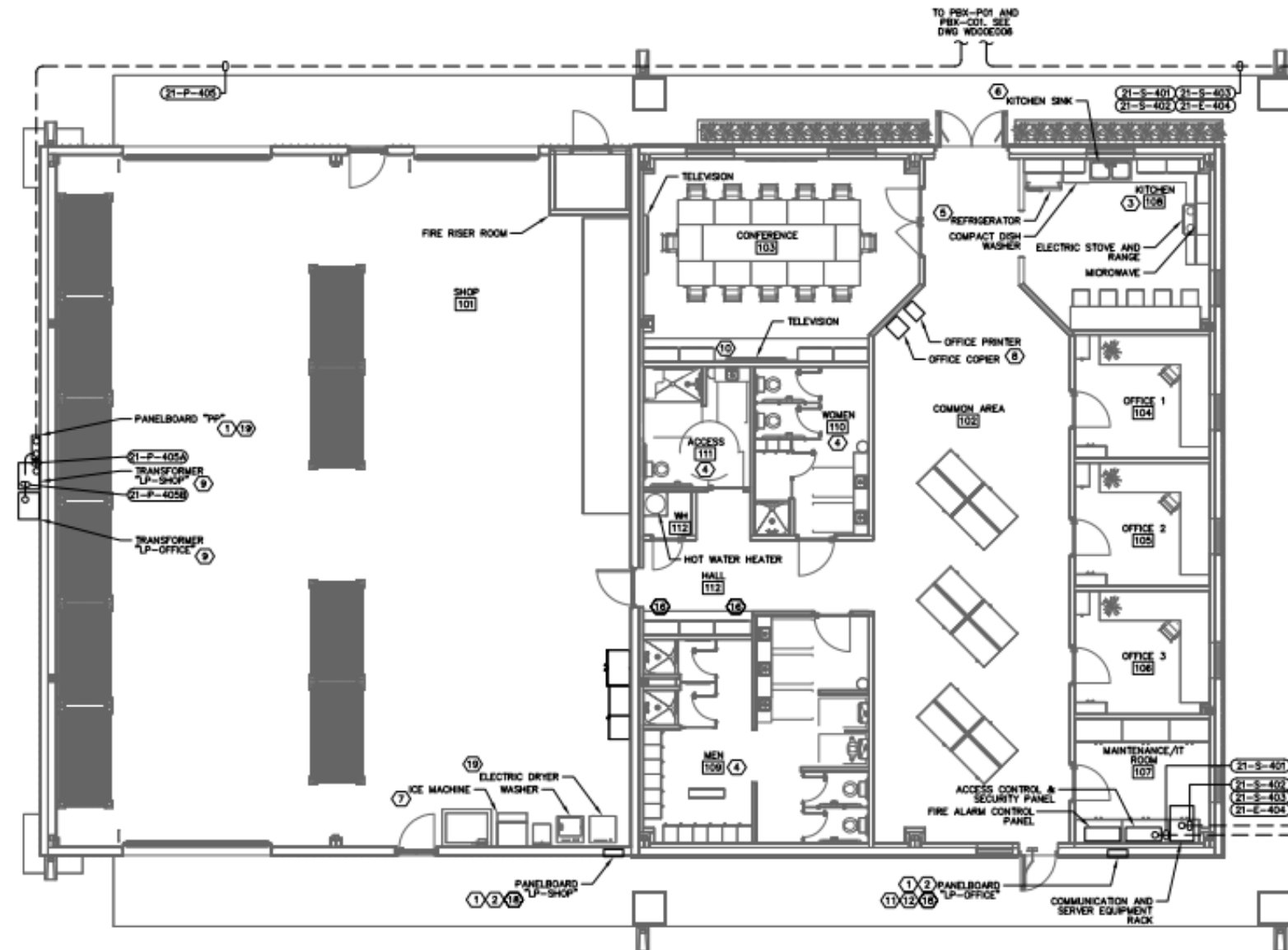
- PROVIDE FOUR HEATERS, ONE IN EACH CORNER OF THE SHOP
- PROVIDE APPROPRIATELY SIZED BUILDING VENTILATION

PLAN
3/16" = 1'-0"

4 0 4 8 FEET
SCALE 3/16"=1'-0"

City of Roseville

LDA Partners
DESIGNERS & ARCHITECTS



LIGHTING AND RECEPTACLE PLAN 15 16 17 20
SCALE: 3/16" = 1'

DRAWING REFERENCED NOTES:

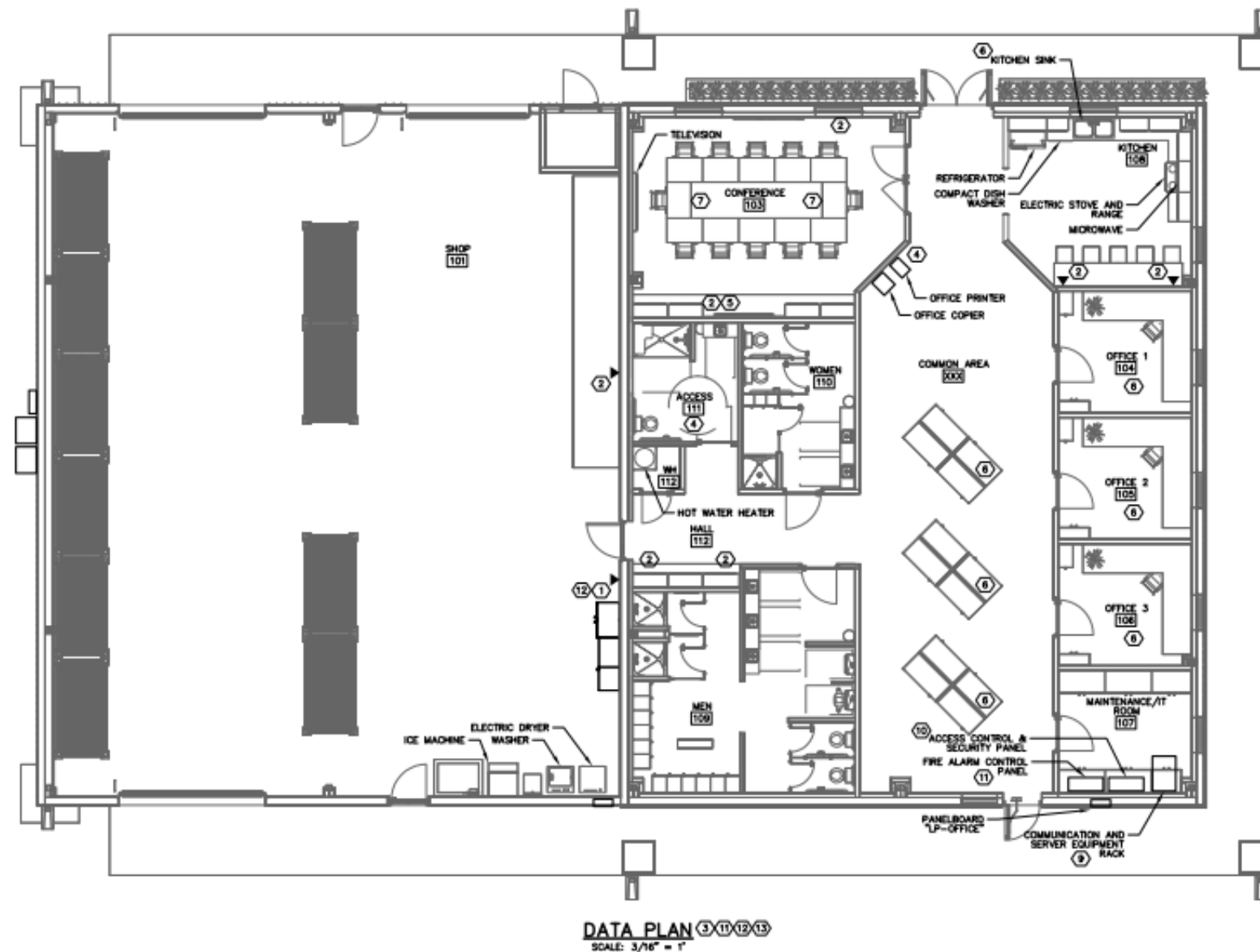
1. PROVIDE PANEL LOAD CALCULATIONS AND PANELBOARD SCHEDULE. PANELBOARD LOAD CALCULATION SHALL INCLUDE: PANEL DESIGNATION, PANEL LOCATION AND MOUNTING, VOLTAGE, NUMBER OF WIRES, NUMBER OF PHASES, BUS AMPERAGE, MAIN INTERUPTION DEVICE RATING, NUMBER OF POLES, DESCRIPTION OF BRANCH CIRCUIT LOAD, TOTAL LOAD PER PHASE, TOTAL LOAD AND CURRENT PER PHASE AT A MINIMUM. INCLUDE SPECIAL REQUIREMENTS SUCH AS GFI BREAKERS, HACR, PADLOCKING ATTACHMENTS AND NEMA RATING.
2. COMBINE RECEPTACLE CIRCUITS IN A SINGLE CONDUIT TO MINIMIZE LENGTH OF CONDUCTORS AND CONDUIT. CIRCUITS COMBINED INTO A SINGLE CONDUIT SHALL BE SIZED FOR NEED DERATING REQUIREMENTS. MAXIMUM 3 CIRCUITS PER CONDUIT SECTION OVER 24" IN LENGTH. CONDUIT SHALL NOT EXCEED 40% FULL.
3. PROVIDE RECEPTACLES FOR UNDER COUNTER LIGHTS IN KITCHEN AREA.
4. INSTALL GFI RECEPTACLES 6" ABOVE RESTROOM SINKS.
5. PROVIDE DEDICATED RECEPTACLE FOR REFRIGERATOR.
6. PROVIDE DEDICATED GFI RECEPTACLE FOR GARBAGE DISPOSAL INSTALLED UNDER SINK. GARBAGE DISPOSAL TO BE CONTROLLED BY MOTOR RATED SWITCH MOUNTED 6" ABOVE COUNTER TOP NEXT TO SINK.
7. PROVIDE DEDICATED RECEPTACLE FOR ICE MACHINE.
8. PROVIDE RECEPTACLE FOR OFFICE PRINTER AND COPIER.
9. TRANSFORMER SHALL BE FREESTANDING NEMA 3R, VENTILATED DRY TYPE 480V-120/240V, 1-PHASE. THE KVA RATING SHALL BE DETERMINED BY THE CONTRACTOR TO SUPPORT CURRENT AND FUTURE LOADS. THE TRANSFORMER SHALL CARRY FULL LOAD CONTINUOUSLY AT RATED VOLTAGE AND FREQUENCY WITHOUT EXCEEDING THE AVERAGE TEMPERATURE RISE OF 115°F ABOVE AN AMBIENT TEMPERATURE OF 40°C. INSULATION SHALL BE RATED FOR 220°C (UL CLASS 220°C). THE TRANSFORMER SHALL BE MOUNTED OUTDOORS.

10. PROVIDE RECEPTACLES IN CABINET FOR AV/MULTIMEDIA EQUIPMENT.
11. PROVIDE RED HANDLE CIRCUIT BREAKER WITH LOCK ON DEVICE FOR FACP.
12. ALL CIRCUITS ARE FED FROM PANEL LP-CREW UNLESS OTHERWISE SPECIFIED.
13. ALL INDOOR AREAS SHALL BE PROVIDED WITH SWITCHABLE CIRCUITS WITH A MINIMUM NUMBER OF NONSWITCHED LIGHTING FIXTURES FOR PERSONNEL SAFETY. FOR INDOOR AREAS WHERE THERE IS A CONCENTRATION OF PROCESS EQUIPMENT REQUIRING ROUTINE INSPECTION, MAINTENANCE OR ADJUSTMENT, SUPPLEMENTARY TASK LIGHTING ACTIVATED BY TIMERS AND/OR MOTION DETECTORS IS REQUIRED.
14. INDOOR NON-PROCESS OR OTHER INFREQUENTLY VISITED AREAS SUCH AS BATHROOMS AND STORAGE ROOMS TO THE EXTENT THAT IT IS SUITABLE FOR THE PHYSICAL AND ENVIRONMENTAL CONDITIONS OF THE AREA SHALL HAVE OCCUPANCY SENSOR ACTIVATED PRIMARY LIGHTING.
15. OUTDOOR LIGHTS SHALL HAVE AUTOMATIC LIGHTING CONTROLS BASED ON PHOTOCELL AND TIME OF DAY CLOCK.
16. PROVIDE RECEPTACLE FOR CHARGING PORTABLE RADIOS.
17. ALL ELECTRICAL EQUIPMENT SHALL HAVE EQUIPMENT TAG. COORDINATE WITH ENGINEER/OWNER TO GENERATE EQUIPMENT TAG NUMBERS.
18. PANELBOARD SHALL BE NEMA 3R RATED, 42 CIRCUIT, 200A, 120/240V, 1 PHASE AND 22 KVA SHORT CIRCUIT RATINGS. MINIMUM BREAKERS SHALL BE A MINIMUM OF 100 AMPERE FRAME AND BREAKERS 15 THROUGH 100 AMPERES TRIP SIZE SHALL TAKE UP THE SAME POLE SPACING. PROVIDED 25% SPARE BREAKERS MINIMUM. PANELBOARDS SHALL BE LABELED WITH A UL SHORT CIRCUIT RATINGS. PANELBOARD SHALL BE INSTALLED OUTDOORS.

GENERAL NOTES THAT APPLY TO LIGHTING AND RECEPTACLE PLAN.

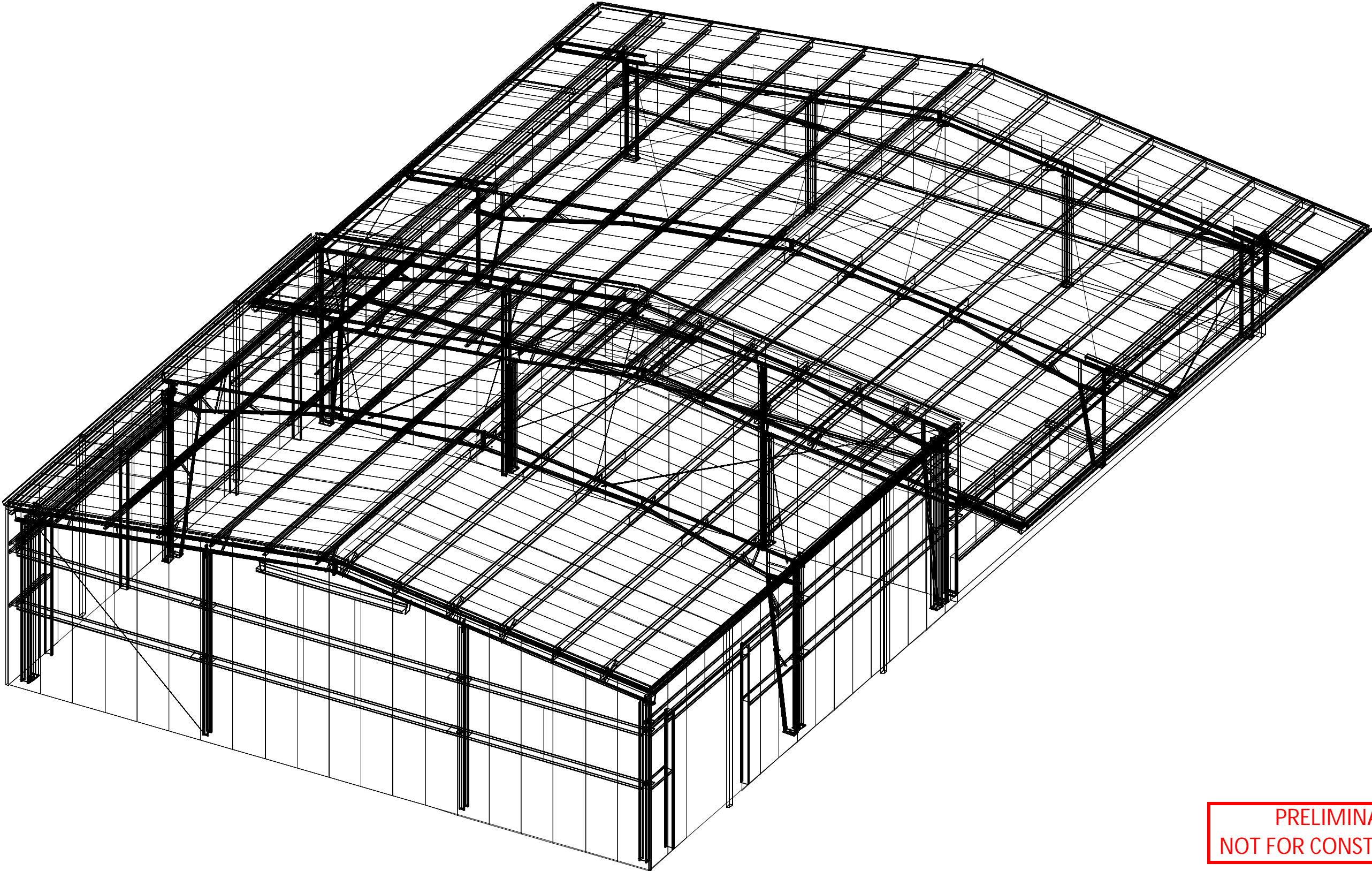
1. THESE NOTES SHALL APPLY TO ALL EQUIPMENT OR FIXTURES WITH ELECTRICAL CONNECTIONS.
2. PROVIDE AND INSTALL NECESSARY WIRES IN 3/4" (MINIMUM) CONDUIT. LAYOUT AS DESIGNED BY CONTRACTOR. MAXIMUM 3 CIRCUITS PER CONDUIT SECTION OVER 24" IN LENGTH. CONDUITS SHALL NOT EXCEED 40% FULL.
3. NON-EXPOSED CONDUITS IN WALLS OR CEILING SPACE SHALL BE EMT. EXPOSED CONDUITS (PERMITTED IN SHOP AREA ONLY) SHALL BE GRS.
4. DEVICE BOXES AND CONDUIT BOXES SHALL BE STAMPED STEEL. DEVICE PLATES AND COVERS SHALL BE STAINLESS STEEL. SWITCHES AND RECEPTACLES SHALL BE COMMERCIAL GRADE, BROWN COLOR.
5. MOUNT WALL SWITCHES AT 48" AFF AND DATA, TELEPHONE AND CONVENIENCE RECEPTACLES AT 18" AFF UNLESS ABOVE COUNTERS.
6. CONDUCTORS SHALL BE COPPER TYPE THHN, SOLID #12 AWG (MINIMUM), STRANDED ABOVE #10 AWG.
7. ALL WORK SHALL CONFORM TO LOCAL CODES AND NATIONAL ELECTRIC CODE.
8. PROVIDE CONDUIT LAYOUT TO INCLUDE ALL CONDUIT NOT ALREADY SHOWN. PROVIDE CONDUIT SCHEDULE FOR CONDUITS WITH WIRING LARGER THAN #12. SCHEDULE SHALL INCLUDE COLUMNS FOR: CONDUIT TAG NUMBER, TO, FROM, SIZE, UNDERGROUND MATERIAL, WIRE FILL AND NOTES. CONDUIT TYPE AND FILL SHALL CALLED OUT DIRECTLY ON THE DRAWINGS FOR LIGHTING AND RECEPTACLES ONLY.
9. PROVIDE SCALED BUILDING POWER, CONTROL, AND GROUNDING PLANS. DRAWINGS SHALL INCLUDE THE ENTIRE SITE WITH CONDUIT ROUTES, CONDUIT IDENTIFICATION, AREA CLASSIFICATIONS, ELECTRICAL EQUIPMENT NAMES AND TAG REFERENCES. ALL INDOOR AND OUTDOOR EQUIPMENT, PULL BOXES, JUNCTIONS, BUILDINGS, UTILITY EQUIPMENT, SHALL BE SHOWN WITH CONDUIT ROUTES RELATED TO POWER, UTILITY FEEDS, INSTRUMENTATION AND CONTROLS.
10. PROVIDE SCALED LIGHTING AND RECEPTACLE PLAN. THE LIGHTING AND RECEPTACLE PLAN DRAWINGS SHALL INCLUDE THE LOCATION AND MOUNTING REQUIREMENT FOR EACH LIGHTING FIXTURE, RECEPTACLE, SWITCHES, SMOKE DETECTOR, EXIT SIGN, BATTERY PACK EMERGENCY LIGHTING AND COMMUNICATIONS DEVICE WITHIN THE BUILDING. FIXTURES SHALL BE IDENTIFIED BY TYPE, PANELBOARD, CIRCUIT AND SWITCH. MAXIMUM 3 RECEPTACLES PER CIRCUIT.
11. PROVIDE LIGHTING FIXTURE SCHEDULE. THE SCHEDULE SHALL INCLUDE EACH TYPE OF LIGHTING FIXTURE USED ON THE PROJECT. THE SCHEDULE SHALL DESCRIBE THE TYPE OF FIXTURE, MANUFACTURER, MATERIALS OF CONSTRUCTION, LUMEN DISTRIBUTION, RATINGS AND ANY ACCESSORIES.
12. DESIGN SHALL COMPLY WITH LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (LEED).
13. THE LIGHTING PLAN SHALL COMPLY WITH CALIFORNIA'S BUILDING EFFICIENCY STANDARDS, TITLE 24, OF THE CALIFORNIA CODE OF REGULATIONS.
14. PROVIDE DESIGNS THAT COMPLY WITH ROSEVILLE ELECTRIC STANDARDS FOR ENERGY EFFICIENCY. EXCEPT WHERE APPROVED BY RE, DESIGNERS SHALL ALSO CONSIDER AND PROPOSE INNOVATIVE DESIGNS THAT WILL ACHIEVE ENERGY EFFICIENCY THAT SHALL BE PROPOSED TO ROSEVILLE ELECTRIC FOR ENERGY EFFICIENCY RETAIRES. DESIGNER SHALL COORDINATE WITH ROSEVILLE ELECTRIC AS REQUIRED TO COMPLETE APPLICATIONS FOR RETAIRES. EXAMPLES OF POTENTIAL ENERGY EFFICIENCY PROGRAMS ARE: HVAC LIGHTING, PREMIUM EFFICIENCY MOTORS, OR ANY OTHER PROCESS IMPROVEMENT OR EQUIPMENT THAT WOULD REDUCE PEAK ELECTRICAL DEMAND AT THIS FACILITY.
15. PROVIDE GENERAL AND SPECIFIC MOUNTING DETAILS FOR ALL ELECTRICAL EQUIPMENT AND FIXTURES.
16. PROVIDE DETAILS FOR CONNECTIONS TO EACH PIECE OF EQUIPMENT. DETAIL SHALL SHOW CONDUIT FINAL TERMINATION REQUIREMENTS, LOCAL JUNCTION BOXES, WIREWAYS, CONDUIT MOUNTING, FLEXIBLE CONDUIT, ETC.
17. PROVIDE CONSTANT ON NIGHT LIGHT FIXTURES FOR LARGE ROOMS AND HALLWAYS.
18. PENDANT MOUNT FIXTURES IN SHOP AT 10' AFF.
19. PROVIDE INDOOR AND OUTDOOR LIGHTING CALCULATIONS SHOWING COMPLIANCE WITH MINIMUM LIGHTING LEVELS.
20. OUTDOOR LIGHTING PRODUCTS SHALL BE FULL CUTOFF, MINIMIZE UP-LIGHT, AND ILLUMINATE ONLY THE SUBJECT AREA.
21. BATTERY PACK TYPE EMERGENCY LIGHTING SHALL BE PROVIDED FOR PERSONNEL SAFETY WHERE REQUIRED BY CODE.
22. MINIMUM LIGHTING LEVELS
 - A. INDOOR PROCESS AREAS 40 FOOT-CANDELS (FC)
 - B. OUTDOOR PROCESS AREAS 1 FC
 - C. ELECTRICAL EQUIPMENT ROOMS 40 FC
 - D. MECHANICAL EQUIPMENT ROOMS 40 FC
 - E. STREET LIGHTING 0.1 TO 1 FC
 - F. MAINTENANCE AREAS GENERAL 60 FC, (TASKS AS REQUIRED)
 - G. OFFICES 100 FC
 - H. RESTROOMS 30 FC
 - I. CONFERENCE ROOMS 60 FC (WITH DIMMER CONTROL)
23. LIGHT FIXTURES
 - A. OUTDOOR LIGHTING FIXTURES SHALL BE LED.
 - B. MAXIMUM POLE HEIGHT: 30 FT.
 - C. POLES SHALL BE DESIGNED TO WITHSTAND 115 MILES PER HOUR WIND GUST.
 - D. PROVIDE FULL CUTOFF FIXTURES THAT HAVE NO DIRECT UPLIGHT (NO LIGHT EMITTED ABOVE HORIZONTAL).
 - E. INDOOR SHOP FIXTURES SHALL BE STRIP LED TYPE.
 - F. ARCHITECTURALLY FINISHED OFFICE AREAS SHALL BE PROVIDED WITH RECESSED LED FIXTURES.
 - G. WHERE RECESSED LIGHTING IS IMPRACTICAL, PROVIDE WRAP-AROUND, SURFACE MOUNTED LED FIXTURES.
 - H. EMERGENCY LIGHTING ADEQUATE FOR SAFE MOVEMENT SHALL BE PROVIDED IN ALL INTERIOR AREAS. SELF CONTAINED BATTERY PACKS WITH PAR TYPE LAMPS ARE REQUIRED.
 - I. SELF ILLUMINATING TYPE EXIT LIGHTS ARE REQUIRED.
 - J. PROVIDE EQUIPMENT NUMBERS ON ALL LIGHT POLES/LAMPS INCLUDING AREA AND STREET LIGHTING.

19. PANELBOARD SHALL BE NEMA 3R RATED, 42 CIRCUIT, 400A, 480V, 3 PHASE AND 42 KVA SHORT CIRCUIT RATINGS MINIMUM. BREAKERS SHALL BE MOUNTED CASE AND MINIMUM OF 225 AMPERE FRAME AND BREAKERS 15 THROUGH 225 AMPERES TRIP SIZE SHALL TAKE UP THE SAME POLE SPACING. PROVIDED 25% SPARE BREAKERS MINIMUM. PANELBOARD SHALL BE LABELED WITH A UL SHORT CIRCUIT RATINGS. PANELBOARD SHALL BE INSTALLED OUTDOORS.
20. PROVIDE DEDICATED RECEPTACLE FOR ELECTRIC DRYER.
21. DESIGN-BUILD CONTRACTOR SHALL FOLLOW ALL CITY OF ROSEVILLE ENVIRONMENTAL UTILITIES (EU) PROCESS CONTROL STANDARDS (PCS). ALL DEVIATIONS FROM THE STANDARDS MUST BE SUBMITTED IN A VARIANCE REQUEST FORM AND APPROVED BY CITY OF ROSEVILLE.



DRAWING REFERENCED NOTES:

1. INSTALL COMMUNICATION OUTLET 48" ABOVE FINISH FLOOR FOR WALL MOUNTED TELEPHONE.
2. DATA RECEPTACLE WITH 4 CAT 6 (TA-SERA) FEMALE RJ-45 RECEPTACLES EACH, TYP. (WHT, BUL, RED, BLK) IN 4"x4" GANG BOX RECESSED IN THE WALL. DATA RECEPTACLES SHALL BE MOUNTED AT 18" AFF OR 6" ABOVE COUNTERTOP UNLESS OTHERWISE NOTED. HOME RUN CABLES TO COMMUNICATION PANEL FROM EACH LOCATION. LABEL WIRING WITH ROOM NUMBER-RECEPT NUMBER. FLUSH FACEPLATE WITH BUILT-IN CABINETS WHERE APPLICABLE.
3. DATA RECEPTACLES SHALL INCLUDE CAT6 CABLES TO BE AS FOLLOWS:
 - a. 1 VOIP
 - b. 1 SCADA CABLE
 - c. 2 NETWORK CABLES
4. DATA RECEPTACLE FOR OFFICE PRINTER
5. INSTALL DATA RECEPTACLE IN CABINET FOR AV/MULTIMEDIA EQUIPMENT.
6. INSTALL DATA RECEPTACLE IN EACH OFFICE SPACE AND EACH CUBICLE. ALL OFFICE SPACES SHALL HAVE DATA RECEPTACLES ON AT LEAST 2 DIFFERENT WALLS
7. INSTALL DATA RECEPTACLE, DUPLEX RECEPTACLE AND OTHER DEVICES NECESSARY TO SUPPORT AV/MULTIMEDIA EQUIPMENT. ALL BOXES SHALL BE FLUSH WITH FLOOR.
8. LABEL ALL CABLES AND SWITCH PORTS WITH SOURCE LOCATION AND PORT NUMBER.
9. MOUNT NEW 19" STEEL VERTICAL WALL MOUNT EQUIPMENT RACK. THE RACK SHALL BE SIZED TO ACCOMMODATE THE FOLLOW EQUIPMENT MINIMUM WITH 25% SPACE FOR FUTURE EQUIPMENT.
 - a. 10/100/1000 BASE ETHERNET SWITCH
 - b. RACK MOUNT FIBER OPTIC PATCH PANEL. INSTALL CAT5e JUMPERS FROM PATCH PANEL TO ETHERNET SWITCH
 - c. NETWORK FIREWALL
 - d. 10/100 MANAGED SWITCH
10. PROVIDE ACCESS CONTROL AND SECURITY SYSTEM DESIGN. SYSTEMS SHALL INCLUDE PROX DOOR CARD READERS AND ELECTRIC DOOR STRIKES AT EACH MAIN DOOR. SECURITY SYSTEM SHALL BE COMPATIBLE WITH EXISTING SECURITY SYSTEM AT THE WWTP.
11. PROVIDE A COMPLETE FIRE ALARM SYSTEM DESIGN FOR THE CREW BUILDING. THE SYSTEM SHALL BE DESIGNED, PERMITTED, AND INSTALLED BY NICET LEVEL IV AND STATE LICENSED CTD CONTRACTOR. SYSTEM SHALL INCLUDE CONTROL PANEL, ALARM-INITIATING DEVICES (SMOKE DETECTORS, DUST SMOKE DETECTORS, FIRE/HEAT DETECTORS, AND PULL STATIONS), AND ALARM-INDICATING DEVICES (HORN/STROBE), INTERLOCK DEVICES (HVAC), IN COMPLIANCE WITH LOCAL CODES AND FOR OCCUPANCY DENIED. SYSTEM SHALL PROVIDE 100 PERCENT BUILDING DETECTION COVERAGE. SYSTEM SHALL BE COMPLETE AND FUNCTIONAL AND INCLUDE ALL COMPONENTS, INSTALLATION, WIRING, CONDUIT, START-UP, PROGRAMMING, AND WARRANTY. SYSTEM SHALL BE A LOCAL, NON-CODED, PROTECTIVE SIGNALING SYSTEM AS DESCRIBED IN NFPA 72. ALL DEVICES SHALL BE ADDRESSABLE TYPE AND HARDWIRED. AN AUTOMATIC COMMUNICATIONS SYSTEM ACTUATED BY AN ALARM CONDITION SHALL BE PROVIDED.
12. INSTALL WALLMOUNTED JUNCTION BOX AT CEILING IN SHOP FOR FUTURE DATA CONNECTIONS. INSTALL 2" EMPTY CONDUIT WITH PULL ROPE TO JUNCTION BOX.
13. DESIGN-BUILD CONTRACTOR SHALL FOLLOW ALL CITY OF ROSEVILLE ENVIRONMENTAL UTILITIES (EU) PROCESS CONTROL STANDARDS (PCS). ALL DEVIATIONS FROM THE STANDARDS MUST BE SUBMITTED IN A VARIANCE REQUEST FORM AND APPROVED BY CITY OF ROSEVILLE.




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B	BUTLER MANUFACTURING 1540 GENESSEE ST. KANSAS CITY, MO 64102			PERSPECTIVE DRAWING			
	REV:	DATE:	BY:	DESCRIPTION:	BUILDER: Diede Construction, Inc	 Butler Manufacturing VPC VERSION: 2021.1d	JOB #:
					CUSTOMER:		DATE: 5/4/2021
					LOCATION: Roseville, California		DRAWN/CHECK: /
					PROJECT: Roseville Design build		PAGE:
DRAWING SCALE: NTS				BUILDER'S PO#:			

Codes and Loads
WHEN MULTIPLE BUILDINGS ARE INVOLVED, SPECIFIC LOAD FACTORS FOR DIFFERING OCCUPANCIES, BUILDING DIMENSIONS, HEIGHTS, FRAMING SYSTEMS, ROOF SLOPES, ETC., MAY RESULT IN DIFFERENT LOAD APPLICATION FACTORS THAN INDICATED BELOW. SEE CALCULATIONS FOR FURTHER DETAILS. WIND LOADS ARE APPLIED TO OVERALL BUILDING ENVELOPE. COMMON WALLS BETWEEN CONNECTED SHAPES ARE NOT SUBJECT TO EXTERNAL WIND LOADS.
City: Roseville County: Placer State: California Country: United States

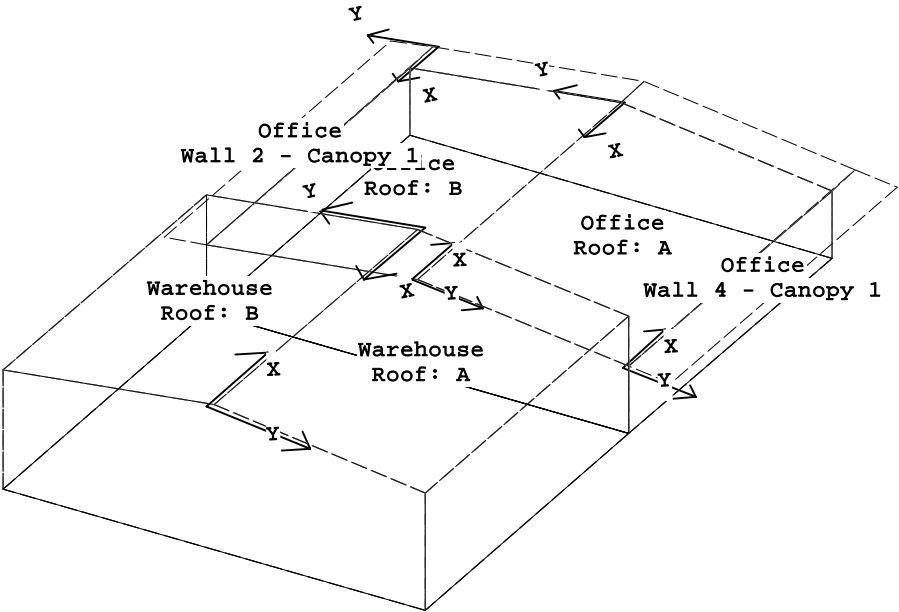
Building Code
Building Code: California Building Standard Code - 2019 Edition Structural: 16AISC - ASD Rainfall: I: 0.10 inches per hour
Based on Building Code: 2018 International Building Code Cold Form: 16AISI - ASD f'c: 3000.00 psi Concrete
Building Risk/Occupancy Category: II (Standard Occupancy Structure)

Dead and Collateral Loads Material Dead Weight Roof Live Load
Collateral Gravity:7.00 psf Roof Covering + Second. Dead Load: 2.25 psf Roof Live Load: 20.00 psf Reducible
Collateral Uplift: 0.00 psf Frame Weight (assumed for seismic):2.50 psf

Wind Load Snow Load Seismic Load
Wind Speed: Vult: 94.00 (Vasd: 72.81) mph Ground Snow Load: pg: 0.00 psf Lateral Force Resisting Systems using Equivalent Force Procedure
The 'Envelope Procedure' is Used Flat Roof Snow: pf: 0.00 psf Mapped MCE Acceleration: Ss: 47.00 %g
Primaries Wind Exposure: C - Kz: 0.849 Design Snow (Sloped): ps: 0.00 psf Mapped MCE Acceleration: S1: 23.00 %g
Parts Wind Exposure Factor: 0.849 Rain Surcharge: 0.00 Site Class: Stiff soil (D) - Default
Wind Enclosure: Partially Open Exposure Factor: 2 Partially Exposed - Ce: 1.00 Seismic Importance: Ie: 1.000
Topographic Factor: Kzt: 1.0000 Snow Importance: Is: 1.000 Design Acceleration Parameter: Sds: 0.4462
Ground Elevation Factor: Ke: 1.0000 Thermal Factor: Heated - Ct: 1.00 Design Acceleration Parameter: Sd1: 0.3281
NOT Windborne Debris Region Ground / Roof Conversion: 0.70 Seismic Design Category: D
Base Elevation: 0/0/0 Obstructed or Not Slippery Seismic Snow Load: 0.00 psf
Site Elevation: 0.0 ft % Snow Used in Seismic: 0.00
Primary Zone Strip Width: 2a: 7/7/10 Diaphragm Condition: Flexible
Parts / Portions Zone Strip Width: a: 3/9/13 Fundamental Period Height Used: 11/5/0
Basic Wind Pressure: q: 16.32, (Parts) 16.32 psf

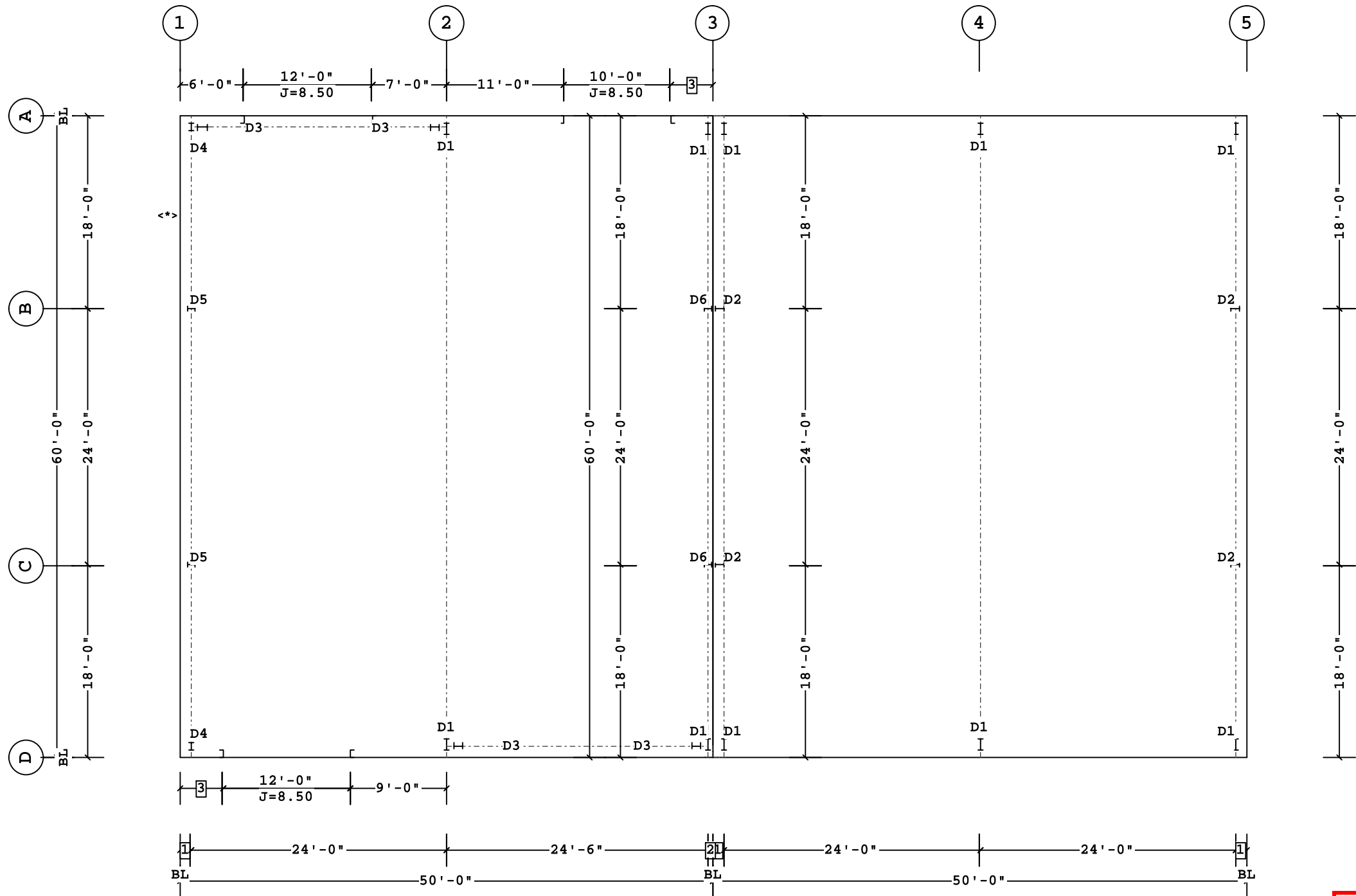
Transverse Direction Parameters
Ordinary Steel Moment Frames
Redundancy Factor: Rho: 1.30
Fundamental Period: Ta: 0.1964
R-Factor: 3.50
Overstrength Factor: Omega: 2.50
Deflection Amplification Factor: Cd: 3.00
Base Shear: V: 0.1275 x W

Longitudinal Direction Parameters
Ordinary Steel Concentric Braced Frames
Redundancy Factor: Rho: 1.30
Fundamental Period: Ta: 0.1242
R-Factor: 3.25
Overstrength Factor: Omega: 2.00
Deflection Amplification Factor: Cd: 3.25
Base Shear: V: 0.1373 x W



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					BUILDER: Diede Construction, Inc		CUSTOMER:		
					LOCATION: Roseville, California				
					PROJECT: Roseville Design build				
					BUILDER'S PO#:				



ANCHOR ROD PLAN

PRELIMINARY
NOT FOR CONSTRUCTION

- 3 4'-0"
2 6"
1 1'-0"
☐ Dimension Key


Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)

<"> THE BUILDING IS DESIGNED WITH BRACING DIAGONALS IN THE DESIGNATED BAYS. COLUMN BASE REACTIONS, BASE PLATES AND ANCHOR RODS ARE AFFECTED BY THIS BRACING AND DIAGONALS MAY NOT BE RELOCATED WITHOUT CONSULTING THE BUILDING SUPPLIERS ENGINEER.

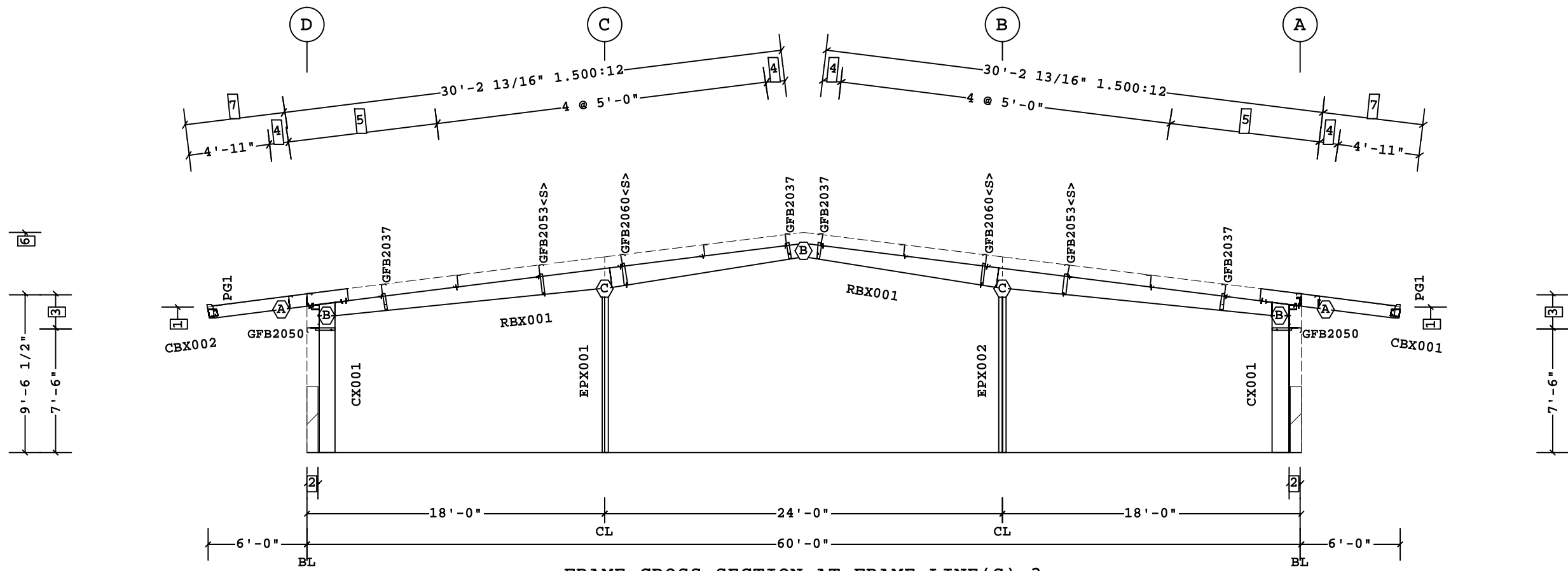
THE BUTLER MFG. ENGINEER'S SEAL APPLIES ONLY TO THE WORK PRODUCT OF BUTLER MFG. AND DESIGN AND PERFORMANCE REQUIREMENTS SPECIFIED BY BUTLER. THE BUTLER MFG. ENGINEER'S SEAL DOES NOT APPLY TO THE PERFORMANCE OR DESIGN OF ANY OTHER PRODUCT OR COMPONENT FURNISHED BY BUTLER EXCEPT TO ANY DESIGN OR PERFORMANCE REQUIREMENTS SPECIFIED BY BUTLER.

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<div>B</div>		BUTLER MANUFACTURING 1540 GENESSEE ST. KANSAS CITY, MO 64102			ANCHOR ROD PLAN			
REV:	DATE:	BY:	DESCRIPTION:		BUILDER:	Diede Construction, Inc	<div> Butler Manufacturing VPC VERSION: 2021.1d</div>	JOB #:
					CUSTOMER:			DATE:
					LOCATION:	Roseville, California		5/4/2021
					PROJECT:	Roseville Design build		DRAWN/CHECK:
								/
DRAWING SCALE: NTS					BUILDER'S PO#:			PAGE:

Frame Clearances
Horiz. Clearance between members 1(CX001) and 6(CX001): 56'-7"
Vert. Clearance at member 1(CX001): 8'-3 3/16"
Vert. Clearance at member 6(CX001): 8'-3 3/16"
Vert. Clearance at member 7(EPX001): 9'-10 15/16"
Vert. Clearance at member 8(EPX002): 9'-10 15/16"
Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)



- 7 6'-0 9/16" 1.500:12
 - 6 13'-3 1/2" Ridge Ht.
 - 5 2 @ 4'-6 5/8"
 - 4 1'-1 9/16"
 - 3 2'-0 1/2"
 - 2 8 1/2"
 - 1 8'-9 1/2"
- Dimension Key

PRELIMINARY
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Shape Name = Office Wall 4, Frame 1

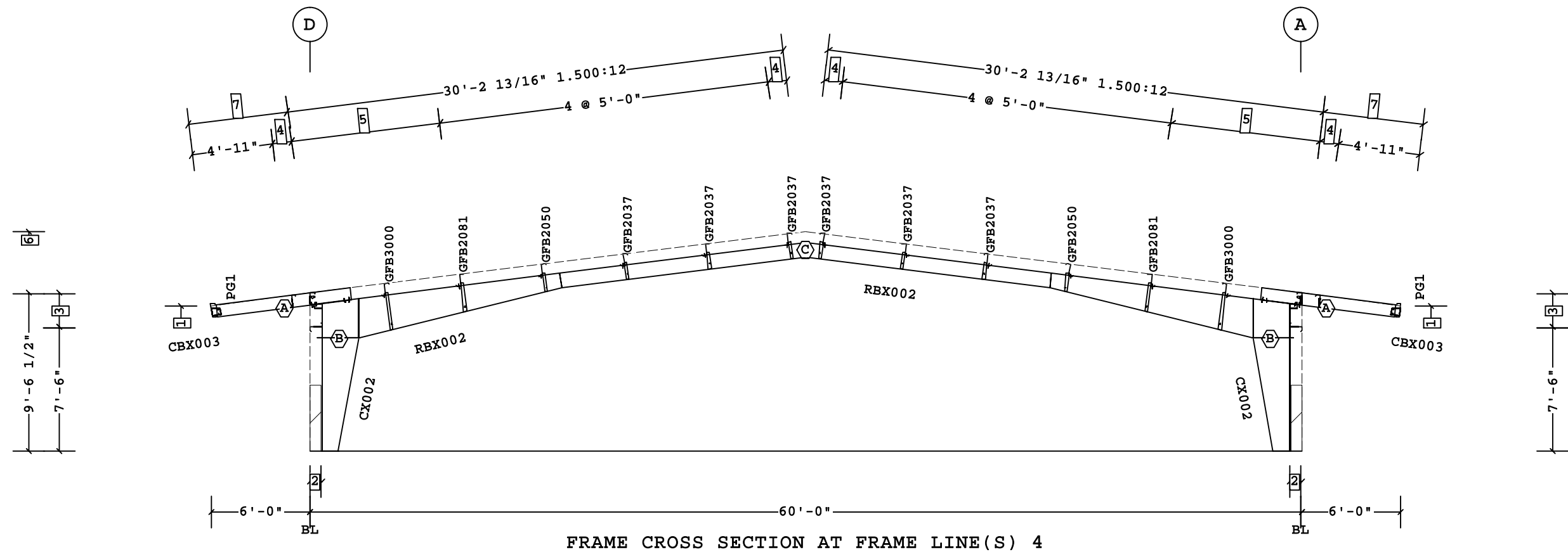
1. USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS, SECONDARY CLIP CONNECTIONS, AND FLANGE BRACE CONNECTIONS, UNLESS NOTED OTHERWISE.
2. SLOT REINFORCEMENT PLATES NEED NOT BE LOCATED ON THE SAME SIDE OF THE WEB AS THE HILLSIDE WASHER.

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B		BUTLER MANUFACTURING 1540 GENESSEE ST. KANSAS CITY, MO 64102		FRAME CROSS SECTION AT FRAME LINE(S) 3	
		REV:	DATE:	BY:	DESCRIPTION:
DRAWING SCALE:		NTS		BUILDER: Diede Construction, Inc	
				CUSTOMER:	
				LOCATION: Roseville, California	
				PROJECT: Roseville Design build	
				BUILDER'S PO#: 2021.1d	
				JOB #:	
				DATE: 5/4/2021	
				DRAWN/CHECK: /	
				PAGE:	

Frame Clearances
 Horiz. Clearance between members 1(CX002) and 6(CX002): 54'-1"
 Vert. Clearance at member 1(CX002): 6'-10 1/16"
 Vert. Clearance at member 6(CX002): 6'-10 1/16"
 Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)



7 6'-0 9/16" 1.500:12
6 13'-3 1/2" Ridge Ht.
5 2 @ 4'-6 5/8"
4 1'-1 9/16"
3 2'-0 1/2"
2 8 1/2"
1 8'-9 1/2"

☐ Dimension Key

Shape Name = Office Wall 4, Frame 2

1. USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120)
W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS,
SECONDARY CLIP CONNECTIONS, AND FLANGE BRACE CONNECTIONS,
UNLESS NOTED OTHERWISE.
2. SLOT REINFORCEMENT PLATES NEED NOT BE LOCATED ON THE SAME
SIDE OF THE WEB AS THE HILLSIDE WASHER.

THE BUTLER MFG. ENGINEER'S SEAL APPLIES ONLY TO THE WORK PRODUCT OF BUTLER MFG. AND DESIGN AND PERFORMANCE REQUIREMENTS SPECIFIED BY BUTLER. THE BUTLER MFG. ENGINEER'S SEAL DOES NOT APPLY TO THE PERFORMANCE OR DESIGN OF ANY OTHER PRODUCT OR COMPONENT FURNISHED BY BUTLER EXCEPT TO ANY DESIGN OR PERFORMANCE REQUIREMENTS SPECIFIED BY BUTLER.

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B	BUTLER MANUFACTURING 1540 GENESSEE ST. KANSAS CITY, MO 64102
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REV.	DATE:	BY:	DESCRIPTION:
DRAWING SCALE:			NTS

FRAME CROSS SECTION AT FRAME LINE(S) 4

BUILDER:	Diede Construction, Inc
CUSTOMER:	
LOCATION:	Roseville, California
PROJECT:	Roseville Design build
BUILDER'S PO#:	

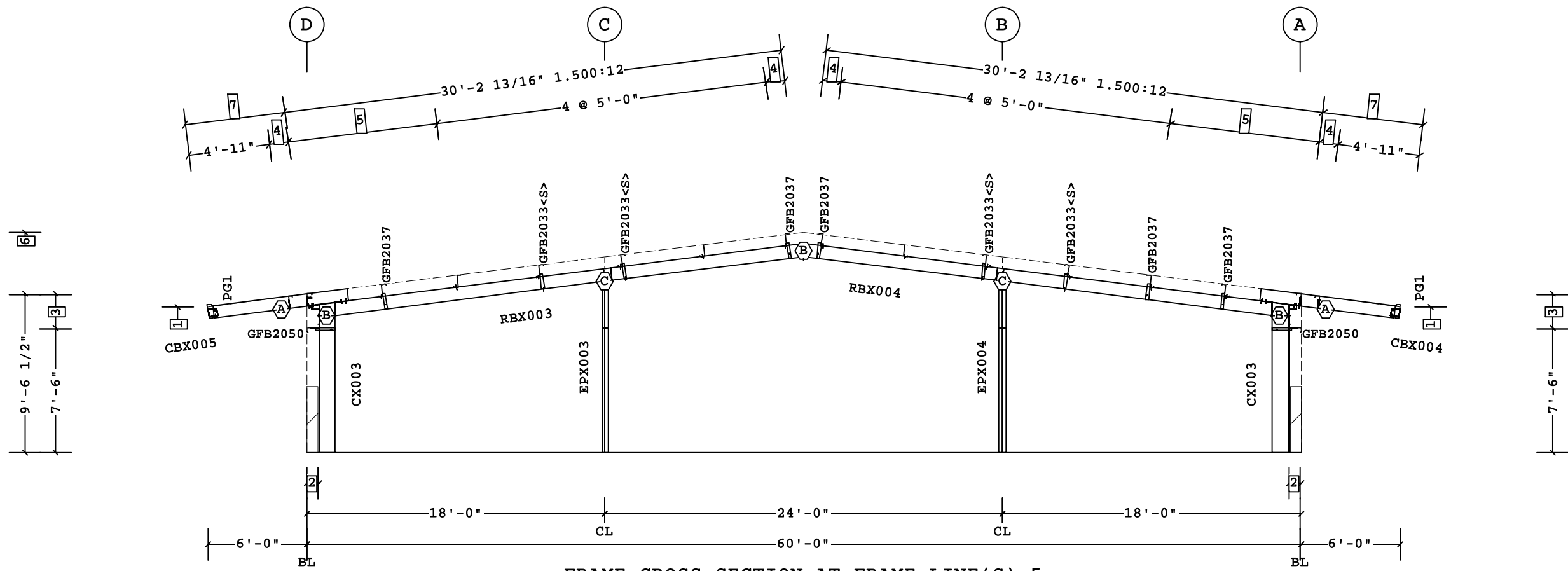


Butler Manufacturing
VPC VERSION: 2021.1d

JOB #:	
DATE:	5/4/2021
DRAWN/CHECK:	/
PAGE:	

PRELIMINARY
NOT FOR CONSTRUCTION

Frame Clearances
Horiz. Clearance between members 1(CX003) and 6(CX003): 56'-7"
Vert. Clearance at member 1(CX003): 8'-3 1/4"
Vert. Clearance at member 6(CX003): 8'-3 1/4"
Vert. Clearance at member 7(EPX003): 10'-3 7/8"
Vert. Clearance at member 8(EPX004): 10'-3 7/8"
Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)



- 7 6'-0 9/16" 1.500:12
 - 6 13'-3 1/2" Ridge Ht.
 - 5 2 @ 4'-6 5/8"
 - 4 1'-1 9/16"
 - 3 2'-0 1/2"
 - 2 8 1/2"
 - 1 8'-9 1/2"
- ☐ Dimension Key

PRELIMINARY
NOT FOR CONSTRUCTION

Shape Name = Office Wall 4, Frame 3

1. USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS, SECONDARY CLIP CONNECTIONS, AND FLANGE BRACE CONNECTIONS, UNLESS NOTED OTHERWISE.
2. SLOT REINFORCEMENT PLATES NEED NOT BE LOCATED ON THE SAME SIDE OF THE WEB AS THE HILLSIDE WASHER.

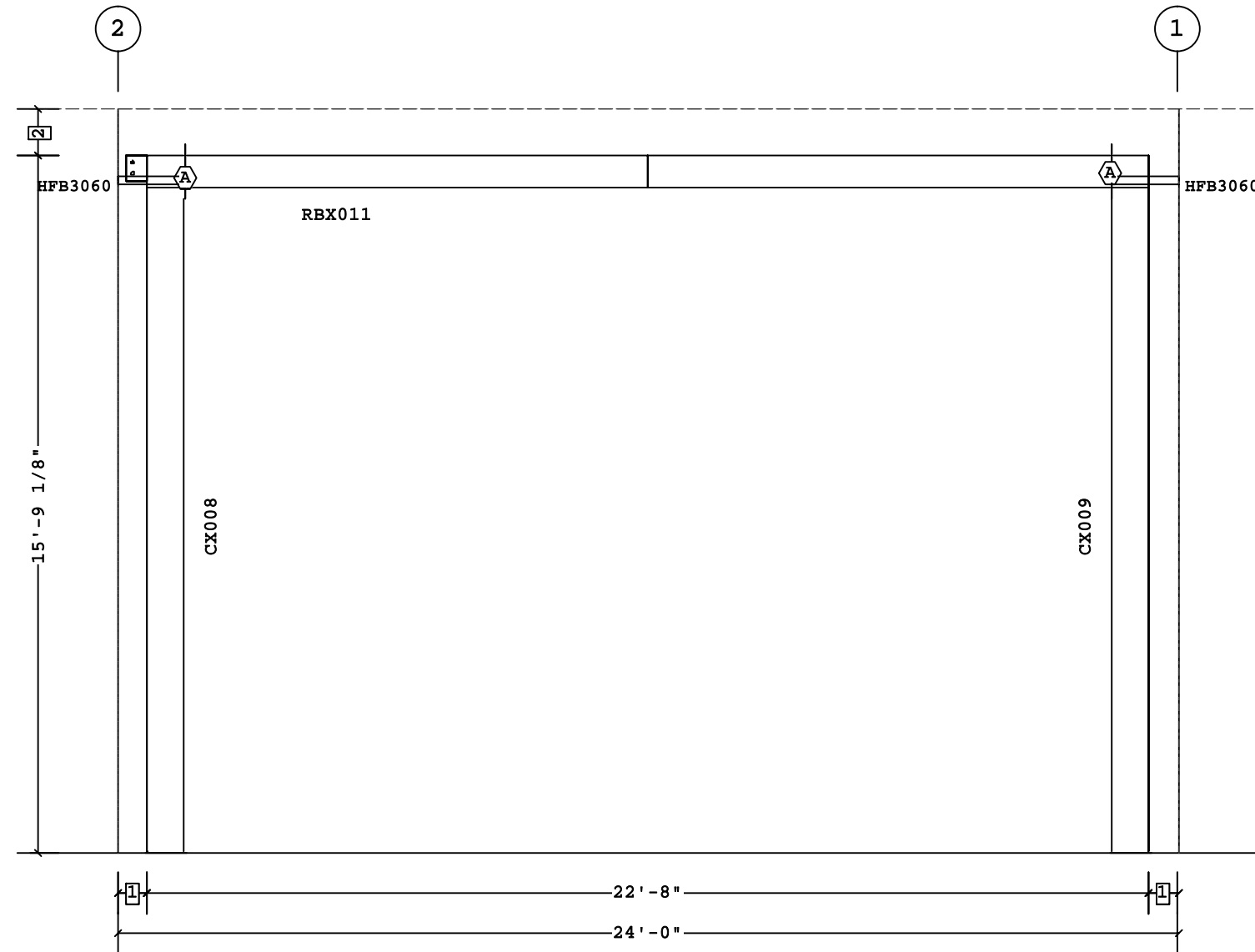
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BUTLER MANUFACTURING 1540 GENESSEE ST. KANSAS CITY, MO 64102				FRAME CROSS SECTION AT FRAME LINE(S) 5			
REV:	DATE:	BY:	DESCRIPTION:	BUILDER:	Diede Construction, Inc		JOB #:
				CUSTOMER:			DATE:
				LOCATION:	Roseville, California		5/4/2021
				PROJECT:	Roseville Design build		DRAWN/CHECK:
				BUILDER'S PO#:			PAGE:
DRAWING SCALE: NTS				BUTLER Butler Manufacturing VPC VERSION: 2021.1d			

Frame Clearances
 Horiz. Clearance between members 1(CX008) and 4(CX009): 21'-0"
 Vert. Clearance at member 1(CX008): 14'-9 3/8"
 Vert. Clearance at member 4(CX009): 14'-9 3/8"
 Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)



PORTAL FRAME ELEVATION ALONG A

PRELIMINARY
NOT FOR CONSTRUCTION

$$\begin{array}{r} 2 \quad 1' - 0 \quad 1/2'' \\ 1 \quad 8'' \end{array}$$

☐ Dimension Key

☐ Dimension Key

Shape Name = Warehouse Wall 2, Frame 2

1. USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120)
W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS,
SECONDARY CLIP CONNECTIONS, AND FLANGE BRACE CONNECTIONS,
UNLESS NOTED OTHERWISE.
2. SLOT REINFORCEMENT PLATES NEED NOT BE LOCATED ON THE SAME
SIDE OF THE WEB AS THE HILLSIDE WASHER.

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1540 GENESSEE ST. KANSAS CITY, MO 64102

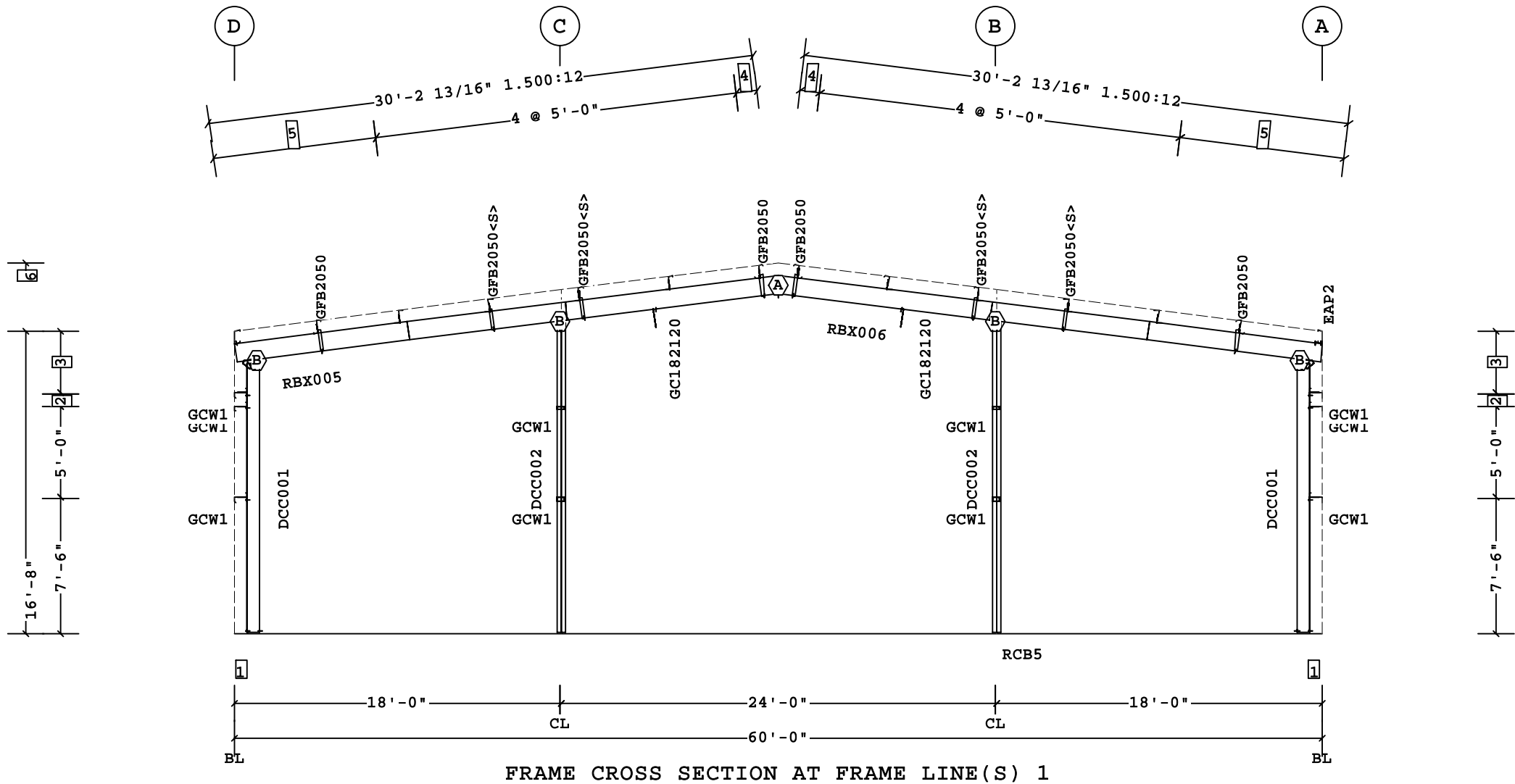
PORTAL FRAME ELEVATION ALONG A

REV:	DATE:	BY:	DESCRIPTION:

DRAWING SCALE: NTS

BUILDER:	Diede Construction, Inc	 Butler Manufacturing <small>VBC VERSION: 2004.1.1</small>	JOB #:	
CUSTOMER:			DATE:	5/4/2021
LOCATION:	Roseville, California		DRAWN/CHECK:	1
PROJECT:	Roseville Design build		PAGE:	
BUILDER'S POW:				

Frame Clearances
Horiz. Clearance between members 1(DCC001) and 8(DCC001): 57'-2"
Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)



- 6 20'-5" Ridge Ht.
- 5 2 @ 4'-6 5/8"
- 4 1'-1 9/16"
- 3 3'-5"
- 2 9"
- 1 8 1/2"

Dimension Key

PRELIMINARY
NOT FOR CONSTRUCTION

Shape Name = Warehouse Wall 4, Frame 1

- USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS, SECONDARY CLIP CONNECTIONS, AND FLANGE BRACE CONNECTIONS, UNLESS NOTED OTHERWISE.
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BUTLER MANUFACTURING
1540 GENESSEE ST. KANSAS CITY, MO 64102

FRAME CROSS SECTION AT FRAME LINE(S) 1

REV.	DATE:	BY:	DESCRIPTION:
DRAWING SCALE:			NTS

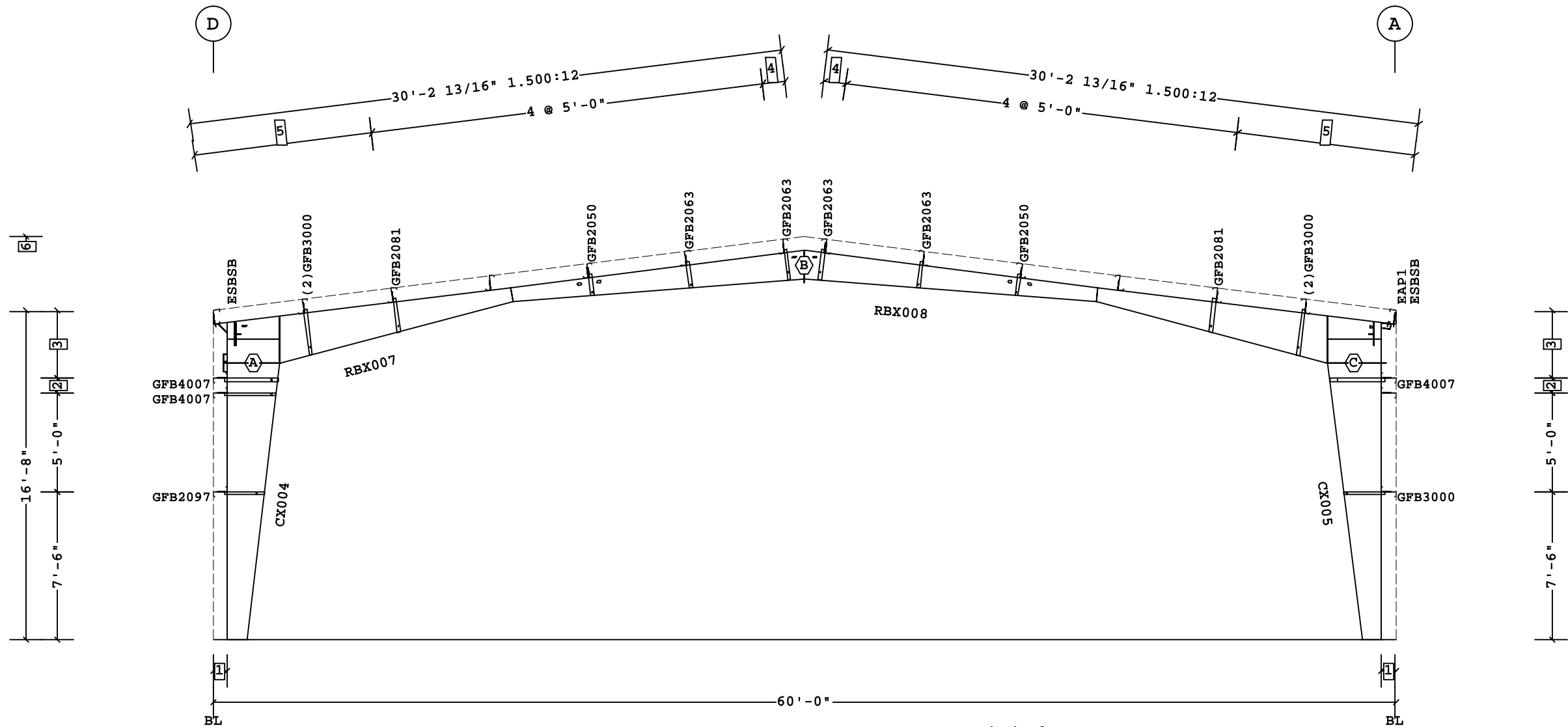
BUILDER:	Diede Construction, Inc
CUSTOMER:	
LOCATION:	Roseville, California
PROJECT:	Roseville Design build
BUILDER'S PO#:	



Butler Manufacturing
VPC VERSION: 2021.1d

JOB #:
DATE:
DRAWN/CHECK:
PAGE:

Frame Clearances
Horiz. Clearance between members 1(CX004) and 6(CX005): 53'-2"
Vert. Clearance at member 1(CX004): 14'-0 3/16"
Vert. Clearance at member 6(CX005): 14'-0 5/16"
Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)



FRAME CROSS SECTION AT FRAME LINE(S) 2

PRELIMINARY
NOT FOR CONSTRUCTION

- 6 20'-5" Ridge Ht.
- 5 2 @ 4'-6 5/8"
- 4 1'-1 9/16"
- 3 3'-5"
- 2 9"
- 1 8 1/2"


Dimension Key

Shape Name = Warehouse Wall 4, Frame 2

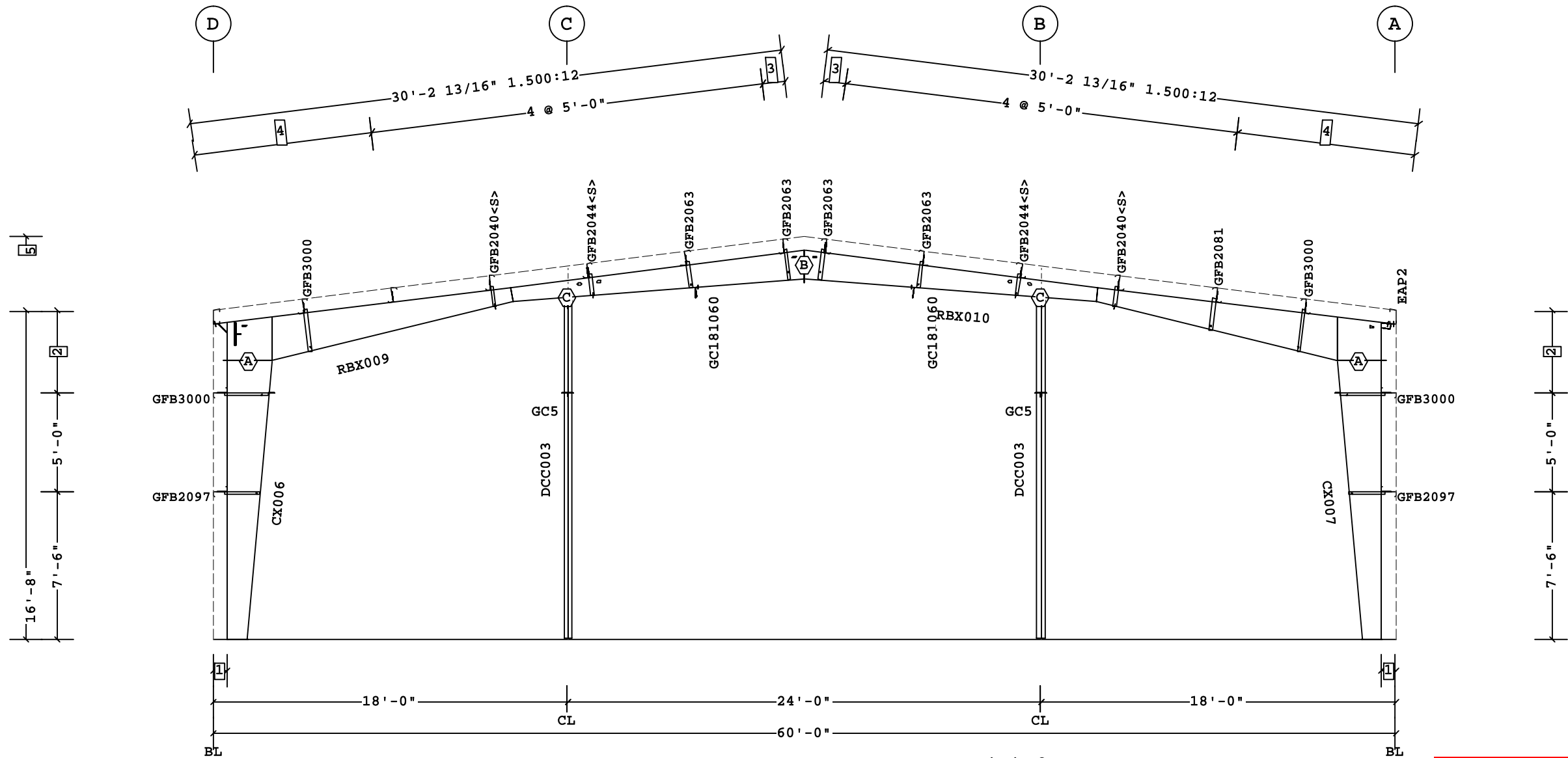
1. USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS, SECONDARY CLIP CONNECTIONS, AND FLANGE BRACE CONNECTIONS, UNLESS NOTED OTHERWISE.
2. SLOT REINFORCEMENT PLATES NEED NOT BE LOCATED ON THE SAME SIDE OF THE WEB AS THE HILLSIDE WASHER.

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B	BUTLER MANUFACTURING 1540 GENESSEE ST. KANSAS CITY, MO 64102				FRAME CROSS SECTION AT FRAME LINE(S) 2			
	REV:	DATE:	BY:	DESCRIPTION:	BUILDER: Diede Construction, Inc		 Butler Manufacturing VPC VERSION: 2021.1d	JOB #:
					CUSTOMER:			DATE:
					LOCATION: Roseville, California			5/4/2021
					PROJECT: Roseville Design build			DRAWN/CHECK: /
DRAWING SCALE: NTS				BUILDER'S POW:		PAGE:		

Frame Clearances
Horiz. Clearance between members 1(CX006) and 6(CX007): 54'-1"
Vert. Clearance at member 1(CX006): 14'-1 1/2"
Vert. Clearance at member 6(CX007): 14'-1 1/2"
Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)



FRAME CROSS SECTION AT FRAME LINE(S) 3

- 5 20'-5" Ridge Ht.
4 2 @ 4'-6 5/8"
3 1'-1 9/16"
2 4'-2"
1 8 1/2"

Dimension Key

Shape Name = Warehouse Wall 4, Frame 3

1. USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS, SECONDARY CLIP CONNECTIONS, AND FLANGE BRACE CONNECTIONS, UNLESS NOTED OTHERWISE.
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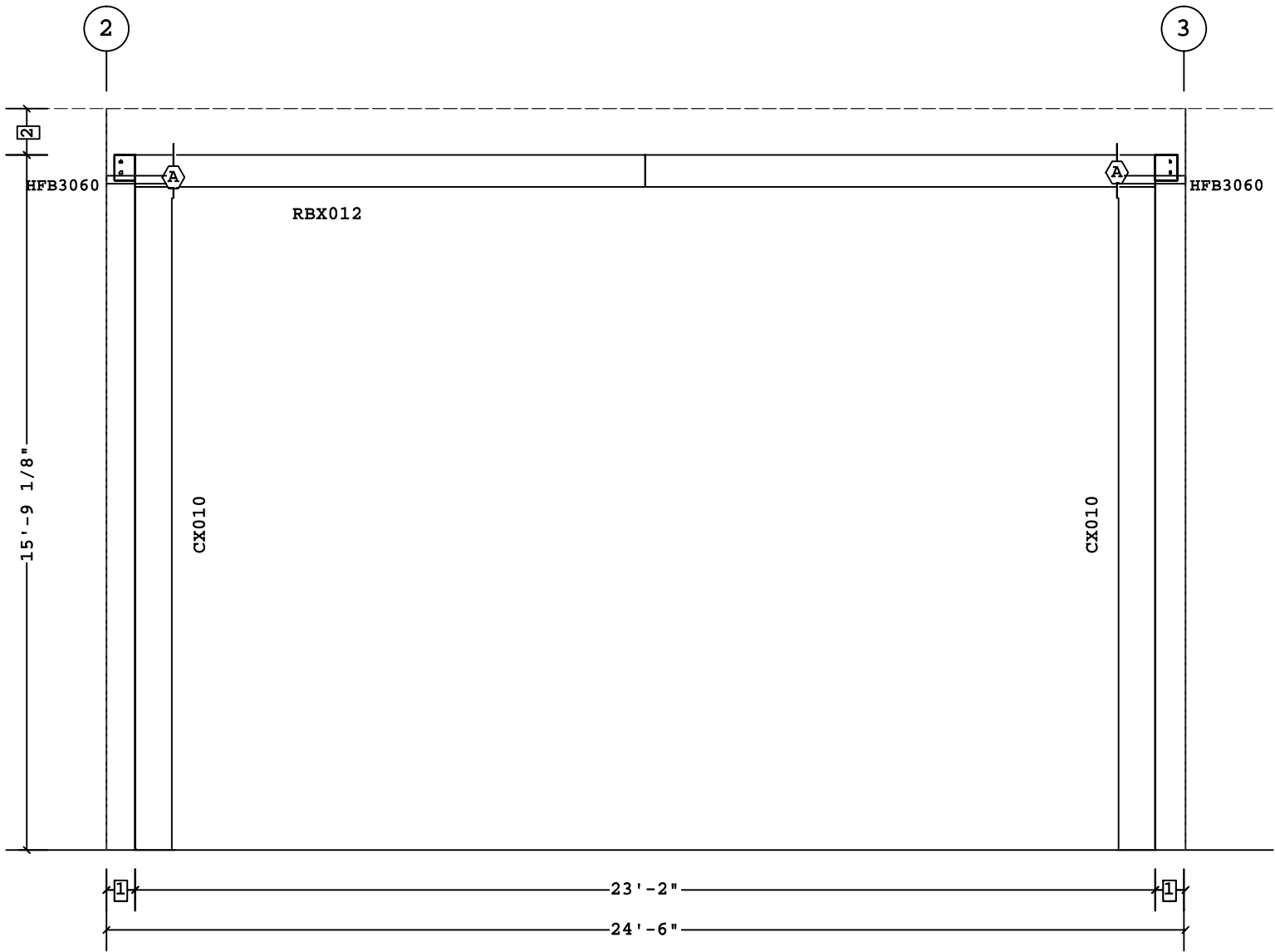
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BUTLER MANUFACTURING 1540 GENESSEE ST. KANSAS CITY, MO 64102				FRAME CROSS SECTION AT FRAME LINE(S) 3			
REV:	DATE:	BY:	DESCRIPTION:	BUILDER:	Diede Construction, Inc		JOB #:
				CUSTOMER:			DATE:
				LOCATION:	Roseville, California		DRAWN/CHECK:
				PROJECT:	Roseville Design build		PAGE:
DRAWING SCALE: NTS				BUILDER'S PO#:			



Butler Manufacturing
VPC VERSION: 2021.1d

Frame Clearances
Horiz. Clearance between members 1(CX010) and 4(CX010): 21'-6"
Vert. Clearance at member 1(CX010): 14'-9 3/8"
Vert. Clearance at member 4(CX010): 14'-9 3/8"
Finished Floor Elevation = 100'-0" (Unless Noted Otherwise)




PORTAL FRAME ELEVATION ALONG D

PRELIMINARY
NOT FOR CONSTRUCTION

2 1'-0 1/2"
1 8"

Dimension Key

Shape Name = Warehouse Wall 4, Frame 2

1. USE 1/2 X 1 1/2 A325T BOLT (49080) AND NUT (47120) W/O WASHERS. SNUG TIGHTEN BOLTS FOR ALL SECONDARY CONNECTIONS, SECONDARY CLIP CONNECTIONS, AND FLANGE BRACE CONNECTIONS, UNLESS NOTED OTHERWISE. 2. SLOT REINFORCEMENT PLATES NEED NOT BE LOCATED ON THE SAME SIDE OF THE WEB AS THE HILLSIDE WASHER.	THE BUTLER MFG. ENGINEER'S SEAL APPLIES ONLY TO THE WORK PRODUCT OF BUTLER MFG. AND DESIGN AND PERFORMANCE REQUIREMENTS SPECIFIED BY BUTLER. THE BUTLER MFG. ENGINEER'S SEAL DOES NOT APPLY TO THE PERFORMANCE OR DESIGN OF ANY OTHER PRODUCT OR COMPONENT FURNISHED BY BUTLER EXCEPT TO ANY DESIGN OR PERFORMANCE REQUIREMENTS SPECIFIED BY BUTLER.	THIS DRAWING, INCLUDING THE INFORMATION HEREON, REMAINS THE PROPERTY OF BUTLER MFG. IT IS PROVIDED SOLELY FOR ERECTING THE BUILDING DESCRIBED IN THE APPLICABLE PURCHASE ORDER AND MAY BE REPRODUCED ONLY FOR THAT PURPOSE. IT SHALL NOT BE MODIFIED, REPRODUCED OR USED FOR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN APPROVAL OF BUTLER MFG. THE GENERAL CONTRACTOR AND/OR ERECTOR IS SOLELY RESPONSIBLE FOR ACCURATE GOOD QUALITY WORKMANSHIP IN ERECTING THIS BUILDING IN ACCORDANCE WITH THIS DRAWING, DETAILS REFERENCED IN THIS DRAWING, ALL APPLICABLE BUTLER MFG. ERECTION GUIDES, AND INDUSTRY STANDARDS PERTAINING TO PROPER ERECTION, INCLUDING THE CORRECT USE OF TEMPORARY BRACING.	<div>B</div> <div>BUTLER MANUFACTURING 1540 GENESSEE ST. KANSAS CITY, MO 64102</div> <table><tr><td>REV:</td><td>DATE:</td><td>BY:</td><td>DESCRIPTION:</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td colspan="4">DRAWING SCALE: NTS</td></tr></table>	REV:	DATE:	BY:	DESCRIPTION:													DRAWING SCALE: NTS				PORTAL FRAME ELEVATION ALONG D			
				REV:	DATE:	BY:	DESCRIPTION:																				
				DRAWING SCALE: NTS																							
BUILDER: Diede Construction, Inc		<div></div> <div>Butler Manufacturing</div> <div>VPC VERSION: 2021.1d</div>	JOB #:																								
CUSTOMER:			DATE: 5/4/2021																								
LOCATION: Roseville, California			DRAWN/CHECK: /																								
PROJECT: Roseville Design build			PAGE:																								
BUILDER'S PO#:																											

TAB J

Addendum Acknowledgement(s)

Pending question yet to be answered:

Question: Are there any owner furnished contractor installed equipment items that are planned for the project? Anything the City plans to purchase themselves and need the contractor to install?

Answer: City will discuss and provide additional information shortly.

Please include a signed copy of this addendum with your proposal.

I acknowledge receipt of Addendum One

Name Steven L. Diede, President

Signature _____

Company Diede Construction, Inc. Date 6/10/21

Unfortunately, AS-3 was used when the nominal square footage of the building was calculated for the RFP. This is a 6000-square foot facility, not 3400.

Section 1.3 of the RFP document is revised as shown below.

1.3 SCOPE OVERVIEW

The work includes, but is not limited to, Design, Permitting and Construction of a new Crew Building at the West Side Tanks and Pump Station site 4501 Westpark Drive, Roseville, CA 95747. The Crew Building will consist of a nominal ~~3400~~ 6000 square foot metal building with approximately 50% of the floor space built as office space and 50% of the floor space built as a high-ceiling two-bay mechanic shop. The architectural design and finishes of the facility will match and/or be complimentary to the West Side Pump Station facility located on the same site. Paved and gravel parking areas will be provided with the facility and the site, and site drainage will be completed in coordination with the overall facility layout. Electrical and control systems located in the crew facility will be coordinated with the West Side Pump Station as well as the overall City communications system. The general arrangement and intent for the facility have been described in the

Regarding AutoCAD files:

These project CADD drawing files have been provided by the Engineer to the Design-Builder for the Design-Builder's convenience, and the Engineer shall assume no responsibility for any information which is extrapolated from the files that is not shown, or shown differently, than the Contract Documents. The Engineer assumes no liability for the Design-Builder's utilization of the CADD files, and Design-Builder is responsible for verification of any subcontractor's use or interpretation of CADD files against the Contract Documents. The drawing files may include miscellaneous or superseded engineering linework, layers, references, and data that is not depicted in the Contract Documents, is not to scale, or is not geo-referenced. It is the responsibility of the Design-Builder to interpret the data relative to the Contract Documents. Additionally Design-Builder is solely responsible for ensuring the completeness and accuracy of the data as Contract Documents are revised, modified, and/or updated throughout the Design-Build proposal and project execution processes.

Please include a signed copy of this addendum with your proposal.

I acknowledge receipt of Addendum Two

Name Steven L. Diede, President

Signature _____

Company Diede Construction, Inc.

Date 6/10/21

29	Question:	13. Please confirm that the CMU columns that are shown going to the underside of the canopy will be structurally independent of the metal building.
	Answer:	This is to be determined by the designer of the design-build team. The plans and elevations are for general guidance as to the overall quality and appearance of the project that is desired. Design-build team to provide detailed design and communicate that in their proposal.
30	Question:	14. Sheet AS-01, elevations imply that the canopy on the office building extends slightly beyond the face of the CMU
	Answer:	This is to be determined by the designer of the design-build team. The plans and elevations are for general guidance as to the overall quality and appearance of the project that is desired. Design-build team to provide detailed design and communicate that in their proposal.
31	Question:	15. Will prefab shower units be acceptable?
	Answer:	This is to be determined by the designer of the design-build team. The plans and specifications are for general guidance as to the overall quality and appearance of the project that is desired. Design-build team to provide detailed design and communicate that in their proposal.
32	Question:	16. Ceramic tile is not mentioned. Are there any wet areas where tile will be installed? If so, FRP can also be used for wall protection as a cost effective solution, if needed.
	Answer:	This is to be determined by the designer of the design-build team. The plans and elevations are for general guidance as to the overall quality and appearance of the project that is desired. Design-build team to provide detailed design and communicate that in their proposal.
33	Question:	17. Are the items listed on the owner furnished list, going to be installed by the GC?
	Answer:	Please reference the answer to question 16 on Addendum 2. For the purposes of the proposal, assume that all appliances (500 tags) will be provided by Owner and installed by Design-Builder.

Please include a signed copy of this addendum with your proposal.

I acknowledge receipt of Addendum 3

Name Steven L. Diede, President

Signature _____

Company Diede Construction, Inc. Date 6/10/21

44	<p>Question: 28. Sheet E-012 Conference Room 103: The counter along the west wall is inconsistent with the counter shown on AS-03. There appears to be additional cabinetry above the base cabinet. Please confirm if there is a program requirement for this additional cabinetry.</p>
	<p>Answer: The cabinetry shown in these concept drawings is schematic in nature. Clarify with your proposal what cabinetry you have included.</p>

Please include a signed copy of this addendum with your proposal.

I acknowledge receipt of Addendum 4

Name Steven L. Diede, President

Signature _____

Company Diede Construction, Inc. Date 6/10/21

48	32. Part 1.2B.2 of spec section 13005 - Metal Building Systems states that the building manufacturer must have AISC quality certification under the Metal Building Certification Program. This program was ended by AISC and the MBMA in 2008. Please confirm this requirement no longer applies.
	Answer: Correct, that requirement no longer applies.

Please include a signed copy of this addendum with your proposal.

I acknowledge receipt of Addendum 5

Name Steven L. Diede, President

Signature _____

Company Diede Construction, Inc. Date 6/10/21

ATTACHMENT H - GUARANTEED MAXIMUM PRICE, COST OF WORK AND FEE

West Side Tanks and Pump Station Operations Crew Facility Project

1.0 TOTAL PROPOSED GUARANTEED MAXIMUM PRICE (GMP)

The undersigned proposes and agrees to contract with the City to perform all of the Work for the Design-Build Construction of the **West Side Tanks and Pump Station Operations Crew Facility Project** including subsidiary obligations as defined in the Contract, for a **Guaranteed Maximum Price (“GMP”)** of Two Million Nine Hundred Ninety-Eight Thousand Seven Hundred Dollars.
(\$ 2,998,700 .00), U.S. Currency.

Subject to the provisions of this Proposal and the Contract, the costs and expenses which the Contractor may include in the Cost of Work for purposes of determining that aspect of the Contractor’s compensation are as set forth below. The Contractor’s total compensation, including Fee and allowable mark-ups, shall not exceed the GMP.

The GMP may be adjusted by Change Order in accordance with the Agreement.

2.0 BREAKDOWN OF GUARANTEED MAXIMUM PRICE

Proposer provides the breakdown of the Contractor’s GMP by major items of work as shown in **Table H.1**. The cost breakdown should sum to a total that equals the GMP given in this Attachment H Section 1.0 – Total Proposed Guaranteed Maximum Price. Contractor must include all costs required to complete the work within the scope area items listed.

Table H.1: Breakdown of Guaranteed Maximum Price

#	Scope Area	Cost
1	Architectural and Engineering Design Process (60/90/100/Construction) and Permitting	\$250,300.00
2	Mobilization, Demobilization, Admin., Insurance, Bonds, and Permits	\$105,600.00
3	Sheeting/Shoring/bracing per Labor Code Section 6707 (From Table H.5)	\$10,000.00
4	Storm Water Pollution Prevention Plan Implementation	\$33,300.00
5	Grading, Paving and Landscaping	\$171,000.00
6	Underground Utilities	\$45,700.00
7	Building Construction (Includes building structure, roof, insulation, interior framing, CMU construction, etc.)	\$949,700.00
8	Interior Finishes (Includes paint, flooring, suspended ceiling, cabinetry, lockers, benches, etc.)	\$416,100.00
9	Plumbing (including all fixtures)	\$117,800.00
10	HVAC	\$113,700.00

#	Scope Area	Cost
11	Fire Protection	\$56,900.00
12	Electrical	\$606,500.00
13	Data	\$93,100.00
14	Miscellaneous items for a complete project not listed above	\$29,000.00
	Total GMP:	\$2,998,700.00

3.0 Schedule of Values

Contractor will be required to submit a complete schedule of values upon selection to facilitate contract negotiation within ten (10) days of notice.

- A. The Schedule of values must include a detailed breakdown of quantities and prices of work and materials required to perform and complete the contract, including Contractor Allowance Items.
- B. The Schedule of Values shall provide a cost breakdown for each element detailed in the approved Construction Schedule. The total of the price breakdown must agree with the GMP. The elements listed and price breakdown shall not be front end loaded or unbalanced, shall be subject to adjustment between the ENGINEER and the CONTRACTOR, and will be used as a basis for progress payments.
- C. Acceptance of the Schedule of values shall not relieve the CONTRACTOR of the responsibility of performing all the work needed to complete the project at the GMP.

Volume 2 – Agreement incorporates additional details and definitions that pertain to the Guaranteed Maximum Price, Fee, and Cost of Work.

4.0 COST OF THE WORK

The term "Cost of Work" means the sum of all costs necessarily incurred and paid by the Contractor for labor, materials, equipment, subcontractors, special services, bonds, liability, workers' compensation and errors and omissions insurance, direct job overhead expenses, taxes and other necessary expenses incurred in the performance of the work, that do not exceed the GMP.

4.1 Hourly Field Labor

The cost of hourly field craft labor for workers used in actual and direct performance of the work by the Contractor will be the sum of the following:

- A. The actual wages paid plus any employer payments to, or on behalf of workers for fringe benefits including health and welfare, pension, vacation and similar purposes.
- B. All payments imposed by State and Federal Laws including, but not limited to, workers' compensation insurance, and social security payments. The rates used for workers'

compensation insurance shall be actual rates paid by the Contractor for each specific craft and broken down by wage rate if applicable to that craft.

- C. Actual General Liability insurance burden, if applied to Contractor's payroll.

4.2 Hourly Field Craft Labor Rates Limitations

The cost of hourly field craft labor for workers used in actual and direct performance of the work by the Contractor will be limited by the following:

- A. Except as otherwise may be agreed to in writing by the City, the actual wages and benefits paid for manual classifications of Contractor's on-site workers will not, in the aggregate, be greater than the current applicable wage for each classification as established by the State of California Department of Industrial Relations.
- B. Specifically prohibited from the labor costs are other payroll burden factors such as small tools (as defined in Attachment H Section 4.6-Construction Equipment), bonuses of any kind and safety incentives.
- C. The Hourly Field Labor Rates will remain unchanged for the duration of the Project unless changed in accordance with an Industry Master Labor Agreement, if the Contractor is signatory to any such Agreements, changes by the Department of Industrial Relations, or changes made company-wide in the Contractor's organization for a craft classification in the Project's geographic area. All changes to these hourly field labor rates must be submitted by the Contractor to the City for review and approval prior to billing the City for work performed with new hourly labor rates. Increase in labor rates is not an allowable increase in the GMP.

4.3 Contractor's Hourly Field Craft Labor Rates

- A. Based on the requirements and limitations of Sections; 4.1-Hourly Field Labor, and 4.2-Hourly Field Craft Labor Rates Limitations, the undersigned Proposer provides their hourly field labor rates set forth in **Table H.2** for all labor employed by Contractor used in the performance all of the Work for the West Side Tanks and Pump Station Operations Crew Facility Project.
- B. The proposer is to list the crafts and classifications, up to foreman level, they anticipate using in the performance of the work when completing this **Table H.2**. Should the contractor ultimately use a craft classification not listed in table below, the contractor will submit backup cost information for that craft classification to the city.
- C. Contractor shall include the actual travel and/or subsistence costs, if any, as a separate line item under the labor cost category when submitting progress billings to the City. Except as otherwise may be agreed to in writing by the City, the actual travel and/or subsistence costs will not be more than established in an applicable Master Labor Agreement or the State of California Department of Industrial Relations.

Table H.2: Hourly Rates. **Contractor Name:** Diede Construction, Inc.

Craft	Classification	Base Wage	Fringes Plus Vacation	P/R Tax & Insurance	Straight Time Hourly Rate	Overtime Daily /Saturday Rate (1.5 X)	Overtime Sunday /Holiday Rate (2 X)
Laborers	Group 2	\$31.65	\$25.79	Varies per company	\$57.44	\$73.27	\$89.09
Equipment Operator	Group 4	\$45.82	\$31.63		\$77.45	\$100.36	\$123.27
Metal Building	Metal Decking & Siding	\$44.45	\$35.55		\$80.00	\$103.23	\$126.45
Rough Carpentry	Carpentry	\$46.92	\$31.11		\$78.03	\$101.49	\$124.95
Masonry	Bricklayer	\$42.62	\$25.18		\$67.80	\$90.36	\$112.92
Concrete	Concrete Mason	\$39.20	\$26.66		\$65.86	\$85.46	\$105.06
Drywall	Drywall/Lather	\$47.27	\$32.27		\$79.54	\$103.17	\$126.81
Paint	Painter	\$35.83	\$21.57		\$57.40	\$75.32	\$93.23
Glass & Glazing	Glaziers	\$41.46	\$31.74		\$73.20	\$114.66	\$114.66
Acoustical Ceiling	Carpentry	\$46.92	\$31.11		\$78.03	\$101.49	\$124.95
Ceramic Tile	Tile Settler	\$44.78	\$23.43		\$68.21	\$90.60	\$112.99
Plumbing	Plumber	\$46.50	\$35.31		\$81.81	\$105.06	\$128.31
HVAC	Sheet Metal Tech	\$43.50	\$38.22		\$81.72	\$104.89	\$128.06
Electrical	Inside Wireman	\$40.00	\$29.54		\$69.54	\$90.45	\$111.35

4.4 Management and Administrative Labor

- A. Wages and Salaries of Contractor's management and administrative personnel assigned to this Project to directly manage and administer the Work on-site shall be included in Table H.3. These positions may include a Principal-in-Charge or Project Director, On-site Project Manager, On-site Project Engineer, On-site Superintendents listed by trade or title, General Foremen, On-site Office Manager, Yardman/Delivery Driver and On-site Administrative Assistant. These positions will be paid in accordance with the following **Table H.3** for the entire duration of the Project and include all labor burden, overhead and profit mark-ups. The Principal-in-Charge can only charge for hours worked at the Site for this Project and can also charge for attendance of on-site Project Meetings. Any off-site Principal-in-Charge time spent on this Project shall be included in the Contractor's Fee Markups Schedule for the Project under subsection 10 below.
- B. The Contractor is allowed to charge up to a maximum of fifty (50) hours per week for each full-time assigned supervisory and administrative personnel even if an employee works more than fifty (50) hours in a week. The Contractor can only charge for supervisory and administrative hours if they also pay those same hours to the employee that worked up to fifty (50) hours in any given week. The Contractor is not allowed to charge for any supervisory and administrative personnel hours not paid to any employee.

Other company personnel such as Corporate Officers and Division/Area Managers (unless either are designated as the Principle-in-Charge), Quality Control Managers, Safety Officers, Project Schedulers, Project Coordinators, Estimators, Business Supervisors and Accountants are not allowed to charge any hours to the Project. The Proposer should include the anticipated cost of such personnel in the Contractor's Fee Schedule for the Project under the Contractor's Fee Markups Subsection 10 below.

- C. Based on the above requirements for Management and Administrative Labor, the undersigned Proposer proposes the rates set forth in **Table H.3** for all Management and Administrative labor employed by Contractor used in the performance all of the Work for the West Side Tanks and Pump Station Operations Crew Facility Project.

Table H.3: On-Site Management and Administrative Labor Rates

Management and Administrative Position	Hourly Rate
Superintendent	\$ 150
Assistant Superintendent	\$ 125
	\$
	\$

4.5 Materials

The cost of all materials, including all factory testing, freight and delivery costs of materials, used in performing the work will be the cost to the Contractor from the supplier thereof. All discounts for early payment shall accrue to the Contractor unless the City's payment to Contractor is paid to Contractor before discount payment is due in which case discount savings will be fully credited to the City on next progress billing. All rebates and all returns from the sale of surplus materials shall be credited to the Cost of the Work. Any rebates from future use of re-usable materials, such as concrete forming materials, shall be negotiated between the Contractor and City as materials are evaluated for possible Contractor re-use on other projects.

4.6 Construction Equipment

- A.** The undersigned Proposer proposes the initial Contractor Owned Equipment Rates set forth in **Table H.4** for all Contractor Owned Equipment used in the performance all of the Design-Build work for the West Side Tanks and Pump Station Operations Crew Facility Project. The rates found in this table for equipment owned by the Contractor will, in all cases, be understood to cover all fuel, supplies, repairs, maintenance, insurance, ownership, and incidental costs and no further allowances will be made for those items, unless specifically approved in writing by the City.
- B.** Equipment owned by Contractor will only be paid for the actual time equipment is used in performing work and will be rounded to the closest full hour if paid by an hourly rate.
- C.** Compensation for idle time of equipment through delays caused by the City will be made consistent with Article 9-Changes in the Work in the Design-Assist Agreement, provided as Volume 2 to the Contract Documents; however, that the Owned Equipment Rates set forth below in **Table H.4** will apply.
- D.** All changes to these equipment rates must be submitted by the Contractor to the City for review and approval prior to billing the City for work performed with new hourly labor rates. Approved changes to equipment rates are not an allowable increase in the GMP.
- E.** The Proposer is to list the contractor owned construction equipment they anticipate using in the performance of the work when completing this table. Should the contractor ultimately use equipment not listed in table below, the contractor will submit backup cost information for that equipment item to the City for approval.
- F.** Equipment not owned by Contractor which is rented by Contractor and used in performing work will be paid by the City based on actual invoiced cost to Contractor, plus actual fuel/lube costs, provided the rental rate is not in excess of rental rates established by distributors or equipment rental companies in the local area. Owner-operated equipment will also be paid by the City based on actual invoiced cost to Contractor provided the City does not deem any charges excessive. All transportation costs to move equipment on and off the Work will be paid by the City up to a maximum of four (4) hours total travel time each way.
- G.** For equipment with a value less than \$500.00: The Contractor will be paid an amount of three percent (3%) of total hourly field labor costs as defined in paragraph 4.3-Contractor's Hourly Field Craft Labor Rates above to cover the cost of small tools and safety supplies for work directly performed at the Site.

Table H.4: Contractor Owned Equipment. Contractor Name: Diede Construction, Inc.

Equipment Description	Hourly Rate	Daily Rate
Excavator	62.50	500.00
Loader	81.25	650.00
Zoom Boom	100.00	800.00
Bobcat	25.00	200.00
Dump Truck	37.50	300.00
Backhoe	37.50	300.00
Water Truck	37.50	300.00

Attach additional sheets as needed.

4.7 Subcontractors and Sub Tier Subcontractors

The Contractor will be paid for all work performed by a subcontractor at the actual invoiced amount. Should a Subcontractor be required to perform extra work caused by a contract change order, the subcontractor will be allowed a mark-up as provided for in Volume 2 of the Contract Documents - Agreement..

4.8 Bonds and Insurance

The Contractor will be paid the actual cost for the 100% payment bond and 100% performance bond, as well as the cost of all insurance costs required for the Work (such costs are deemed a Cost of Work and are therefore contained within the GMP). Additional details regarding requirements for Bonds and

Insurance are included in Volume 2 of the Contract Documents – Agreement Article 9 – Insurance and Bonds; Indemnification.

4.9 Direct Job Overhead Expenses

The Contractor will be paid for the actual cost of job overhead expenses which may include such expenses as office trailers, storage vans, temporary fencing/security, toilets, dumpsters, waste removal, water, utility power, jobsite landline telephone costs, jobsite internet provider costs, reasonable room and board subsistence for employees who live farther than 40 miles from the Work Site or as required by California prevailing wage laws, copy machine, water cooler and any office furniture required for the Work needs, including mobilization and demobilization of same. There will be no warranty reserve.

4.10 Taxes

The Contractor acknowledges it will be liable for all sales, use, gross receipts or other taxes, tariffs or duties related to the Work and that these taxes and tariffs are included in the GMP. All invoices to the City will include the applicable taxes and tariffs that are the Contractor's responsibility and will not be shown as a separate line item on the Contractor's invoice.

5.0 CALIFORNIA LABOR CODE SECTION 6707

Pursuant to the provisions of California Labor Code Section 6707, each Proposal submitted in response to this RFP shall contain, as a separate cost item, adequate sheeting, shoring, and bracing, or equivalent method, for the protection of life or limb in trenches and open excavation, exceeding five (5) feet, which shall conform to applicable safety orders. By entering an amount for this cost item below, the Proposer warrants that its action does not convey tort liability to the City, the Engineer, the Construction Manager, the Funding Agencies and their respective officers, employees, agents, and subconsultants.

Table H.5: Total Amount for Worker Protection for CA Labor Code Section 6707

Protection in trenches and Open Excavations - Description	Total Cost
Connection to Sewer	\$ 10,000.00

6.0 SPECIAL SERVICES

Special work or services are defined as that work not included in this agreement and characterized by extraordinary complexity, sophistication, or innovation or a combination of the foregoing attributes which are unique to the construction industry. These special services may include such services as registered land surveyor, licensed geotechnical engineer, licensed structural engineer, special testing or laboratory work. The Contractor will be paid for special services based on actual invoiced cost, provided the City does not determine any special services costs to be excessive.

8.0 PROPOSED SHARED SAVINGS

In the event the final Cost of Work, plus the Proposed Total Fee Mark-up for General Overhead and Profit, is less than the GMP, as adjusted by the Change Orders, the undersigned Proposer proposes a sharing of the savings as follows.

25 % of the savings to the City

75 % of the savings to the Contractor

Percent of Savings to the contractor must be a minimum of 20% plus the Total Fee Markup percentage for General Overhead and Profit as shown in the Section 1 of this Attachment H.

“GMP” Savings shall mean the positive difference, if any, when the actual Total Cost of the Work and Fee is subtracted from the GMP; provided, however, that unused Allowance monies, if any, shall not be subject to shared savings.

Should there be savings shared, City will pay the Contractor its share of the savings at the same time as the final retention payment.

9.0 ITEMS NOT INCLUDED IN THE COST OF WORK:

- A. Salaries and other compensation of Contractor's personnel stationed at Contractor's principal office or offices other than the Site, except as specifically provided in this Attachment H Section 4.4 – Management and Administrative Labor.
- B. Expenses of Contractor's principal office and offices, other than the Site office.
- C. Contractor's General Overhead and Expenses, except as specifically provided for in the Contract Documents.
- D. The capital expenses of Contractor, including interest on capital employed for the Work and charges to Contractor for delinquent payments.
- E. Hours in excess of fifty (50) hours per week for each full-time assigned supervisory and administrative personnel even if a supervisory or administrative employee works more than fifty (50) hours in a week.
- F. Costs due to correction of Defective Work, disposal of materials or equipment wrongfully supplied, and making good any damage to property.
- G. Costs that would cause the GMP to be exceeded.
- H. Any costs incurred after Owner's Final Acceptance of the Project.

10.0 CONTRACTOR'S FEE MARKUPS

- A. The undersigned Proposer proposes the following mark-up fees for general overhead and profit in the performance all of the Design-Build work for the West Side Tanks and Pump Station Facility Operations Crew Facility Project as shown in **Table H.7**.

Table H.7: Contractor's Fee Mark-up Schedule

Attachment H Section	Cost Category	Fee Mark-Ups For General Overhead And Profit
4.1-4.3	Hourly Field Labor	15 %
4.4	Management and Administrative Labor	Included in hourly rates
4.5	Materials	15 %
4.6	Construction Equipment	15 %
4.7	Subcontractors	10 %
4.8	Bonds and Insurance	2 %
4.9	Direct Job Overhead Expenses	10 %
4.10	Taxes	9 %

- B. Based on the above percentages for each cost category, the Proposed Total Fee Markup-for General Overhead and Profit percentage included in the Contractor's GMP is 14%.

****END OF ATTACHMENT H****

Diede Construction Inc

793 RFP # 08-089 ROSEVILLE DESIGN-BUILD CONSTRUCTION OF WEST SIDE TANKS AND PUMP STATION
OPERATIONS CREW FACILITY

Bid Breakdown

7/14/2021

Code	Description	\$
	Preconstruction Architectural and Engineering Design Process	
00100	(60/90/100/Construction) and Permitting	\$ 250,300.00
01000	General Conditions	\$ 178,200.00
01100	Mobilization, Demobilization, Admin., Insurance, Bonds, and Permits	\$ 105,600.00
01200	Sheeting/Shoring/bracing per Labor Code Section 6707 (From Table H.5)	\$ 10,000.00
01800	Construction Staking	\$ 6,600.00
02000	Erosion Control	\$ 31,300.00
02210	Grading and Paving	\$ 136,400.00
02580	Pavement Marking	\$ 5,600.00
02600	Underground Utilities	\$ 43,000.00
02800	Landscaping	\$ 12,500.00
03300	Concrete	\$ 197,800.00
03350	Concrete Finishes	\$ 3,100.00
04220	Masonry	\$ 48,500.00
06100	Carpentry	\$ 6,300.00
06410	Architectural Casework	\$ 55,000.00
07426	Insulation	\$ 4,300.00
07900	Sealants and Waterproofing	\$ 8,100.00
08000	Doors, Frames & Hardware	\$ 42,400.00
08331	Overhead Coiling Doors	\$ 45,600.00
08800	Glazing	\$ 25,000.00
09250	Gypsum Board	\$ 127,800.00
09510	Acoustical Ceilings	\$ 63,000.00
09650	Flooring	\$ 21,900.00
09800	FRP	\$ 15,900.00
09900	Painting	\$ 30,700.00
10440	Signage	\$ 4,400.00
105100	Lockers	\$ 14,300.00
10520	Fire Protection Specialties	\$ 1,900.00
10536	Awnings	\$ 12,500.00
10750	Window Covering	\$ 3,900.00
10800	Toilet & Bath Accessories	\$ 15,100.00
11452	Owner Furnished Contractor Installed	\$ 15,800.00
13100	Metal Building system	\$ 523,000.00
15300	Fire Sprinkler System	\$ 53,600.00
15400	Plumbing	\$ 111,000.00
15500	HVAC & Sheet Metal	\$ 107,100.00
16050	Electrical	\$ 571,200.00
18000	Contractor Contingency	\$ 90,000.00
Total		\$ 2,998,700.00

EXHIBIT G

VOLUME 1 OF 4: REQUEST FOR PROPOSALS (RFP # 08-089)



**CONTRACT DOCUMENTS FOR
DESIGN-BUILD CONSTRUCTION OF
WEST SIDE TANKS AND PUMP STATION
OPERATIONS CREW FACILITY**

VOLUME 1 OF 4:

REQUEST FOR PROPOSALS (RFP # 08-089)

DUE: Thursday June 10, 2021 at 3:00 PM

DELIVER TO:

By Email: cityclerkroseville@roseville.ca.us

OR

By Regular Mail to: City of Roseville
Attn: City Clerk Department
311 Vernon Street
Roseville, CA 95678

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CITY OF ROSEVILLE

****NOTICE FOR PROPOSALS****

DESIGN-BUILD CONSTRUCTION OF WEST SIDE TANKS AND PUMP STATION OPERATIONS CREW FACILITY

NOTICE IS HEREBY GIVEN that proposals for **Design-Build (DB) Construction of the West Side Tanks and Pump Station Operations Crew Facility Project** will be received by the City of Roseville. Due to closure of City of Roseville facilities and offices as a result of COVID-19, proposals shall **ONLY** be **submitted via electronic mail to** cityclerkroseville@roseville.ca.us, or be regularly mailed to the office of the City Clerk, Civic Center, 311 Vernon Street, Roseville, CA, 95678 until **3:00 p.m., Thursday, June 10, 2021.**

Said proposals will be evaluated and results will be made public after completion of the negotiation process with the selected consultant. The City reserves the right to reject any or all proposals and to waive any informalities or irregularities in any proposal or in the proposal process.

April 1, 2021

Date

Janice Gainey, Senior Engineer
Environmental Utilities

CITY OF ROSEVILLE

**** IMPORTANT – RFP DELIVERY ****

- The City is not responsible for misdelivered proposals, and the proposer is strictly liable for its chosen method of delivery.
- It is the proposer's sole responsibility to make sure that proposals arrive at the proper location.
- Any proposal which does not actually arrive in the City Clerk's Office by the RFP due date and time will be rejected as non-responsive, even if properly addressed or delivered to another City Department.

Your proposal **MUST** be addressed and delivered (regular mail only) as follows:

**City of Roseville
Attn: City Clerk Department
311 Vernon Street
Roseville, CA 95678**

The proposer is also directed to include the attached "Sealed Proposal" label on the outside of the package or envelope, so that it is visible when delivered to the City.

Or emailed to:

cityclerkroseville@roseville.ca.us

CITY OF ROSEVILLE

****PREVAILING WAGE NOTIFICATION****

This is a prevailing wage project. Accordingly, all prevailing wage and fair employment laws and regulations shall be adhered to. For prevailing wage contracts over \$25,000.00, copies of certified payroll must be submitted with invoices. Prevailing wage rates may be obtained from the Department of Industrial Relations and/or the following website address:

<http://www.dir.ca.gov/dlsr/DPreWageDetermination.htm>

CITY OF ROSEVILLE

****DEPARTMENT OF INDUSTRIAL RELATIONS CONTRACTOR REGISTRATION****

No contractor or subcontractor may be listed on a Proposal for or work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. The Contractor shall provide proof of current registration with the Department of Industrial Relations for both itself and all listed subcontractors with their Proposal. The Contractor is hereby notified that this Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

<https://www.dir.ca.gov/Public-Works/Contractor-Registration.html>

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**CITY OF ROSEVILLE
ENVIRONMENTAL UTILITIES-ENGINEERING**

**REQUEST FOR PROPOSALS (RFP)
FOR DESIGN-BUILD CONSTRUCTION OF THE
WEST SIDE TANKS AND PUMP STATION
OPERATIONS CREW FACILITY**

1.0 INTRODUCTION

The City of Roseville (hereinafter “City”) is soliciting proposals for the **Design-Build Construction of the West Side Tanks and Pump Station Operations Crew Facility**. This will be a competitive negotiation process. Qualified individuals, firms, contractors, consultants or entities (hereinafter “Contractor(s)”), that meet the requirements set forth in this Request for Proposals (hereinafter “RFP”), and are capable of providing the services requested are encouraged to participate.

1.1 BACKGROUND

Personnel and facility needs led the City to require a new Operations Crew Facility to house water distribution operations personnel and provide space for the storage and maintenance of materials, equipment and vehicles used by the water distribution operations personnel. The decision was made to locate this facility on the West Side Tanks and Pump Station site which is currently under construction. The Operations Crew Facility has been planned for in the site and utility planning of the West Side Tanks and Pump Station site. See Section 5 – Scope of Services for more information.

1.2 CITY OVERVIEW

The City of Roseville is an incorporated city with a population of more than 135,000 residents, located in Placer County off of Interstate 80, approximately 16 miles northeast of Sacramento, California. The City of Roseville is a Charter city operating under the City Council/City Manager form of government.

1.3 SCOPE OVERVIEW

The work includes, but is not limited to, Design, Permitting and Construction of a new Crew Building at the West Side Tanks and Pump Station site 4501 Westpark Drive, Roseville, CA 95747. The Crew Building will consist of a nominal ~~3400~~-6000 square foot metal building with approximately 50% of the floor space built as office space and 50% of the floor space built as a high-ceiling two-bay mechanic shop. The architectural design and finishes of the facility will match and/or be complimentary to the West Side Pump Station facility located on the same site. Paved and gravel parking areas will be provided with the facility and the site, and site drainage will be completed in coordination with the overall facility layout. Electrical and control systems located in the crew facility will be coordinated with the West Side Pump Station as well as the overall City communications system. The general arrangement and intent for the facility have been described in the

preliminary plans and specifications provided with this RFP. The Design-Builder will have the overall responsibility to complete the detailed design, carrying the design concepts presented in the preliminary design drawings, through the final design process, to produce a code-compliant facility which accomplishes the design intent shown in the preliminary design drawings and specifications. The design process will be iterative and collaborative with the City with the final design as approved by the City. Design-Builder will apply for and get all required permits to construct the project, including but not limited to building permits, grading permits, etc. After design and permitting have been completed, Design-Builder will be responsible for the construction, testing and start-up of all equipment, and commissioning of the facility.

The contract time is 436 working days, with the Notice to Proceed projected to be issued by August 24, 2021.

1.4 TENTATIVE SCHEDULE

The following represents the tentative schedule for this RFP. Any change in the scheduled dates for the Pre-Proposal, Deadline for Final Questions, or Proposal Submission Deadline will be advertised in the form of an addendum to this RFP. The schedule for the evaluation process and other future dates may be adjusted without notice.

Table 1: Tentative Schedule

Event	Date
RFP Released by the City	4/1/21
Mandatory Pre-Proposal Conference (Attend Online) 10AM	4/21/21
Deadline for Final Questions	5/20/21
Proposal Submission Deadline 3PM	6/10/21
Interviews (Optional)	6/28-30/21
Contract Negotiations	7/1-6/21
Anticipated Contract Approval by City Council	8/18/21
Anticipated Notice to Proceed	8/24/21
Anticipated Final Completion	4/26/23

2.0 AVAILABLE INFORMATION

2.1 CONTRACT DOCUMENTS

The RFP Documents consist of four volumes and will be incorporated into the final set of contract documents together with Design-Build proposal:

- VOLUME 1 – Request of Proposals (this document) and all of the required forms and attachments.

- VOLUME 2 – Sample Agreement (Contract)
- VOLUME 3 – Concept Technical Specifications
- VOLUME 4 – Concept Drawings

Volumes 3 and 4 represent the minimum requirements for the building.

Any Proposer planning to submit a Proposal is responsible for examining with appropriate care the complete RFP Documents, all Addenda, Supplemental Information, and is also responsible for informing themselves with respect to all conditions, which might in any way affect the cost or the performance of the Work. Failure to do so will be at the sole risk of the Proposer, and no relief shall be given for errors or omissions by the Proposer. The submission of a Proposal shall constitute an acknowledgment upon which City shall rely on as a confirmation that the Proposer has thoroughly examined and is familiar with the RFP Documents and that the Proposer has waived any objections or contentions regarding the RFP Documents and/or the Proposal submission requirements. The failure or neglect of a Proposer to receive or examine any of the RFP Documents shall in no way relieve it from any obligation with respect to its Proposal or to the Agreement. No claim for additional compensation will be allowed which is based upon a lack of knowledge of any RFP Documents.

2.2 SUPPLEMENTAL INFORMATION

Supplemental information that is available includes:

- Contract Documents for Design-Assist and Construction of West Side Tanks and Pump Station Project, November 2019
- Geotechnical Report, West Side Tanks and Pump Station Project Phase 2, Roseville, CA, January 9, 2019
- CEQA – Development of the West Side Tank and Pump Station facilities, including the Crew Building, are within the scope of the project covered by the Amoruso Ranch Specific Plan Final EIR. Mitigation requirements of the EIR are included in Technical Specification Section 01145 – Environmental Protection.

3.0 MANDATORY PRE-PROPOSAL CONFERENCE

A mandatory pre-proposal conference has been scheduled for **Wednesday, April 21, 2021 at 10AM** via a Microsoft Teams video call. Below are instructions for connecting to this conference either through your computer or telephone.

➤ **Computer link:** Copy the below link into your internet browser.

[Click here to join the meeting](#)

https://teams.microsoft.com/l/meetup-join/19%3ameeting_ZTIyN2NjNWQtZGJkYy00NzI3LWI0N2UtNGE3Y2MwMjYxYWYw%40thread.v2/0?context=%7b%22Tid%22%3a%22446c7c35-e59d-4e53-84df-3832018aec5a%22%2c%22Oid%22%3a%22af0f0088-b6af-4b92-adb0-053cceed276%22%7d

The Microsoft Teams app does not need to be installed on the connecting computer as you will be presented an option to join using a web browser or the application.

- **Telephone:** 1 213-282-6642
- **Conference ID:** 167 938 961#

The City will be sharing a PowerPoint Presentation on the screen share of Microsoft Teams therefore it is recommended that Potential Proposers connect via a computer if possible.

During the conference potential proposers will have an opportunity to ask questions regarding the scope of the project or requirements of this RFP. To make the meeting more effective for all participants, attendees are strongly encouraged to review the RFP and associated documents prior to the meeting.

Substantial clarifications or changes required as a result of the meeting will be issued as an addendum to the RFP. A list of attendees will be distributed upon request.

4.0 INSTRUCTIONS TO PROPOSERS

This RFP includes a description of the scope of services, proposal requirements, and instructions for submitting your proposal. Failure to follow these instructions may result in rejection of your proposal.

4.1 OVERVIEW OF PROPOSAL PROCESS

- ✓ Attend Mandatory Pre-Proposal Conference (Section 3).
- ✓ Study all RFP/Contract Documents and Supplemental Information.
- ✓ Prepare Proposal Parts 1 and 2. (Section 7).
- ✓ Follow Proposal Submittal Instructions (Section 8) to submit by due date and time.

4.2 COMMUNICATIONS REGARDING THIS RFP AND PROJECT

To protect the integrity of the procurement process, by shielding it from undue influences prior to the recommendation of Project award, there are strict prohibitions regarding communications between potential Proposers and the City. From the publication of this RFP until the time of City's publication of the Notice of Intent to Award, the following rules will apply:

- City's Representative for this project is:
Janice Gainey, P.E.

Senior Engineer
City of Roseville Environmental Utilities – Engineering
2005 Hilltop Circle
Roseville, CA 95747
JRGainey@roseville.ca.us.

- Direct all inquiries regarding this RFP in writing to:
<http://www.publicpurchase.com>.
- No oral representations or interpretations will be made to any Proposer as to the meaning of this RFP.
- Do not contact any other City staff or departments in regard to this project. Information provided by anyone other than the above contact may be invalid and Proposals which are submitted in accordance with such information may be declared non-responsive.
- Other than contact with the City's Representative, communication (of any form) with any City staff including its consultants and City Council members and their staff, is prohibited.
- If the City determines that the communication prohibition rules have been violated, the City may use this as grounds for Proposal rejection.

4.3 REVISIONS TO REQUEST FOR PROPOSALS

In the event that it becomes necessary to revise any part of this RFP, written addenda will be issued via PublicPurchase. Any amendment to this RFP is valid only if it is in writing and issued by the City department issuing the RFP. No oral interpretations or answers shall bind the City unless confirmed by the City in writing.

All addenda for this RFP will be distributed to Proposers who have registered with PublicPurchase.com and who have downloaded the RFP. Additionally, the Notice of Intent to Award will be posted on PublicPurchase.com. **It is the proposer's sole responsibility to monitor PublicPurchase.com for possible addenda to this RFP and for the Notice of Intent to Award.** Failure of proposer to retrieve addenda or the Notice of Intent to Award from PublicPurchase.com shall not relieve him/her of the requirements contained therein or the timelines associated therewith. Additionally, failure of proposer to return a signed addendum, when required, may be cause for rejection of his/her proposal.

5.0 SCOPE OF SERVICES

5.1 PROJECT OBJECTIVES

One of the City's strategic goals is to invest in well-planned infrastructure and growth. As the City of Roseville continues to grow, water distribution operations support in the North West portion of the city is critical. Additional staff needs also have made the development of a water distribution operations crew facility necessary. Co-locating this

facility with the West Side Tanks and Pump Station allows for efficient, effective use of space. This project supports the City's strategic goals. Additionally, there are specific objectives for the successful execution of the Operations Crew Facility Project.

1. The City has opted to procure the Operations Crew Facility using the design-build procurement model to take advantage of the expertise of design-build entities who specialize in cost-effective, space efficient commercial/light-industrial facilities. In this way, the City's needs, as expressed in the preliminary drawings and specifications included in this RFP, will be met.
2. The Operations Crew Facility project team must work in close coordination with the West Side Tanks and Pump Station project team in order to have seamless coordination between the projects in the design, appearance, function and construction of the two facilities. At the end of both projects, the site should appear as a single, unified, well-coordinated facility.
3. We expect the Design-Build team to function in a collaborative teaming environment with transparency in action, engagement of all stakeholders, and constant attention to project success.

5.2 DESIGN-BUILD OVERVIEW

5.2.1 General Scope

The DB Entity will provide design, permitting, construction, and building commissioning services to complete the Project.

5.2.1.1 Design services shall consist of the following:

- Develop the Project execution and management plan, including Project schedule.
- Based on the minimum requirements for the facility described in the concept plans and specifications provided with this RFP, develop the architectural and engineering design (including preparing and submitting intermediate design review packages as defined herein) and value-engineering activities in conjunction with City.
 - Design shall be developed in a minimum of four submittals as follows:
 - 60% Design – complete plans and specifications which depict all project components with the intent to get City input on the design before proceeding with final detailing
 - 90% Design – complete plans and specifications for final review by City to ensure comments on the 60% Design were addressed
 - 100% Plan-Check Ready – All comments from the 90% Design submittal addressed, project completely designed and

ready (including any required calculations) for submittal to the Building Department and any other required permitting agency for review. Contractor shall produce as many resubmittals to the Building Department or any other required permitting agency as needed.

- Final Construction Documents – All Building Department review comments addressed, and the documents updated for use in construction.
- A review meeting shall be held with the City for the 60%, 90% and 100% Plan-Check Ready submittals. After the 60% and 90% submittal, City shall be given 2 weeks to provide review comments for adjudication by Contractor. Subsequent submittals shall include comments received and adjudication status for each comment in a separate review document.
- Perform and document, in readable form, engineering studies as necessary to support design.
- Apply for and obtain necessary permits as needed to complete the Project. City will pay for the fees associated with the needed permits directly to the permitting agencies.

5.2.1.2 Construction services shall generally consist of the following:

- Procure materials, equipment and subcontractors.
- Secure necessary construction permits and perform permit compliance activities.
- Construct the Project in accordance with the Final Construction Documents.
- Provide quality control and quality assurance during the construction of the Project.
- Conduct startup, commissioning, and performance verification testing for all systems.
- Provide legible, usable project record drawings and specifications conforming to actual facilities constructed.

5.2.2 Roles and Responsibilities

The project will be executed by two parties – the City and the Contractor. Each shall have the following responsibilities in addition to those responsibilities assigned to each party in the Agreement.

5.2.2.1 City Responsibilities:

The City will cooperate with the Contractor and will fulfill its responsibilities in a manner to facilitate the Contractor's timely and efficient performance of services. City responsibilities generally include the following, as ultimately defined in the contractual agreement between the City and Contractor:

- Review submittals and provide comments to DB Entity in a timely manner.
- Furnish designated studies and provide pertinent data and information regarding the Project, including record drawings, preliminary studies, etc. Such data and information is provided by reference in Volume 2 and 3.
- Provide access to the Project site and necessary easements to lands belonging to the City.
- Provide contract oversight, as well as act as a liaison to the public.
- Make progress payments to DB Entity

5.2.2.2 Contractor Responsibilities:

The Contractor will cooperate with the City and will provide in a timely manner the design, construction, and commissioning services necessary to complete the Project scope Contractor responsibilities generally include the following, as ultimately defined in the contractual agreement between the City and Contractor:

- Prepare design and construction documents through the design development process described above.
- Conduct site investigations as necessary to verify and supplement data contained in this RFP and to support final design by the Responsible Architect/Engineer.
- Coordinate with City for access to Project site.
- Supervise subcontractors and personnel provided by Contractor.
- Obtain necessary regulatory approvals and permits to complete the project (building permit, grading permit, etc.).
- Provide and implement Storm Water Pollution Prevention Plan.
- Implement Best Management Practices to maintain compliance with all applicable permits and regulatory requirements.

- Maintain site security.
- Complete construction work.
- Commission the facility, including providing all required materials and labor
- Implement quality-management procedures.
- Implement Project health and safety practices.
- Provide insurance and bonding as required by the contract.
- Perform record keeping, including as-built documents.

6.0 ASSURANCE OF DESIGNATED PROJECT TEAM

Proposer shall assure that the designated project team, including sub-consultants or sub-contractors (if any), is used for this project. Departure or reassignment of, or substitution for, any member of the designated project team, sub-consultant(s) or sub-contractor(s) shall not be made without the prior written approval of the City.

7.0 PROPOSAL REQUIREMENTS AND FORMAT

There are two parts to the Proposal. Part 1 is the Proposer's Technical Proposal and Required Proposal Form Attachments. Part 2 is the Proposer's Guaranteed Maximum Price (GMP), Cost Information, and Proposal Guarantee. Delivery instructions are detailed in Section 8 of this RFP.

Proposal Development. Contractors are encouraged to keep the proposals brief and to the point, but sufficiently detailed to allow evaluation of the Proposer's: project understanding; approach to the design-build project delivery methodology; strategy/approach for execution of the scope of work, qualifications and expertise of the team; and quality control processes. Unauthorized conditions, omissions, limitations or provisions attached to a proposal will render the proposal non-responsive and may cause its rejection.

Proposal Organization. Each response to this RFP must include all of the information described in this section. Provide the information in the specified order. Failure to include all of the information specified may be cause for rejection. Additional information may be provided, but should be succinct and relevant to the goals of this RFP. Any additional information that a proposing Contractor wishes to include that is not specifically requested should be included in an appendix to the Proposal.

Proposers are warned against making erasures or alterations of any kind, without initialing each and every such change. Proposals that contain erasures or irregularities of any kind, without such initialing, or omissions, may be rejected.

If submitting hard copies, the Proposal should be bound or contained in a loose-leaf binder. Document pages should be 8-1/2 inches by 11 inches in size or folded to such a size with the exception of Preliminary Drawings provide with Part 1 which should be submitted as 11 inch x 17 inch drawings. Use section dividers, tabbed in accordance with this section as specified below.

There are page limits for specific sections of the Proposal which are indicated below. For counting of page limits, each single page of text is counted as one page. Double sided pages are counted as two pages. The following sections do not have page limits: cover sheet; index sheets (tab dividers), table of contents, references, signature requirements, safety record, resumes (in the appendix), sample documents, proposed project schedule, financial status documents, and cost proposal.

7.1 PART 1 –TECHNICAL PROPOSAL

Proposer must submit all forms and information required as described in Section 7.1 in a sealed envelope (or container) labeled as Part 1. See Section 8 for additional labeling and delivery instructions.

Part 1 of the Proposer's submittal shall be divided into three parts, as follows:

Part 1A – Technical Proposal

Part 1B – Preliminary Drawings, Preliminary Materials, and Finishes Information

7.1.1 PART 1A – TECHNICAL PROPOSAL

The following sections are to be included within Part 1A of the Proposer's submittal. Use section dividers (Tabs) as specified below.

COVER LETTER (1-PAGE MAXIMUM)

Include a Cover Letter with, at a minimum, the following information:

- ✓ Title of this RFP
- ✓ Name and Mailing Address of Firm (include physical location if mailing address is a PO Box)
- ✓ Contact Person, Telephone Number, Fax Number, and Email Address

TAB A: FIRM AND TEAM QUALIFICATIONS (4-PAGE MAXIMUM)

Describe your firm and provide a statement of your firm's qualifications for performing the requested services. Provide a brief summary of the role, qualifications and experience of each team member and designated project manager/lead assigned to this project, including length of service with the firm.

Identify the services which would be completed by your firm's staff and those that would be provided by sub-consultants or sub-contractors, if any. Provide a

statement of the qualifications/experience of any sub-consultant or sub-contractor staff on your project team.

Include a project organizational chart identifying roles and responsibilities.

Full resumes may be included in an appendix to the proposal (not included in page count).

TAB B: PROJECT UNDERSTANDING (4-PAGE MAXIMUM)

Based on the available information, supplemental research, field observations, and experience with similar projects, provide a narrative describing your understanding of the services requested in this RFP. Describe what you see as the major challenges to achieving the City's stated goals. Identify any issues that you believe will require special consideration for this project.

TAB C: PROJECT APPROACH (5-PAGE MAXIMUM)

Provide a detailed narrative of your firm's approach to the successful implementation of this project. How will the challenges and issues identified in Project Understanding (Tab B) be addressed or mitigated with your unique project approach? Include thorough discussions of methodologies you believe are essential to accomplishing this project, any unique approaches or strengths that your firm may have that will be relevant and advantageous to this project and a description of your quality control process.

Discuss your firm's approach to providing design-build project delivery and how the design-build process will be carried out, coordinated and managed. Specifically identify the team members who will be responsible for each part of the design-build process, how they will approach their responsibilities and how they will interact with the rest of the design-build team to take best advantage of the design-build process for a successful project.

Discuss the required permitting for this project, your team's approach to the permitting process, and how the permitting process interfaces with the overall project schedule. Provide proposed work schedule and work sequence to accomplish all of the required tasks within the desired timeline. Sample/proposed work schedule does not count toward the page limit for this section.

TAB D: EXPERIENCE AND REFERENCES (4-PAGE MAXIMUM)

Provide a summary of your firm's experience in providing these or similar services. Provide a minimum of three (3) references for projects or services similar in nature and scope that your firm's team members have completed in the last five (5) years. Include brief descriptions of the projects, dates, a list of proposed staff that were part of the project, client names and contact persons' names, addresses and telephone numbers. Public sector references are preferred.

TAB E: REQUIRED STATEMENTS/DOCUMENTS

Include statements of assurance regarding the following requirements in the proposal:

- Non-substitution for the designated members of the team without approval by City staff (**Section 6.0**)
- The absence of a conflict of interest (**Section 11.4**)
- Indicate your ability and agreement to fulfill the indemnification and insurance requirements in this RFP (**Section 11.7**). Insurance and Indemnification Requirements are further detailed in the Sample Agreement (Volume 2 of the RFP Documents (Article 9). Please note that actual certificates of insurance are not required as part of your submittal.
- A statement that nothing contained in the submitted proposal will be proprietary. (**Section 11.23**), or include Confidential Envelope in Part 2 of Proposal (**Section 7.2**)

Also submit the following documents (completed form attachments) in Tab E.

- Executed copy of Proposer's Certification (**Attachment A**)
- Contractor Licenses (**Attachment B**)
- Subcontractor List (**Attachment C**)
- Executed copy of Noncollusion Declaration (**Attachment D**)
- Iran Contracting Act (**Attachment G**)

TAB F: EXCEPTIONS

Describe any and all proposed exceptions, alterations or amendments to the Scope of Services or other requirements of this RFP, including the Sample Contract (**Volume 2 of the Contract Documents**). The nature and scope of your proposed exceptions may negatively affect the evaluation of your submittal and the City's determination of whether it is possible to successfully negotiate a contract with your firm.

TAB G: LEGAL AND FINANCIAL

The City wants to ensure that the successful Contractor has the necessary facilities, ability, experience, and financial resources to provide the services specified herein in a satisfactory and timely manner. Please list and explain any pending bankruptcies, liens, stop payment notices, judgments, lawsuits, arbitrations, mediations, foreclosures, and any similar actions filed or resolved in the past seven (7) years. Please indicate whether a client has ever terminated a contract with your firm for breach, and if so, please explain.

7.1.2 PART 1B – PRELIMINARY DRAWINGS

The Preliminary Drawings will depict the facility which the Contractor intends to build and has used as the basis for their cost proposal. The Concept Drawings which have been provided in Volume 4 of this RFP, may be used as the basis for, or background to, the Preliminary Drawings. The Preliminary Drawings presented by the Contractor in this section of the proposal, whether they are reproductions

of the Concept Drawings, or drawings which have been produced by the Contractor in their development of the proposal, are represented by the Contractor to be of a facility which will meet all applicable building codes and requirements, while accomplishing the goals for the facility layout presented in the Concept Drawings. Contractor takes sole responsibility for the accuracy and completeness of the Preliminary Drawings submitted to meet these requirements. These Preliminary Drawings will become a part of the Design-Build Contract and will define the facility which the Contractor will design, construct and commission for the GMP provided. Preliminary Drawings will consist of, at a minimum:

- Site Plans
- Underground Utilities Plans
- Architectural Plans and Elevations
- Structural Plans and Sections
- Floor Plans
- HVAC Plans and Equipment Schedules
- Plumbing Plans and Fixture Schedules
- Fire Protection System Plans
- Electrical and Lighting Plans and Fixture Schedules
- Data Plans

7.1.3 PART 1B: PRELIMINARY MATERIALS AND FINISHES INFORMATION

Contractor must provide a set of Preliminary Specifications for all materials, fixtures and finishes which will be provided on the project. In addition to Preliminary Specifications, specific manufacturer information shall also be provided for materials, fixtures and finishes which demonstrate the range of manufacturers, type, and quality of the materials and finishes Contractor proposes to provide for the project. These shall not be final materials, fixtures, and finishes selections, but shall define the materials, fixtures, and finishes used in the GMP cost proposal, and will be a minimum level of quality to be provided under that GMP.

All materials, fixtures, and finishes will, at a minimum, comply with the requirements of the Concept Technical Specifications provided in Volume 3 of this RFP. Specifications presented in the proposal are represented by the Contractor to be for a facility which, when detailed design has been completed, will meet all applicable building codes and requirements while accomplishing the goals for the facility layout presented in the Concept Drawings.

Information will be provided for the following, at a minimum:

- Metal Building
- CMU
- Windows and Doors
- Flooring
- Suspended Ceiling
- Plumbing Fixtures (Mark 101-108 in the Concept Drawings)
- Cabinetry
- Accessories (Mark 202-207 in the Concept Drawings)
- Benches and Lockers
- Electrical Fixtures

7.2 PART 2 – COST PROPOSAL

Proposer shall submit all forms and information required as described in Section 7.2 in a separate sealed envelope (or container) labeled as “Part 2”. See Section 8 for additional instruction for delivery and labeling.

The following sections must be included within Part 2 of the Proposal submittal.

TAB H: Guaranteed Maximum Price, Cost of Work and Fee

Contractor shall present their Guaranteed Maximum Price (GMP) to perform DB Contract Services described in this RFP. The scope of design services shall be as detailed in the Contractor’s Technical Proposal presented in Part 1.

Contractor must include in their GMP, any work which is not shown on the Design Drawings or outlined in the Technical Specifications but which is necessary or normally required as a part of the Work outlined in the Contract Documents, to provide a complete and fully operable installation. Contractor shall not be able to make any claim to the City for a Change Order, if Contractor does not include the cost of any such work.

Complete **Attachment H** to provide a total cost proposal for all products and services to be delivered; GMP, breakdown of GMP, schedules of hourly rates, equipment, allowance items. Define any reimbursable expenses requested to be paid by the City.

OPTIONAL CONFIDENTIAL ENVELOPE

If a Proposer desires to claim a **privilege against public disclosure** as described in Section 11.23, for a trade secret or other proprietary information, such information must be submitted with the Part 2 Envelope (or container). Seal this statement in a separate

envelope, clearly marked “CONFIDENTIAL ENVELOPE” and include in Part 2 Original.

8.0 SUBMITTAL INSTRUCTIONS

8.1 Hard Copy Submittal

If submitting a hard copy, proposals shall ONLY be regularly mailed to:

City of Roseville
Attn: City Clerk Department
311 Vernon Street
Roseville, CA 95678

Hard Copy Submittal Package Structure and Contents

There are two parts to the Proposal. Part 1 is the Technical Proposal. Part 2 is the Cost Proposal.

Each part must be labeled appropriately, sealed, and submitted simultaneously before the Proposal submission deadline.

Your submittal packages shall be sealed and include the following:

Envelope 1 (or Container 1)

- One (1) original and five (5) printed copies of your Part 1A – Firm’s Qualifications and Technical Proposal (Reference Section 7.1 for contents) and Part 1B – Preliminary Drawings, Materials and Finishes Information; and
- Two (2) electronic copies of your entire Part 1A and Part 1B proposal in PDF format on flash drives or other electronic media

Envelope 2 (or Container 2)

- One (1) original and one (1) printed copy of your Part 2 – Cost Proposal and Confidential Financial data.
- Two (2) electronic copies of your entire Part 2 in PDF format on two separate flash drives or other electronic media (one copy on each device).
- (Optional) Proprietary information statement. (**Section 11.23**) (**Attachment F**)

8.2 Email Submittal

If submitting your proposal via electronic mail, then send one (1) copy of the proposal to cityclerkroseville@roseville.ca.us and contain the following:

- **Subject line of email:** Email should have the title of the RFP and “Sealed Proposal” in the subject line.
- **Body of the email:** should contain a scanned image of filled in Proposal label (Attachment 7 of this RFP).
- **First page of attachments:** Scanned image of the “Sealed Proposal” label (Attachment 7 of this RFP) filled in and signed should appear as the first page of PDF formatted Technical Proposal.
- **Attachment 1 to email:** One (1) electronic copy of your Part 1 – Technical Proposal in PDF format.

Attachment 2 and 3 to email: One (1) electronic copy of your Part 2 – Cost Proposal in PDF format (Attachment 2) and Excel format (Attachment 3).

8.3 Proposal Deadline

Proposals must be submitted not later than the date and time and date indicated on the cover page of this RFP.

Postmarks will not be accepted, and Proposals received after the deadline date and time will not be opened and will be returned to Proposer.

8.4 Delivery Responsibility

The City will not be responsible for proposals delivered to a person or location other than that specified in Section 8.5 above.

8.5 Labeling

Each submittal envelope/container (Part 1 and Part 2) must include the City’s “Sealed Proposal” label. In addition to the City’s label, clearly mark each envelope as either Part 1 or Part 2. See Attachment I for “Sealed Proposal” label.

8.6 Postmarks

Postmarks will not be accepted, and proposals received after the deadline date and time will not be accepted or considered.

8.7 Proposal Preparation Costs

All costs associated with proposal preparation will be borne by the proposer.

8.8 Minor Irregularities

The City reserves the right to waive minor defects and/or irregularities in proposals and will be the sole judge of the materiality of any such defect or irregularity.

8.9 Department of Industrial Relations Contractor Registration:

No contractor or subcontractor may be listed on a proposal for or work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor

Code section 1725.5. The Contractor must provide proof of current registration with the Department of Industrial Relations for both itself and all listed subcontractors with their proposal. The Contractor is hereby notified that this project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

9.0 EVALUATION CRITERIA and PROPOSAL SCORING

A selection committee consisting of City employees will evaluate and rank the Proposals received. The City may conduct such reference checks as the City deems necessary to establish the responsibility, and qualifications of the Proposer's team, to perform the Work.

The following evaluation criteria and rating schedule will be used to determine the most highly qualified firm(s).

Table 2: Proposal Scoring

Tab	Evaluation Category	Maximum Score
	Part 1A - Technical Proposal and Proposal Forms	
A	Firm and Team Qualifications	40
B	Project Understanding	20
C	Project Approach	60
D	Experience and References	30
E	Required Statements/Documents	Pass/Fail
F	Exceptions	Pass/Fail
G	Legal and Financial	Pass/Fail
	Part 1A Maximum Score	150
	Part 1B – Preliminary Drawings, Materials and Finishes Information	
	Completeness and Quality of Drawings	80
	Completeness and Quality of Proposed Materials and Finishes	70
	Part 1B Maximum Score	150
	Part 2 – Cost Proposal	
	Proprietary Information Letter (Optional)	N/A
	Guaranteed Maximum Price, Cost of Work, and Fee (See scoring details below)	100
	Part 2 Maximum Score	100
	Total Maximum Score Parts 1A, 1B, and 2	400
	Part 3 (OPTIONAL) Interviews if needed	100
	Total Possible Maximum Score	500

Points Scoring Formulas for Part 2 (Envelope 2) of the Proposal.

The Part 2 scoring will order the Proposals received and score each using the following formulas:

- Total Proposed GMP Score
 - Lowest GMP receives 80 Points
 - GMP within 3% of Lowest GMP receives 80 Points
 - GMP more than 3% and less than or equal to 6% of Lowest GMP receives 60 points
 - GMP more than 6% and less than or equal to 10% of Lowest GMP receives 40 points
 - GMP more than 10% and less than or equal to 13% of Lowest GMP receives 20 points
 - GMP greater than 13% of Lowest GMP receives 0 Points
- Proposed Total Fee Mark-Up for General Overhead & Profit Score = 10 Points x Lowest Fee / Proposer's Fee
- Proposed Shared Savings = 10 Points x Proposer's % to Owner / Highest % to Owner

10.0 SELECTION PROCESS

10.1 Award of Contract

Award of the RFP shall be made to the responsible Proposer whose Proposal is determined, through a formal evaluation panel process, to be the most advantageous to the City after the evaluation panel has taken into consideration the evaluation factors set forth in the RFP. A master score sheet shall be created based on the evaluation panel's initial evaluation. Proposals shall be scored according to the criteria stated in the RFP.

10.2 Interviews

If City determines that a Proposer cannot be selected based solely on the Proposals submitted, the top ranked Proposers submitting the most highly rated technical Proposals may be invited for interviews with the selection committee. The Proposer's proposed Project Manager must be present at the interview; up to three (3) others may attend at the discretion of the Proposer. After this process, the Proposers will be ranked and notified.

The City reserves the right to make a selection after review of the Proposals without oral interviews; therefore, the Proposal should be submitted initially on the most favorable terms that the contractor might propose.

10.3 Contract Negotiation

A contract will be negotiated with the Contractor considered best meeting the City's need for this project. In the event a mutually satisfactory contract cannot be negotiated with the City's first choice, negotiations may be terminated and commenced with the Contractor considered next best in meeting the City's needs for this particular project.

10.4 Contract Execution

The selected Contractor will be required to execute a City prepared contract (Agreement). Sample Agreement is included in these documents as “Volume 2 – Agreement”. The contract may further refine the scope of services and will provide for the terms and conditions.

10.5 City Council Approval

The award of any contract is expressly contingent upon City Council approval and the availability of funds. City staff may not legally bind the City to a contract.

10.6 City’s Right to Reject All Proposals

The City reserves the right to reject any or all proposals, or to waive minor irregularities in said proposals, or to negotiate minor deviations with the successful Contractor(s). In the case of differences between written words and figures in a proposal, the amount stated in written words shall govern. In the case of a difference in unit price versus the extended figure, the unit price shall govern.

10.7 City’s Right to Seek Clarification

The City reserves the right to seek clarification on any or all proposal submittals to ensure the RFP specifications are met. Proposals may be rejected from any proposer who does not comply with the City’s request for clarification.

10.8 Notice of Intent (NOI)

Once a decision has been made to award the contract, then a formal notice of the intent to award to the recommended proposer(s) shall be made by the Department.

10.9 License, Permits, and Certifications

A City of Roseville business license as well as all applicable permits, licenses and certifications required by local, state or federal law are required before the award of contract.

Contractors are not required to have a City of Roseville Business license to submit a proposal; however, it will be required before executing a Contract. Contractors may apply for a business license at:

<https://www.roseville.ca.us/government/departments/finance/licensing/business>

11.0 GENERAL TERMS & CONDITIONS

11.1 Standard Contract

Upon completion of the evaluation and recommendation for award, the selected Contractor will be required to execute an agreement prepared by the City, a sample of which is included as **Volume 2 of the Contract Documents**.

11.2 Independent Contractor

At all times the Contractor shall represent himself/herself to be an independent contractor offering such services to the general public and shall not represent himself/herself, or his/her employees, to be an employee of the City. Therefore, the Contractor shall assume all legal and financial responsibility for taxes, FICA, employee fringe benefits, workers' compensation, employee insurance, minimum wage requirements, overtime, etc., and agrees to indemnify, save, and hold the City, its officers, agents, and employees, harmless from and against, any and all loss, cost (including attorneys' fees), and damage of any kind related to such matters.

11.3 Non-Appropriation

The City may terminate any resulting contract at the end of any fiscal year, June 30th, without further liability other than payment of debt incurred during such fiscal year, should funds not be appropriated by its governing body to continue services for which the contract was intended.

11.4 Conflict of Interest

The Contractor shall warrant that no official or employee of the City has an interest, has been employed or retained to solicit or aid in the procuring of the resulting contract, nor that any such person will be employed in the performance of such contract without immediate divulgence of such fact to the City. Contractors submitting a proposal in response to this RFP must disclose any actual, apparent, direct, indirect, or potential conflicts of interest that may exist with respect to the Contractor or the Contractor's management or employees relative to the services to be provided to the City. Conflict of interest issues may require consultation with legal counsel. If a Contractor has no conflicts of interest, a statement to that effect must be included in the proposal. Violation of this section shall be a material breach of the contract entitling the City to any and all remedies by law or in equity.

11.5 Undue Influence

The Contractor shall warrant via an executed Proposer's Certification (**Attachment A**) that no undue influence or pressure is used against or in concert with any officer or employee of the City in connection with the award or terms of the contract that will be executed as a result of this RFP, including any method of coercion, confidential financial arrangement or financial inducement. No officer or employee of the City shall receive compensation, directly or indirectly, from the Contractor, or from any officer, employee or agent of the Contractor, in connection with the award of the contract or any work to be conducted as a result of this RFP. Violation of this section shall be a material breach of the contract entitling the City to any and all remedies by law or in equity.

11.6 Non-Collusion

Contractors submitting proposals shall warrant via an executed Proposer's Certification (**Attachment A**) that their offer is made without any previous understanding, agreement or connection with any person, firm or corporation submitting a separate proposal for the

same project and is in all respects fair, without outside control, collusion, fraud or otherwise illegal action. This condition shall not apply to proposals which are submitted by firms who have partnered with others to submit a cooperative proposal that clearly identifies a primary contractor and the associated sub-consultants or sub-contractors. For construction contracts, proposers shall submit a properly completed and executed “Non-collusion Declaration” which is attached as **Attachment D**.

11.7 Indemnification & Insurance Requirements

The City’s standard indemnification and insurance requirements are provided in the sample contract, included in **Volume 2 to the Contract Documents**.

11.7.1 Insurance

Insurance requirements are provided in Volume 2 of the Contract Documents – Agreement Article 9 - Insurance to be provided by CONTRACTOR, only an overview is provided in Table 3, refer to the agreement for all requirements.

Table 1: Insurance Requirements

Insurance	Requirement
Architect/Engineer Professional Liability Insurance (errors and omissions)	\$2,000,000 per claim \$4,000,000 aggregate
Commercial General Liability Major Construction Projects (Projects over \$1,000,000)	\$5,000,000 each occurrence \$10,000,000 aggregate Personal Injury: \$5,000,000 each occurrence \$10,000,000 aggregate
Comprehensive Automobile Liability For bodily injury (including death) and property damage which provides	Total limits of not less than One Million Dollars (\$1,000,000) combined single limits per accident, applicable to all owned, non-owned, and hired vehicles.
Statutory Workers’ Compensation and Employer’s Liability Insurance	Limits of not less than One Million Dollars (\$1,000,000) per occurrence.
Builder's Risk/Course of Construction Insurance	All Risk type of builder's Risk Insurance of the type covering one hundred percent (100%) of the value of the Work performed under this Contract

All costs of complying with the insurance requirements shall be as included in Contractor’s Proposal pricing (GMP). The selected Contractor shall provide complete and valid insurance certificates within ten (10) days of the City’s written request. Failure to provide the documents within the time stated may result in rejection of the Contractor’s proposal. Alterations to the terms and conditions shall not be allowed.

11.7.2 Bonds

The Contract's Article 9.3-Payment, Performance and Warranty Bonds contains requirements for Performance, Labor & Materials and Warranty Bonds. The successful Contractor will be required to provide a Faithfull Performance Bond and a Labor and Materials Bond using the City's forms. The successful contractor will also be required to execute Warranty Bond issued by a corporate surety, acceptable to City. The Payment Bond and Labor and Material Bond shall be for not less than one hundred percent (100%) of the Total GMP; and the Warranty Bond shall be not less than ten percent (10%) of the Agreement cost. Pursuant to California Code of Civil Procedures Section 995.311, the City will verify all bonds for this Project are issued and executed by a California admitted surety. A summary of the Bonding requirements is presented in Table 4-Bonding Requirements below.

Table 2: Bonding Requirements

Bond Type	Requirement
Faithful Performance	100% of the Total Contract Price
Labor and Materials	100% of the Total Contract Price

All costs of complying with the insurance requirements shall be as included in Contractor's pricing. The selected Contractor shall provide complete and valid insurance certificates within ten (10) days of the City's written request. Failure to provide the documents within the time stated may result in rejection of the Contractor's proposal. Alterations to the terms and conditions shall not be allowed.

11.8 Cost of Preparing Proposal

The City will not pay any costs incurred by any Contractor in preparing or submitting a proposal in response to this RFP.

11.9 Proposals Property of the City

All documents or materials submitted with or in conjunction with any proposal, including but not limited to electronic files, shall become the property of the City after the proposal submission deadline. No submission documents will be returned. During negotiations, the scope of services may be amended by the City and negotiated based upon ideas provided by other proposers or any other source.

11.10 Proposals are Public Records

All proposals submitted are subject to the public disclosure requirements under the laws of the State of California, unless the City identifies and exercises a right or obligation to exempt any record from public disclosure. However, proposals will not be disclosed until negotiations are complete and a recommendation for selection and award is made.

11.11 Protests

A. Protest Requirements

Any Proposer who is aggrieved in connection with the solicitation or award of a contract may file a protest with the City Clerk's office. The protest must be received in writing by the City Clerk's office within seven (7) calendar days after such aggrieved proposer 1) knows or should have known of the facts giving rise thereto or 2) the date of the notice of intent to award, whichever is sooner. In no event shall a protest be allowed after an award has been made by City Council. If the seventh calendar day falls on a weekend or City holiday, the protesting party may submit the protest prior to close of business on the first business day following such weekend or holiday. Failure to submit a timely protest shall bar consideration of a protest.

B. Grounds for Protest

1. The alleged grounds for protest shall be limited to the following: (a) computation errors, (b) violations of local, state, or federal law, or (c) the City failed to follow the procedures specified in this Policy.
2. The protest shall state all grounds claimed for the protest and include supporting documentation. Failure to clearly state the grounds for the protest and provide supporting documentation shall be deemed a waiver of all protest rights.

C. Administrative Review

Upon receipt of the protest and after determining the protest was properly filed, the Department Director shall provide a copy of the protest to other proposers who might become aggrieved as a result of the protest and issue a written decision within fourteen (14) calendar days after receipt of the protest. The protest will be evaluated by the Department Director, the City Attorney's Office, and the Purchasing Manager. The protesting proposer shall promptly provide any information requested by City staff as part of such investigation. The decision shall either deny or uphold the protest and include reasons for the decision. The written decision shall be final.

D. Stay of Action During a Protest

In the event a protest is filed under Section 11.11, the City shall not proceed further with the award of the contract until the protest is resolved, unless:

1. The Director of Environmental Utilities makes a determination that the award of the contract without delay is necessary to protect a substantial interest of the City, or
2. The City decides to reject all proposals and issue a new RFP.

11.12 Rejection of RFP

The City reserves the right to reject any or all proposals, to waive defects or irregularities in any proposal or in the RFP process, and to offer to negotiate or contract with any

Contractor in response to any RFP. This RFP does not constitute any form of offer to contract.

11.13 Multiple Award

The City reserves the right to award the contract to multiple contractors when applicable.

11.14 Increasing/Decreasing Portions of RFP

The City reserves the right to increase or decrease the amount of any portions of the work represented in the RFP and/or to omit portions of said work, as may be deemed necessary by the City.

11.15 Rejection as Non-Responsive

Proposals may be rejected as non-responsive at the City's sole discretion if there are alterations of form, the proposal is conditional or the proposal is incomplete.

11.16 Modifying RFP

The City reserves the right to modify any portion of, or to postpone or cancel this RFP at any time, and/or reject any and all submissions without indicating any reason.

11.17 No Proposal Accepted

If no proposal is accepted, the City may elect to have the services performed in some other manner.

11.18 Rejecting Team Members, Firms or Sub-contractors

The City reserves the right to reject individual team members, firms, sub-consultants or sub-contractors and request substitution prior to contract award.

11.19 Local Business, Small Business, Minority and Women Owned Business

Although no preferences will be given, the City highly encourages submission of proposals by local businesses, by small business owners, and by minority and women-owned businesses.

11.20 Withdrawal of Proposals

Proposals may be withdrawn prior to the date and time specified for proposal submission with a formal written notice by an authorized representative of the proposer delivered to the City Clerk's Office. Proposals submitted will become property of the City after the proposal submission deadline.

Proposals may not be withdrawn for ninety (90) days after the due date unless the City enters into a contract with another Contractor prior to the expiration of that ninety (90) day period.

11.21 Prohibited Transmittals

No telephone, hand delivered, or facsimile proposals will be accepted. If a photocopy is submitted, the proposal must be signed in ink.

11.22 Proposal Postponement and Amendment

The City reserves the right to revise or amend the RFP or specifications up to the time set for opening of the proposals. Such revisions and amendments, if any, shall be announced by amendments to this RFP through the City's web site. Copies of such amendments shall be furnished to all prospective proposers. Prospective proposers are defined as those proposers who have registered and are on the City's RFP list for this material/service. If revisions and amendments require changes in quantities, prices or scope of services, the date set for opening of the proposals may be postponed by such number of days as in the opinion of the City shall enable proposers to revise their proposals. Proposals which fail to acknowledge a substantive addendum to the RFP, as determined by the City Attorney's Office, on the City supplied addendum form will be rejected as non-responsive. Any revisions or amendments to the RFP will become incorporated into any contract awarded pursuant to the RFP.

11.23 Proprietary Information

Proposers submitting a proposal in response to this RFP must provide a statement that nothing contained in the submitted proposal will be proprietary. However, if a proposer desires to claim a privilege against public disclosure for a trade secret or other proprietary information (by indicating so on Attachment F), the proposer will be asked to submit this in a separate confidential letter. The City Attorney's Office will determine if the information is in fact proprietary, based on state and federal law. Note that under California law, a price proposal to a public agency is not a trade secret. The Contractor shall defend, indemnify and hold harmless the City regarding any claim by any third party for the public disclosure of the "confidential" portion of the proposal.

11.24 Right to Request Additional Information

During the evaluation process, the City reserves the right, where it may serve the best interests of the City, to request additional information and clarifications from proposers. Such information will be requested in writing to the specific proposer. This information will become a part of the original proposal submitted by the specific proposer and will be used by the City in evaluating the proposal and will not be shared with other proposers during the evaluation and negotiation process.

11.25 Modification of Proposals

Modification of a proposal already received will be considered only if the modification is received prior to the deadline date for receiving proposals. All modifications shall be made in writing, executed, and submitted in the same form and manner as the original proposal.

11.26 Examination of Contract Documents

Each proposer shall thoroughly examine and be familiar with the terms of this RFP, the sample contract attached (Volume 2), Technical Specifications (Volume 3), Drawings (Volume 4), legal and procedural documents, general conditions, specifications, and addenda (if any), which will constitute the contract documents. Submission of a proposal shall constitute acknowledgement, upon which the City may rely, that the proposer has thoroughly examined and is familiar with the contract documents. Failure or neglect of a proposer to receive or examine any of the contract documents shall in no way relieve the proposer of any obligation with respect to their proposal or to the contract. No claim for additional compensation will be allowed which is based upon lack of knowledge of any contract document.

11.27 Non-Discrimination

The City maintains various policies related to contractual service providers. Among these is an anti-discrimination policy, which requires that the City's contractors not discriminate in hiring on the basis of gender, race, religion, sexual orientation, medical condition, and all other categories protected by law. Upon acceptance of a proposal, the City may request that the selected Contractor sign a statement affirming its compliance with this policy.

11.28 No Assignment or Modifications

This awarded contract is to be binding on the successors and assigns of the parties hereto. The services called for herein are deemed unique and except as provided herein Contractor shall not assign, transfer, subcontract, or otherwise substitute its interest in the agreement or any of its obligations herein without the written consent of the City. The Agreement may be modified only by a written amendment signed by the parties.

11.29 Bankruptcy

Upon filing for any bankruptcy or insolvency proceeding whether voluntary or involuntary, or upon the appointment of a receiver, trustee, or assignee for the benefit of creditors, the Contractor must notify the City immediately. Upon learning the actions herein identified, the City reserves the right, at its sole discretion, to cancel the contract.

12.0 LIST OF ATTACHMENTS

Attachment A	PROPOSER'S CERTIFICATION
Attachment B	LICENSES and DIR REGISTRATION
Attachment C	SUBCONTRACTORS LIST
Attachment D	NON-COLLUSION DECLARATION
Attachment E	ASSEMBLY BILL NO. 626
Attachment F	PROPRIETARY INFORMATION STATEMENT
Attachment G	IRAN CONTRACTING ACT DISCLOSURE FORM
Attachment H	GUARANTEED MAXIMUM PRICE, COST OF WORK AND FEE
Attachment I	PROPOSAL ENVELOPE LABEL

ATTACHMENT A - PROPOSER'S CERTIFICATION

I hereby propose to furnish the goods or services specified in the Request for Proposals ("RFP"). I agree that my proposal will remain firm for a period of up to ninety (90) days in order to allow the City of Roseville ("City") adequate time to evaluate the qualifications submitted.

I have carefully examined the Request for Proposals and any other documents accompanying or made a part of this RFP. The information contained in this proposal is true and correct to the best of my knowledge and is signed under penalty of perjury under the laws of the State of California. I further certify that I am duly authorized to submit this proposal on behalf of the firm as its authorized agent and that the firm is ready, willing and able to perform if awarded the contract.

I further certify that this proposal is made without prior understanding, agreement, connection, discussion, or conspiracy with any other person, firm or corporation submitting a proposal for the same product or service; that this proposal is fair and made without outside control, collusion, fraud or illegal action; that no officer, employee or agent of the City or any other proposer is financially interested in said proposal; that no undue influence or pressure was used against or in concert with any officer, employee or agent of the City in connection with the award or terms of the contract that will be executed as a result of this RFP; and that the undersigned executed this Proposer's Certification with full knowledge and understanding of the matters therein contained and was duly authorized to do so.

NAME OF BUSINESS

SIGNATURE

NAME & TITLE, TYPED OR PRINTED

MAILING ADDRESS

TELEPHONE NUMBER

EMAIL

Type of Organization:

_____ Sole Proprietorship

_____ Corporation

_____ Partnership

_____ Limited Liability Company

_____ State of Incorporation

The undersigned Proposer acknowledges receipt, understanding, and full consideration of the following Addenda:

Table A.1 – Acknowledgement of Addenda

Addendum Number	Addendum Date	Signature of Proposer

Table A.2 - Certification if proposing firm is a Sole Proprietorship:

Name (typed or printed):			
By:			
		(Individual's signature)	
Doing business as:			
Business Address:			
Phone Number:	()	FAX Number:	()
Email Address of Authorized Representative:			

Table A.3 - Certification if proposing firm is a Partnership

Partnership Name (typed or printed):			
By:			
		(Signature of general partner- attach evidence of authority to sign)	
Name (typed or printed):			
Business Address:			
Phone Number:	()	FAX Number:	()
Email Address of Authorized Representative:			

Table A.4 - Certification if proposing firm is a Corporation:

Corporation Name (typed or printed):	
State of Incorporation:	
By:	
	(Signature - attach evidence of authority to sign – Board Resolution)
Name (typed or printed):	
Title:	
(CORPORATE SEAL)	

Attest:			
		(Signature of Corporate Secretary)	
Name:			
Date of Qualification to do business:			
Business Address:			
Phone Number:	()	FAX Number:	()
Email Address of Authorized Representative:			

***If person executing on behalf of a Corporation is not the President or Vice President, evidence of authority to sign on behalf of Corporation must be attached.**

Table A.5 - Certification if proposing firm is a Limited Liability Company:

Limited Liability Company Name:			
By:			
		(Signature of Managing Member - attach evidence of authority to bind the LLC under the LLC's articles of organization)	
Name (typed or printed):			
Title:			
Business Address:			
Phone Number:	()	FAX Number:	()
Email Address of Authorized Representative:			

****END OF ATTACHMENT A****

ATTACHMENT B - LICENSES AND DIR REGISTRATION

List the licenses held by your company and/or employees. The following representations are made under penalty of perjury.

A. CONTRACTOR'S LICENSES

CA State License No.	Name on License	Class/Type	Expiration Date

B. CITY OF ROSEVILLE BUSINESS LICENSE

Contractors are not required to have a City of Roseville Business license to submit a proposal; however, it will be required before executing a contract. Contractors may apply for a business license at:

<https://www.roseville.ca.us/government/departments/finance/licensing/business>

Do you currently have a City of Roseville Business License? _____ Yes _____ No

License No. _____

C. DEPARTMENT OF INDUSTRIAL RELATIONS CONTRACTOR REGISTRATION

***For Public Works Projects (SB854):** Contractors must register with the Department of Industrial Relations (DIR) pursuant to Labor Code section 1725.5. The Contractor shall provide proof of current registration with the Department of Industrial Relations for both itself and all listed subcontractors with their proposal. Contractors may register at:

<http://www.dir.ca.gov/public-works/publicworks.html>

DIR contractor registration number and expiration date:

No.: _____ Expiration Date: _____

****END OF ATTACHMENT B****

ATTACHMENT C - SUBCONTRACTOR LIST

In accordance with the Public Contract Code, Part 1, Chapter 4, Subletting and Subcontracting, Contractors must list the name and business address of each subcontractor who will perform work or labor or render service to the prime contractor in or about the construction of the work or improvement, or who will specially fabricate and install a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent (0.5%) of the prime contractor's total bid, or in the case of bids or offers for the construction of streets and highways, including bridges, in excess of one-half of one percent (0.5%) of the prime contractor's total bid or ten thousand dollars (\$10,000) whichever is greater. If subcontractors will not be used, proposer must write "NONE".

Company Name:	
Principal:	
Address:	
Phone:	
Job Capacity:	
Percentage of Total Work:	
CSLB Contractor License Number:	
DIR Registration Number, and Expiration Date:	

Company Name:	
Principal:	
Address:	
Phone:	
Job Capacity:	
Percentage of Total Work:	
CSLB Contractor License Number:	
DIR Registration Number, and Expiration Date:	

Company Name:	
Principal:	
Address:	
Phone:	
Job Capacity:	
Percentage of Total Work:	
CSLB Contractor License Number:	
DIR Registration Number, and Expiration Date:	

Company Name:	
Principal:	
Address:	
Phone:	
Job Capacity:	
Percentage of Total Work:	
CSLB Contractor License Number:	
DIR Registration Number, and Expiration Date:	

Reproduce this page for additional Subcontractors.

****END OF ATTACHMENT C****

ATTACHMENT D - NONCOLLUSION DECLARATION

NONCOLLUSION DECLARATION TO BE EXECUTED BY BIDDER AND SUBMITTED WITH PROPOSAL

The undersigned declares:

I am the _____ of _____, the party making the foregoing Proposal.

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

Any person executing this declaration on behalf of a Proposer that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the Proposer.

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 of Declarant)

****END OF ATTACHMENT D****

ATTACHMENT E - ASSEMBLY BILL NO. 626

CHAPTER 810

An act to add and repeal Section 9204 of the Public Contract Code, relating to public contracts.

[Approved by Governor September 29, 2016. Filed with
Secretary of State September 29, 2016.]

LEGISLATIVE COUNSEL'S DIGEST

AB 626, Chiu. Public contracts: claim resolution.

Existing law prescribes various requirements regarding the formation, content, and enforcement of state and local public contracts. Existing law applicable to state public contracts generally requires that the resolution of claims related to those contracts be subject to arbitration. Existing law applicable to local agency contracts prescribes a process for the resolution of claims related to those contracts of \$375,000 or less.

This bill would establish, for contracts entered into on or after January 1, 2017, a claim resolution process applicable to any claim by a contractor in connection with a public works project. The bill would define a claim as a separate demand by the contractor for one or more of the following: a time extension for relief from damages or penalties for delay, payment of money or damages arising from work done pursuant to the contract for a public work, or payment of an amount disputed by the public entity, as specified.

This bill would require a public entity, defined to exclude certain state entities, upon receipt of a claim sent by registered or certified mail, to review it and, within 45 days, provide a written statement identifying the disputed and undisputed portions of the claim. The bill would authorize the 45-day period to be extended by mutual agreement. The bill would require any payment due on an undisputed portion of the claim to be processed within 60 days, as specified. The bill would require that the claim be deemed rejected in its entirety if the public entity fails to issue the written statement.

This bill would authorize, if the claimant disputes the public entity's written response of if the public entity fails to respond to a claim within the time prescribed, the claimant to demand to meet and confer for settlement of the issues in dispute. The bill would require any disputed portion of the claim that remains in dispute after the meet and confer conference to be subject to nonbinding mediation, as specified. The bill would provide that unpaid claim amounts accrue interest at 7% per annum. The bill would prescribe a procedure by which a subcontractor or lower tier contractor may make a claim through the contractor.

This bill would require the text of these provisions, or a summary, to be set forth in the plans or specifications for any public work which may give rise to a claim. The bill would specify that a waiver of these rights is void and contrary to public policy, except as specified. The bill would also specify that it does not impose liability on a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.

By increasing the duties of local agencies and officials, this bill would impose a state-mandated local program.

This bill would, on January 1, 2020, repeal the provision establishing the claim resolution process.

This bill would specify that these provisions constitute a matter of statewide concern.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that, if the Commission on State Mandates determines that the bill contains costs mandated by the state, reimbursement for those costs shall be made pursuant to these statutory provisions.

The people of the State of California do enact as follows:

SECTION 1. Section 9204 is added to the Public Contract Code, to read: 9204. (a) The Legislature finds and declares that it is in the best interests of the state and its citizens to ensure that all construction business performed on a public works project in the state that is complete and not in dispute is paid in full and in a timely manner.

(b) Notwithstanding any other law, including, but not limited to, Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2, Chapter 10 (commencing with Section 19100) of Part 2, and Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3, this section shall apply to any claim by a contractor in connection with a public works project.

(c) For purposes of this section:

(1) "Claim" means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:

(A) A time extension, including, without limitation, for relief from damages or penalties for delay assessed by a public entity under a contract for a public works project.

(B) Payment by the public entity of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.

(C) Payment of an amount that is disputed by the public entity.

(2) "Contractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who has entered into a direct contract with a public entity for a public works project.

(3) (A) "Public entity" means, without limitation, except as provided in subparagraph (B), a state agency, department, office, division, bureau, board, or commission, the California State University, the University of California, a city, including a charter city, county, including a charter county, city and county, including a charter city and county, district, special district, public authority, political subdivision, public corporation, or nonprofit transit corporation wholly owned by a public agency and formed to carry out the purposes of the public agency.

(B) "Public entity" shall not include the following:

(i) The Department of Water Resources as to any project under the jurisdiction of that department.

(ii) The Department of Transportation as to any project under the jurisdiction of that department.

(iii) The Department of Parks and Recreation as to any project under the jurisdiction of that department.

(iv) The Department of Corrections and Rehabilitation with respect to any project under its jurisdiction pursuant to Chapter 11 (commencing with Section 7000) of Title 7 of Part 3 of the Penal Code.

(v) The Military Department as to any project under the jurisdiction of that department.

(vi) The Department of General Services as to all other projects.

(vii) The High-Speed Rail Authority.

(4) "Public works project" means the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind.

(5) "Subcontractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who either is in direct contract with a contractor or is a lower tier subcontractor.

(d) (1) (A) Upon receipt of a claim pursuant to this section, the public entity to which the claim applies shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, a public entity and a contractor may, by mutual agreement, extend the time period provided in this subdivision.

(B) The claimant shall furnish reasonable documentation to support the claim.

(C) If the public entity needs approval from its governing body to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the public entity shall have up to three days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion.

(D) Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. If the public entity fails to issue a written statement, paragraph (3) shall apply.

(2)(A) If the claimant disputes the public entity's written response, or if the public entity fails to respond to a claim issued pursuant to this section within the time prescribed, the claimant may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the public entity shall schedule a meet and confer conference within 30 days for settlement of the dispute.

(B) Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the public entity shall provide the claimant a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written

statement. Any disputed portion of the claim, as identified by the contractor in writing, shall be submitted to nonbinding mediation, with the public entity and the claimant sharing the associated costs equally. The public entity and claimant shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this section.

(C) For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

(D) Unless otherwise agreed to by the public entity and the contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.

(E) This section does not preclude a public entity from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this section does not resolve the parties' dispute.

(3) Failure by the public entity to respond to a claim from a contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this section shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of the public entity's failure to have responded to a claim, or its failure to otherwise meet the time requirements of this section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.

(4) Amounts not paid in a timely manner as required by this section shall bear interest at 7 percent per annum.

(5) If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a public entity because privity of contract does not exist, the contractor may present to the public entity a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that the contractor present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the public entity shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the contractor shall notify the subcontractor in writing as to whether the contractor presented the claim to the public entity and, if the original contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

(e) The text of this section or a summary of it shall be set forth in the plans or specifications for any public works project that may give rise to a claim under this section.

(f) A waiver of the rights granted by this section is void and contrary to public policy, provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) a public entity may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of this

section, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in this section.

(g) This section applies to contracts entered into on or after January 1, 2017.

(h) Nothing in this section shall impose liability upon a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.

(i) This section shall remain in effect only until January 1, 2020, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2020, deletes or extends that date.

SEC. 2. The Legislature finds and declares that it is of statewide concern to require a charter city, charter county, or charter city and county to follow a prescribed claims resolution process to ensure there are uniform and equitable procurement practices.

SEC. 3. If the Commission on State Mandates determines that this act contains costs mandated by the state, reimbursement to local agencies and school districts for those costs shall be made pursuant to Part 7(commencing with Section 17500) of Division 4 of Title 2 of the Government Code.

****END OF ATTACHMENT E****

ATTACHMENT F - **PROPRIETARY INFORMATION STATEMENT**

Complete and sign one of the following statements.

No Proprietary Information

Contractor hereby certifies that nothing contained in the submitted Proposal is to be proprietary information.

NAME OF BUSINESS

SIGNATURE

NAME & TITLE, TYPED OR PRINTED

Existence of Proprietary Information.

Contractor desires to claim a privilege against public disclosure for a trade secret or other proprietary information.

NAME OF BUSINESS

SIGNATURE

NAME & TITLE, TYPED OR PRINTED

****END OF ATTACHMENT F***

*

ATTACHMENT G - IRAN CONTRACTING ACT DISCLOSURE FORM

GENERAL REQUIREMENTS

Pursuant to the Iran Contract Act of 2010 (California Public Contract Code, Sections 2202-2208), Proposers are ineligible to propose on projects with a public entity for goods or services of one million dollars (\$1,000,000) or more if the Proposer engages in investment activities in Iran.

Proposers must provide the below disclosure form as a mandatory submittal for all projects in excess of \$1,000,000. The Iran Contracting Act Disclosure Form shall be submitted by all Proposers as a mandatory submittal.

(California Public Contract, Sections 2202-2208)

When responding to a bid or proposal or executing a contract or renewal for a City contract for goods or services of \$1,000,000 or more, a vendor must either: a) certify it is **not** on the current list of persons engaged in investment activities in Iran created by the California Department of General Services (“DGS”) pursuant to Public Contract Code section 2203(b) and is not a financial institution extending twenty million dollars (\$20,000,000) or more in credit to another person, for 45 days or more, if that other person will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS; or b) demonstrate it has been exempted from the certification requirement for that solicitation or contract pursuant to Public Contract Code Section 2203(c) or (d).

To comply with this requirement, please provide your vendor or financial institution name and complete **one** of the options on the following page. Please note: California law establishes penalties for providing false certifications, including civil penalties equal to the greater of \$250,000 or twice the amount of the contract for which the false certification was made; contract termination; and three-year ineligibility to bid on contracts. (Public Contract Code section 2205.)

OPTION #1 – CERTIFICATION

I, the official named below, certify I am duly authorized to execute this certification on behalf of the vendor/financial institution identified below, and the vendor/financial institution identified below is **not** on the current list of persons engaged in investment activities in Iran created by DGS and is not a financial institution extending twenty million (\$20,000,000) or more in credit to another person/vendor, for 45 days or more, if that other person/vendor will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS.

<i>Vendor Name/Financial Institution (Printed)</i>	
<i>By (Authorized Signature)</i>	
<i>Printed Name and Title of Person Signing</i>	
<i>Date Executed</i>	<i>Executed in</i>

OPTION #2 – EXEMPTION

Pursuant to Public Contract Code sections 2203(c) and (d), a public entity may permit a vendor/financial institution engaged in investment activities in Iran, on a case-by-case basis, to be eligible for, or to bid on, submit a proposal for, or enters into or renews, a contract for goods and services.

If you have obtained an exemption from the certification requirement under the Iran Contracting Act, please fill out the information below, and attach documentation demonstrating the exemption approval.

<i>Vendor Name/Financial Institution (Printed)</i>	
<i>By (Authorized Signature)</i>	
<i>Printed Name and Title of Person Signing</i>	
<i>Date Executed</i>	<i>Executed in</i>

****END OF ATTACHMENT G****

ATTACHMENT H - GUARANTEED MAXIMUM PRICE, COST OF WORK AND FEE

West Side Tanks and Pump Station Operations Crew Facility Project

1.0 TOTAL PROPOSED GUARANTEED MAXIMUM PRICE (GMP)

The undersigned proposes and agrees to contract with the City to perform all of the Work for the Design-Build Construction of the **West Side Tanks and Pump Station Operations Crew Facility Project** including subsidiary obligations as defined in the Contract, for a **Guaranteed Maximum Price (“GMP”)** of _____ dollars (\$_____.00), U.S. Currency.

Subject to the provisions of this Proposal and the Contract, the costs and expenses which the Contractor may include in the Cost of Work for purposes of determining that aspect of the Contractor’s compensation are as set forth below. The Contractor’s total compensation, including Fee and allowable mark-ups, shall not exceed the GMP.

The GMP may be adjusted by Change Order in accordance with the Agreement.

2.0 BREAKDOWN OF GUARANTEED MAXIMUM PRICE

Proposer provides the breakdown of the Contractor’s GMP by major items of work as shown in **Table H.1**. The cost breakdown should sum to a total that equals the GMP given in this Attachment H Section 1.0 – Total Proposed Guaranteed Maximum Price. Contractor must include all costs required to complete the work within the scope area items listed.

Table H.1: Breakdown of Guaranteed Maximum Price

#	Scope Area	Cost
1	Architectural and Engineering Design Process (60/90/100/Construction) and Permitting	
2	Mobilization, Demobilization, Admin., Insurance, Bonds, and Permits	
3	Sheeting/Shoring/bracing per Labor Code Section 6707 (From Table H.5)	
4	Storm Water Pollution Prevention Plan Implementation	
5	Grading, Paving and Landscaping	
6	Underground Utilities	
7	Building Construction (Includes building structure, roof, insulation, interior framing, CMU construction, etc.)	
8	Interior Finishes (Includes paint, flooring, suspended ceiling, cabinetry, lockers, benches, etc.)	
9	Plumbing (including all fixtures)	
10	HVAC	

#	Scope Area	Cost
11	Fire Protection	
12	Electrical	
13	Data	
14	Miscellaneous items for a complete project not listed above	
	Total GMP:	

3.0 Schedule of Values

Contractor will be required to submit a complete schedule of values upon selection to facilitate contract negotiation within ten (10) days of notice.

- A. The Schedule of values must include a detailed breakdown of quantities and prices of work and materials required to perform and complete the contract, including Contractor Allowance Items.
- B. The Schedule of Values shall provide a cost breakdown for each element detailed in the approved Construction Schedule. The total of the price breakdown must agree with the GMP. The elements listed and price breakdown shall not be front end loaded or unbalanced, shall be subject to adjustment between the ENGINEER and the CONTRACTOR, and will be used as a basis for progress payments.
- C. Acceptance of the Schedule of values shall not relieve the CONTRACTOR of the responsibility of performing all the work needed to complete the project at the GMP.

Volume 2 – Agreement incorporates additional details and definitions that pertain to the Guaranteed Maximum Price, Fee, and Cost of Work.

4.0 COST OF THE WORK

The term "Cost of Work" means the sum of all costs necessarily incurred and paid by the Contractor for labor, materials, equipment, subcontractors, special services, bonds, liability, workers' compensation and errors and omissions insurance, direct job overhead expenses, taxes and other necessary expenses incurred in the performance of the work, that do not exceed the GMP.

4.1 Hourly Field Labor

The cost of hourly field craft labor for workers used in actual and direct performance of the work by the Contractor will be the sum of the following:

- A. The actual wages paid plus any employer payments to, or on behalf of workers for fringe benefits including health and welfare, pension, vacation and similar purposes.
- B. All payments imposed by State and Federal Laws including, but not limited to, workers' compensation insurance, and social security payments. The rates used for workers'

compensation insurance shall be actual rates paid by the Contractor for each specific craft and broken down by wage rate if applicable to that craft.

- C. Actual General Liability insurance burden, if applied to Contractor's payroll.

4.2 Hourly Field Craft Labor Rates Limitations

The cost of hourly field craft labor for workers used in actual and direct performance of the work by the Contractor will be limited by the following:

- A. Except as otherwise may be agreed to in writing by the City, the actual wages and benefits paid for manual classifications of Contractor's on-site workers will not, in the aggregate, be greater than the current applicable wage for each classification as established by the State of California Department of Industrial Relations.
- B. Specifically prohibited from the labor costs are other payroll burden factors such as small tools (as defined in Attachment H Section 4.6-Construction Equipment), bonuses of any kind and safety incentives.
- C. The Hourly Field Labor Rates will remain unchanged for the duration of the Project unless changed in accordance with an Industry Master Labor Agreement, if the Contractor is signatory to any such Agreements, changes by the Department of Industrial Relations, or changes made company-wide in the Contractor's organization for a craft classification in the Project's geographic area. All changes to these hourly field labor rates must be submitted by the Contractor to the City for review and approval prior to billing the City for work performed with new hourly labor rates. Increase in labor rates is not an allowable increase in the GMP.

4.3 Contractor's Hourly Field Craft Labor Rates

- A. Based on the requirements and limitations of Sections; 4.1-Hourly Field Labor, and 4.2-Hourly Field Craft Labor Rates Limitations, the undersigned Proposer provides their hourly field labor rates set forth in **Table H.2** for all labor employed by Contractor used in the performance all of the Work for the West Side Tanks and Pump Station Operations Crew Facility Project.
- B. The proposer is to list the crafts and classifications, up to foreman level, they anticipate using in the performance of the work when completing this **Table H.2**. Should the contractor ultimately use a craft classification not listed in table below, the contractor will submit backup cost information for that craft classification to the city.
- C. Contractor shall include the actual travel and/or subsistence costs, if any, as a separate line item under the labor cost category when submitting progress billings to the City. Except as otherwise may be agreed to in writing by the City, the actual travel and/or subsistence costs will not be more than established in an applicable Master Labor Agreement or the State of California Department of Industrial Relations.

Table H.2: Hourly Rates. **Contractor Name:** _____

Craft	Classification	Base Wage	Fringes Plus Vacation	P/R Tax & Insurance	Straight Time Hourly Rate	Overtime Daily /Saturday Rate (1.5 X)	Overtime Sunday /Holiday Rate (2 X)

4.4 Management and Administrative Labor

- A. Wages and Salaries of Contractor's management and administrative personnel assigned to this Project to directly manage and administer the Work on-site shall be included in Table H.3. These positions may include a Principal-in-Charge or Project Director, On-site Project Manager, On-site Project Engineer, On-site Superintendents listed by trade or title, General Foremen, On-site Office Manager, Yardman/Delivery Driver and On-site Administrative Assistant. These positions will be paid in accordance with the following **Table H.3** for the entire duration of the Project and include all labor burden, overhead and profit mark-ups. The Principal-in-Charge can only charge for hours worked at the Site for this Project and can also charge for attendance of on-site Project Meetings. Any off-site Principal-in-Charge time spent on this Project shall be included in the Contractor's Fee Markups Schedule for the Project under subsection 10 below.
- B. The Contractor is allowed to charge up to a maximum of fifty (50) hours per week for each full-time assigned supervisory and administrative personnel even if an employee works more than fifty (50) hours in a week. The Contractor can only charge for supervisory and administrative hours if they also pay those same hours to the employee that worked up to fifty (50) hours in any given week. The Contractor is not allowed to charge for any supervisory and administrative personnel hours not paid to any employee.

Other company personnel such as Corporate Officers and Division/Area Managers (unless either are designated as the Principle-in-Charge), Quality Control Managers, Safety Officers, Project Schedulers, Project Coordinators, Estimators, Business Supervisors and Accountants are not allowed to charge any hours to the Project. The Proposer should include the anticipated cost of such personnel in the Contractor's Fee Schedule for the Project under the Contractor's Fee Markups Subsection 10 below.

- C. Based on the above requirements for Management and Administrative Labor, the undersigned Proposer proposes the rates set forth in **Table H.3** for all Management and Administrative labor employed by Contractor used in the performance all of the Work for the West Side Tanks and Pump Station Operations Crew Facility Project.

Table H.3: On-Site Management and Administrative Labor Rates

Management and Administrative Position	Hourly Rate
	\$
	\$
	\$
	\$

4.5 Materials

The cost of all materials, including all factory testing, freight and delivery costs of materials, used in performing the work will be the cost to the Contractor from the supplier thereof. All discounts for early payment shall accrue to the Contractor unless the City's payment to Contractor is paid to Contractor before discount payment is due in which case discount savings will be fully credited to the City on next progress billing. All rebates and all returns from the sale of surplus materials shall be credited to the Cost of the Work. Any rebates from future use of re-usable materials, such as concrete forming materials, shall be negotiated between the Contractor and City as materials are evaluated for possible Contractor re-use on other projects.

4.6 Construction Equipment

- A. The undersigned Proposer proposes the initial Contractor Owned Equipment Rates set forth in **Table H.4** for all Contractor Owned Equipment used in the performance all of the Design-Build work for the West Side Tanks and Pump Station Operations Crew Facility Project. The rates found in this table for equipment owned by the Contractor will, in all cases, be understood to cover all fuel, supplies, repairs, maintenance, insurance, ownership, and incidental costs and no further allowances will be made for those items, unless specifically approved in writing by the City.
- B. Equipment owned by Contractor will only be paid for the actual time equipment is used in performing work and will be rounded to the closest full hour if paid by an hourly rate.
- C. Compensation for idle time of equipment through delays caused by the City will be made consistent with Article 9-Changes in the Work in the Design-Assist Agreement, provided as Volume 2 to the Contract Documents; however, that the Owned Equipment Rates set forth below in **Table H.4** will apply.
- D. All changes to these equipment rates must be submitted by the Contractor to the City for review and approval prior to billing the City for work performed with new hourly labor rates. Approved changes to equipment rates are not an allowable increase in the GMP.
- E. The Proposer is to list the contractor owned construction equipment they anticipate using in the performance of the work when completing this table. Should the contractor ultimately use equipment not listed in table below, the contractor will submit backup cost information for that equipment item to the City for approval.
- F. Equipment not owned by Contractor which is rented by Contractor and used in performing work will be paid by the City based on actual invoiced cost to Contractor, plus actual fuel/lube costs, provided the rental rate is not in excess of rental rates established by distributors or equipment rental companies in the local area. Owner-operated equipment will also be paid by the City based on actual invoiced cost to Contractor provided the City does not deem any charges excessive. All transportation costs to move equipment on and off the Work will be paid by the City up to a maximum of four (4) hours total travel time each way.
- G. For equipment with a value less than \$500.00: The Contractor will be paid an amount of three percent (3%) of total hourly field labor costs as defined in paragraph 4.3-Contractor's Hourly Field Craft Labor Rates above to cover the cost of small tools and safety supplies for work directly performed at the Site.

Table H.4: Contractor Owned Equipment. Contractor Name: _____

Equipment Description	Hourly Rate	Daily Rate

Attach additional sheets as needed.

4.7 Subcontractors and Sub Tier Subcontractors

The Contractor will be paid for all work performed by a subcontractor at the actual invoiced amount. Should a Subcontractor be required to perform extra work caused by a contract change order, the subcontractor will be allowed a mark-up as provided for in Volume 2 of the Contract Documents - Agreement..

4.8 Bonds and Insurance

The Contractor will be paid the actual cost for the 100% payment bond and 100% performance bond, as well as the cost of all insurance costs required for the Work (such costs are deemed a Cost of Work and are therefore contained within the GMP). Additional details regarding requirements for Bonds and

Insurance are included in Volume 2 of the Contract Documents – Agreement Article 9 – Insurance and Bonds; Indemnification.

4.9 Direct Job Overhead Expenses

The Contractor will be paid for the actual cost of job overhead expenses which may include such expenses as office trailers, storage vans, temporary fencing/security, toilets, dumpsters, waste removal, water, utility power, jobsite landline telephone costs, jobsite internet provider costs, reasonable room and board subsistence for employees who live farther than 40 miles from the Work Site or as required by California prevailing wage laws, copy machine, water cooler and any office furniture required for the Work needs, including mobilization and demobilization of same. There will be no warranty reserve.

4.10 Taxes

The Contractor acknowledges it will be liable for all sales, use, gross receipts or other taxes, tariffs or duties related to the Work and that these taxes and tariffs are included in the GMP. All invoices to the City will include the applicable taxes and tariffs that are the Contractor's responsibility and will not be shown as a separate line item on the Contractor's invoice.

5.0 CALIFORNIA LABOR CODE SECTION 6707

Pursuant to the provisions of California Labor Code Section 6707, each Proposal submitted in response to this RFP shall contain, as a separate cost item, adequate sheeting, shoring, and bracing, or equivalent method, for the protection of life or limb in trenches and open excavation, exceeding five (5) feet, which shall conform to applicable safety orders. By entering an amount for this cost item below, the Proposer warrants that its action does not convey tort liability to the City, the Engineer, the Construction Manager, the Funding Agencies and their respective officers, employees, agents, and subconsultants.

Table H.5: Total Amount for Worker Protection for CA Labor Code Section 6707

Protection in trenches and Open Excavations - Description	Total Cost
	\$

6.0 SPECIAL SERVICES

Special work or services are defined as that work not included in this agreement and characterized by extraordinary complexity, sophistication, or innovation or a combination of the foregoing attributes which are unique to the construction industry. These special services may include such services as registered land surveyor, licensed geotechnical engineer, licensed structural engineer, special testing or laboratory work. The Contractor will be paid for special services based on actual invoiced cost, provided the City does not determine any special services costs to be excessive.

8.0 PROPOSED SHARED SAVINGS

In the event the final Cost of Work, plus the Proposed Total Fee Mark-up for General Overhead and Profit, is less than the GMP, as adjusted by the Change Orders, the undersigned Proposer proposes a sharing of the savings as follows.

_____ % of the savings to the City

_____ % of the savings to the Contractor

Percent of Savings to the contractor must be a minimum of 20% plus the Total Fee Markup percentage for General Overhead and Profit as shown in the Section 1 of this Attachment H.

“GMP” Savings shall mean the positive difference, if any, when the actual Total Cost of the Work and Fee is subtracted from the GMP; provided, however, that unused Allowance monies, if any, shall not be subject to shared savings.

Should there be savings shared, City will pay the Contractor its share of the savings at the same time as the final retention payment.

9.0 ITEMS NOT INCLUDED IN THE COST OF WORK:

- A. Salaries and other compensation of Contractor's personnel stationed at Contractor's principal office or offices other than the Site, except as specifically provided in this Attachment H Section 4.4 – Management and Administrative Labor.
- B. Expenses of Contractor's principal office and offices, other than the Site office.
- C. Contractor's General Overhead and Expenses, except as specifically provided for in the Contract Documents.
- D. The capital expenses of Contractor, including interest on capital employed for the Work and charges to Contractor for delinquent payments.
- E. Hours in excess of fifty (50) hours per week for each full-time assigned supervisory and administrative personnel even if a supervisory or administrative employee works more than fifty (50) hours in a week.
- F. Costs due to correction of Defective Work, disposal of materials or equipment wrongfully supplied, and making good any damage to property.
- G. Costs that would cause the GMP to be exceeded.
- H. Any costs incurred after Owner's Final Acceptance of the Project.

10.0 CONTRACTOR'S FEE MARKUPS

- A. The undersigned Proposer proposes the following mark-up fees for general overhead and profit in the performance all of the Design-Build work for the West Side Tanks and Pump Station Facility Operations Crew Facility Project as shown in **Table H.7**.


Table H.7: Contractor's Fee Mark-up Schedule

Attachment H Section	Cost Category	Fee Mark-Ups For General Overhead And Profit
4.1-4.3	Hourly Field Labor	%
4.4	Management and Administrative Labor	Included in hourly rates
4.5	Materials	%
4.6	Construction Equipment	%
4.7	Subcontractors	%
4.8	Bonds and Insurance	%
4.9	Direct Job Overhead Expenses	%
4.10	Taxes	%

- B. Based on the above percentages for each cost category, the Proposed Total Fee Markup-for General Overhead and Profit percentage included in the Contractor's GMP is ____%.

****END OF ATTACHMENT H****

ATTACHMENT I - PROPOSAL ENVELOPE LABEL

SEALED PROPOSAL	
 CITY OF ROSEVILLE CALIFORNIA	IMPORTANT NOTICE TO PROPOSER
<p>The envelope containing your proposal MUST have:</p> <ol style="list-style-type: none">1. Your name and address in the UPPER left corner.2. This label on the LOWER left corner.	
<div style="border: 1px solid black; padding: 10px; min-height: 150px;"><p>RFP NAME _____</p><p>PROPOSAL DUE DATE _____</p><p>PROPOSAL DUE TIME _____</p><p>_____ A.M. _____ P.M.</p><p>PROPOSAL FOR _____</p></div>	
TIME SENSITIVE. DELIVER TO CITY CLERK IMMEDIATELY.	

****END OF ATTACHMENT I****

EXHIBIT H

VOLUME 3 OF 4: CONCEPT TECHNICAL SPECIFICATIONS

(DIVISIONS 1-16)



**CONTRACT DOCUMENTS FOR
DESIGN-BUILD CONSTRUCTION OF
WEST SIDE TANKS AND PUMP STATION
OPERATIONS CREW FACILITY
(RFP # 08-089)**

**VOLUME 3 OF 4:
CONCEPT TECHNICAL SPECIFICATIONS
(DIVISIONS 1-16)**

April 1, 2021



WATERWORKS
E N G I N E E R S

CONTACT:

Mike Fisher
(916) 780-2888 Extension 401

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SECTION 01000
PROJECT DESCRIPTION

PART 1 - GENERAL

1.1 INTRODUCTION

- A. The purpose of these Specifications is to provide descriptions of the project elements and associated design-build services of the Operations Crew Facility project. The DB entity is responsible for providing the final design documents for the project (sealed and signed by California professionally licensed engineers) in accordance with these Specifications and the Project Drawings.

1.2 DESCRIPTION OF PROPOSED CONSTRUCTION:

- A. This project is required to support utility operations for the City of Roseville by providing an Operations Crew Facility on the West Side Tank and Pump Station site.
- B. The Operations Crew Facility will include the following facilities:
1. Offices
 2. Kitchen
 3. Conference Room
 4. Bathrooms
 5. Showers and locker rooms
 6. Shop
- C. Total minimum square footage: 75' x 45' (3,345 sf), nominal total building size, split equally between office and shop.
- D. The Operations Crew Facility will be procured as a design-build project, with site/civil, yard piping, electrical, security, etc. coordinated with the West Side Tank and Pump Station project.

1.3 REFERENCE DOCUMENTS

- A. The following documents shall be referenced by the Design-Build contractor to complete the facility design documents:
1. Geotechnical Report – Bajada Geosciences, Inc, dated January 9, 2019
 2. Survey Files
 3. City of Roseville Process Control Standards
 4. CEQA Documents
 5. West Side Tank and Pump Station Final Design Documents

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- B. Contractor shall be required to provide attribute data for all assets provided under this project. The attribute data shall include cost for each asset and specific mechanical and or electrical properties; averaging approximately 12 parameters per asset.

1.4 BASIS OF DESIGN

- A. Site/Yard Piping General Arrangement:
 - 1. No buildings were identified to be demolished as part of this project.
 - 2. General civil design has been provided. See drawings for more detailed information. Construction materials are to conform to Technical Specifications.
- B. Structural Design Criteria:
 - 1. Building construction will be a one-story, steel frame, steel-walled building.
- C. Architectural Design Requirements:
 - 1. Ceiling: suspended ceiling. material to be approved by owner
 - 2. Walls: metal stud wall framing with gypsum wallboard
 - 3. Paint: color to be approved by owner
 - 4. Glazing: details to be approved by owner
 - 5. Bathroom and kitchen floor: resilient tile flooring. material to be approved by owner
 - 6. Shop floor: concrete slab with smooth finish. no floor drains
 - 7. All other floor surfaces: resilient flooring. material to be approved by owner
- D. Electrical System Requirements:
 - 1. Provide interior lighting plan
 - 2. Provide security for entry points and alarm system
 - 3. Provide connections for electrical appliances as listed in Fixture Schedule on drawings
- E. Communication System Requirements:
 - 1. Provide connections for phone, internet, and cable.
 - 2. Connections shall be provided in locations as approved by owner.
- F. HVAC General Design Criteria and Requirements
 - 1. Heating and air conditioning will be provided by self-contained systems.
 - 2. Systems shall be designed for a lifetime of 20 years.
 - 3. Shop and Administration rooms will have different HVAC requirements as defined on the drawings.
- G. Special Inspection Requirements:
 - 1. Follow all special inspection requirements as described in the Technical Specifications.

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- H. Deferred Submittal Requirements: Deferred Submittals will be provided by the DB contractor and will include:
1. Design Drawings:
 - a. Architectural
 - b. Structural
 - c. Mechanical
 - d. Electrical
 2. Structural calculations for building framing, including roof framing
 3. HVAC and lighting detailed design and Title 24 calculations
 4. Plumbing piping plan and fixture schedule
 5. Fire suppression system calculations and plan
 6. Furnishing schedule
 7. Finish schedule and finish selections
 8. Door and window schedule
- I. Work Area Limits:
1. Work area limits are shown in the RFP drawings. The DB Entity shall not conduct activity in, or store equipment in areas that are not designated as either the work area limits, laydown area, or staging area.
 2. Equipment may be stored overnight in the work area. The DB entity may provide temporary locks and site security system in order to protect stored items. Storage and construction shall remain within the site boundaries.

++END OF SECTION++

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SECTION 01130

SPECIAL PROJECT CONSTRAINTS

PART 1 - GENERAL

1.1 LIMIT OF CONSTRUCTION ACTIVITIES ON WORK SITE

A. Traffic Control:

1. During non-work hours, the CONTRACTOR shall keep all lanes of traffic open and clear. All trenches shall be backfilled or covered with suitable steel plates and open to traffic.
2. No equipment, construction material or excavated material that will interfere with traffic shall be stored on streets or roadways at any time.
3. The CONTRACTOR's available work space is defined on the drawings. No access or material storage shall be allowed outside of the limits shown on the drawings, unless discussed with and confirmed with the OWNER.

1.2 SEQUENCE OF WORK

A. General:

1. The CONTRACTOR shall schedule and sequence their work in order to complete the Work by the specified completion date.
2. The OWNER's water distribution system must remain operational at all times.
3. Re-vegetation of graded areas shall take place as quickly as possible as weather permits.

1.3 PROJECT CONSTRAINTS

A. Maintenance of OWNER's Operations:

1. Constraints listed herein involve limits on activities during construction. These limits relate to the critical nature of the existing water system.
2. Continuous operation of OWNER's facilities is of critical importance. Schedule and conduct activities to enable existing facilities to operate continuously, unless otherwise specified.
3. Work Plan:
 - a. The CONTRACTOR shall submit a detailed Work Plan and time schedule for all construction activities that will make it necessary to remove a tank, pipeline, electrical circuit, equipment, structure, road or other facilities from service, including the critical outages identified herein.
 - b. The Work Plan shall, at a minimum, identifying:
 - 1) the date and time when each activity will occur;
 - 2) what equipment will be present including standby equipment;
 - 3) what assistance will be required by OWNER's operating personnel;
 - 4) an emergency backup plan identifying what action will be taken if Work cannot be completed within the allotted time; and
 - 5) what individual will be in charge of the activity.
 - c. Submit Work Plan 10 days prior to the scheduled activity.

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4. Perform Work continuously during critical connections and changeovers, and as required to prevent interruption of OWNER's operations.
 5. Shutdowns:
 - a. Coordinate proposed Work with OWNER and facility operations personnel before affecting unit shutdowns. The CONTRACTOR shall provide written confirmation of the shutdown date and time two (2) working days prior to the actual shutdown.
 - b. Under no circumstances shall the CONTRACTOR cease Work at the end of a normal working day or at the end of a working week if such actions may inadvertently cause a cessation of any facility operating process, in which case, remain onsite until necessary repairs are complete.
 6. Do not close lines, open valves or gates, shut down equipment, or take other action which would affect the operation of existing systems, except as specifically required by the Contract Documents and after approval of OWNER.
 7. Do not proceed with Work affecting a facility's operation without obtaining OWNER's advance approval of the need for and duration of such Work.
- B. Relocation of Existing Facilities:
1. During construction, it is expected that minor relocations of Work will be necessary.
 2. Provide complete relocation of existing structures and Underground Facilities, including piping, utilities, equipment, structures, electrical conduit wiring, electrical duct bank, and other necessary items.
 3. Use only new materials for relocated facility. Match materials of existing facility, unless otherwise shown or specified.
 4. Perform relocations to minimize downtime of existing facilities.
 5. Install new portions of existing facilities in their relocated position prior to removal of existing facilities, unless otherwise accepted by OWNER.
- C. Overtime:
1. Conduct Work outside regular working hours on prior written consent of OWNER to meet Project schedule and avoid undesirable conditions.
 2. All overtime Work by the CONTRACTOR necessary to conform to the requirements of this Section and related Sections shall be performed by the CONTRACTOR, at no cost to the OWNER and shall be performed in accordance with the General Conditions. The CONTRACTOR shall make no claims for extra compensation as a result thereof.

1.4 SCHEDULED SHUTDOWNS AND CONSTRUCTION SEQUENCING CONSTRAINTS

- A. Scheduled Shutdowns:
1. All Work requiring the OWNER's facilities to be out-of-service shall be performed during the scheduled shutdowns shown.
 2. The OWNER's staff will continue to perform administrative, operation and maintenance functions during shutdowns.
- B. Critical work sequencing constraints are described in this paragraph. Work not specifically covered in this Section may, in general, be done anytime during the contract period.
- C. Key work sequencing constraints are as follows:
1. Electrical Service tie in
 2. Water Service tie in

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PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

+ + END OF SECTION + +

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SECTION 01140

WATER POLLUTION CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope:
1. Provide all labor, materials and resources to fully comply with applicable local, State and Federal regulations and requirements for water pollution prevention and control.
 2. The preliminary SWPPP has been prepared and posted to the City of Roseville's Public Purchase website. It is made available for the convenience of the CONTRACTOR. The CONTRACTOR shall develop, update, revise and finalize as needed to comply with all requirements.
 3. CONTRACTOR to comply with the City's municipal separate storm sewer system (MS4) Stormwater Management Program.

1.2 SUBMITTALS

- A. Stormwater Pollution Prevention Plan (SWPPP) Information:
1. Within 10 business days of the contract being signed, the CONTRACTOR shall provide the following information:
 - a. Provide project SWPPP to comply with Construction General Permit Requirements and all other requirements of the Contract Documents;
 - b. Provide the Prime CONTRACTOR's company name, address, contact person (with office phone and emergency/cell phone) for Sections 100.1 and 500.1;
 - c. Provide the Qualified SWPPP Practitioner's (QSP) name, company name, address, office phone and emergency/cell phone for Section 500.1. Provide a copy of their current QSP certification from California Stormwater Quality Association (CASQA) including the license expiration date. If a SMARTs certified QSD is being used then provide documentation from SMARTs;
 - d. Provide a Subcontractor List (with names, addresses, phone numbers, areas of responsibility, etc.);
 - e. Provide a Project Schedule.
 2. Provide Storm Water Quality Construction Site Inspection Checklist to be used by CONTRACTOR during construction.

1.3 REGULATORY REQUIREMENTS

- A. Laws and Regulations:
1. The CONTRACTOR is responsible for complying with the Clean Water Act Section 401, Stormwater Pollution Prevention Plan (SWPPP) for all anticipated construction activities.
 2. The OWNER shall submit a Notice of Intent (NOI) to the State Water Resources Control Board to obtain coverage under the National Pollution Discharge Elimination System (NPDES) and pay all filing fees associated with the NOI.
 3. The Contractor shall perform construction operations to comply, and ensure subcontractors comply, with applicable Federal, State, and local laws, orders, regulations and water quality standards concerning control and abatement of water

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pollution, and terms and conditions of applicable permits issued by permit issuing authority. If conflict occurs between Federal, State, and local laws, regulations, and requirements, the most stringent shall apply.

4. The CONTRACTOR shall know and fully comply with applicable provisions of the Permits and all modifications thereto, and Federal, State, and local regulations and requirements that govern the CONTRACTOR's operations and stormwater and non-stormwater discharges from both the project site and areas of disturbance outside the project limits during construction.

B. Permit

1. As part of the water pollution control work, a Storm Water Pollution Prevention Plan (SWPPP) is required for this contract. The SWPPP and amendments shall be considered to fulfill the provisions in this section, "Water Pollution Control," of the Standard Specifications for development and submittal of a Water Pollution Control Program.
2. Approval shall not constitute a finding that the SWPPP complies with applicable requirements of the Permit, the Manuals and applicable Federal, State and local laws, regulations, permits, and requirements, nor does approval supersede the requirements and provisions of these special provisions, the Permit, or any other federal, state, or local regulations or permit in the event of a conflict.
3. The SWPPP shall identify the Qualified SWPPP Practitioner (QSP) as required by the Permit.
4. A Preliminary SWPPP will be provided to the CONTRACTOR. The CONTRACTOR will be required to revise and finalize the SWPPP as needed to comply with Construction General Permit Requirements and all other pertinent laws, rules, and regulations. Only a Qualified SWPPP Developer (QSD) is allowed to revise or amend the SWPPP. All revisions and Amendments must be accepted by Legally Responsible Person (LRP). The CONTRACTOR shall provide all Permit Registration Documents (PRDs). PRDs consist of:
 - a. Notice of Intent (NOI)
 - b. Risk assessment
 - c. Site Map
 - d. Storm Water Pollution Prevention Plan (SWPPP)
 - e. Annual Fee
 - f. Signed Certification Statement
 - g. Notice of termination (NOT)
 - h. Changes of Termination
 - i. Annual Reporting
 - j. Other Compliance Documents
5. The OWNER will submit the PRDs electronically to the State Water Resources Control Board (State) website, entitled Stormwater Multi Application Reporting and Tracking System (SMARTS). For the purposes of the Permit, the City of Roseville is the owner of the Permit and is the Legally Responsible Person (LRP). The LRP will retain authority for assigning the Approved Signatories and Data Submitters in SMARTS. The CONTRACTOR's QSP and/or QSD will be designated as Data Submitters in SMARTS, including the responsibilities thereof, as required by the Permit. LRP will submit the appropriate fee to the State and obtain a certified NOI and Waste Discharge Identification Number (WDID) for the project
6. No ground disturbing work shall occur until the PRD and SWPPP have been uploaded to the State website. The ENGINEER will notify the CONTRACTOR in writing upon completion of the document upload which will allow ground disturbing work to begin.

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The SWPPP shall apply to the areas within or immediately outside of the right-of-way that are directly related to all construction activities including, but not limited to, material borrow or disposal areas, staging areas, storage yards, and access roads, including those on-site areas developed by the CONTRACTOR with third parties for use during the project.

7. The CONTRACTOR shall develop a Water Pollution Control Schedule that describes the timing of grading or other work activities that could affect water pollution. The Water Pollution Control Schedule shall be updated by the CONTRACTOR to reflect changes in the CONTRACTOR's operations that would affect the necessary implementation of water pollution control practices.
8. Water pollution control practices include the "Minimum Requirements" and other CONTRACTOR-selected water pollution control practices from the "SWPPP" and the "Project-Specific Minimum Requirements" identified in the Water Pollution Control Cost Break-Down of this section. Listing of these minimum requirements shall not relieve the Contractor of meeting all permit requirements.
9. The requirements described herein are considered minimum requirements. Additional BMPs may be required to meet the requirements set forth in the SWPPP and the Permit. All BMPs shall be designed, installed, maintained, and otherwise managed pursuant to the provisions set forth in the most stringent and most recent of the following: the City of Roseville Stormwater Quality BMP Guidance Manual for Construction, West Placer Storm Water Quality Design Manual, California Department of Transportation (Caltrans) Stormwater Quality Handbook - Construction Site BMP Manual or the California Stormwater Quality Association (CASQA) - California Stormwater BMP Handbook for Construction. The CONTRACTOR shall prepare an amendment to the SWPPP as required by the Permit, such as when there is a change in construction activities or operations which may affect the discharge of pollutants to surface waters, ground waters, storm drain systems; when the CONTRACTOR's activities or operations violate a condition of the Permit; when there is a change in the schedule that affects the discharge of pollutants; when there is a change in the schedule that affects the Risk Level required by the Permit; or when directed by the ENGINEER. Amendments shall identify additional water pollution control practices or revised operations, including those areas or operations not identified in the initially approved SWPPP. Amendments to the SWPPP shall be prepared and submitted for review and approval within the time required by the Permit and approved by the ENGINEER, but in no case longer than the time specified for the initial submittal and review of the SWPPP. Approved amendments shall be submitted electronically to the ENGINEER within 24 hours of approval. At a minimum, the SWPPP shall be amended annually as required by the Permit, and an electronic copy submitted to the ENGINEER.
10. The CONTRACTOR shall keep one copy of the approved SWPPP and approved amendments at the project site. The SWPPP shall be made available upon request by a representative of the Regional Water Quality Control Board, State Water Resources Control Board, United States Environmental Protection Agency, or the local storm water management agency. Requests by the public shall be directed to the ENGINEER.
11. The CONTRACTOR shall notify the ENGINEER immediately upon request from the regulatory agencies to enter, inspect, sample, monitor, or otherwise access the project site or the CONTRACTOR's records pertaining to water pollution control work.
12. Cost Break-down

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- a. The CONTRACTOR shall include a Water Pollution Control Cost Break-Down which itemizes the water pollution control work portion of the GMP. The CONTRACTOR shall use the Water Pollution Control Cost Break-Down provided in this section (See attached supplement) as the basis for the cost break-down submitted with the SWPPP information. The CONTRACTOR shall use the Water Pollution Control Cost Break-Down to identify items, quantities and non-adjustable values for water pollution control work, excluding water pollution control practices for which are separated in the Schedule of Values. The CONTRACTOR shall be responsible for the accuracy of the quantities and non-adjustable values used in the cost break-down submitted with the SWPPP. Partial payment for the item of water pollution control will not be made until the Water Pollution Control Cost Break-Down is approved by the ENGINEER.
- b. Line items indicated in the Water Pollution Control Cost Break-Down in this section with a specified Estimated Quantity shall be considered "Project-Specific Minimum Requirements." The CONTRACTOR shall incorporate Project-Specific Minimum Requirements with CONTRACTOR-designated quantities and values into the Water Pollution Control Cost Break-Down submitted with the SWPPP.
- c. Line items indicated in the Water Pollution Control Cost Break-Down in this section without a specified Estimated Quantity shall be considered by the CONTRACTOR for selection to meet the applicable requirements for water pollution control work required in the SWPPP. In the Water Pollution Control Cost Break-Down submitted with the SWPPP, the CONTRACTOR shall list only those water pollution control practices selected for the project, including quantities and non-adjustable values required to complete the work for those items.
- d. The sum of the amounts for the items of work listed in the Water Pollution Control Cost Break-Down shall be equal to the value for water pollution control include in the GMP. Overhead and profit shall be included in the individual items listed in the cost break-down.
- e. No adjustment in compensation will be made to the GMP for water pollution control due to differences between the quantities shown in the approved cost break-down and the quantities required to complete the work as shown on the approved SWPPP. No adjustment in compensation will be made for ordered changes to correct SWPPP work resulting from the CONTRACTOR's own operations or from the CONTRACTOR's negligence.
- f. The approved cost break-down will be used to determine partial payments during the progress of the work and as the basis for calculating the adjustment in compensation for the item of water pollution control due to increases or decreases of quantities ordered by the ENGINEER. When an ordered change increases or decreases the quantities of an approved cost break-down item, the adjustment in compensation will be determined in the same manner specified for increases and decreases in the quantity of a contract item of work in conformance with the Agreement. If an ordered change requires a new item which is not on the approved cost break-down, the adjustment in compensation will be determined in the same manner specified for Changes In the Work in the Agreement.

PART 2 - PRODUCTS

- A. Provide all materials in accordance with provisions set forth in the most stringent and most recent of the following: City of Roseville Stormwater Quality BMP Guidance Manual

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for Construction, West Placer Storm Water Quality Design Manual, California Department of Transportation (Caltrans) Stormwater Quality Handbook, Construction Site BMP Manual or of the California Stormwater Quality Association (CASQA), California Stormwater BMP Handbook for Construction.

- B. Only biodegradable wattles containing no plastic can remain on a site when applying for a Notice of Termination (NOT). Wattles containing plastic netting (including plastic specified as biodegradable) are not permitted on this project.

PART 3 - EXECUTION

3.1 THIRD PARTY SWPPP OVERSIGHT AND PRACTITIONER SUBCONSULTANT

- A. CONTRACTOR shall retain a third-party firm to provide SWPPP oversight and QSP services including:
 - 1. Print out daily weather report
 - 2. Read and record rain gauge daily
 - 3. Prepare REAPs
 - 4. Perform all inspections (pre-and post-storm, quarterly, non-stormwater inspections)
 - 5. Write inspection reports to document inspections
 - 6. Prepare annual report for OWNER to certify
 - 7. Perform and document all sampling (stormwater, non-stormwater, and discharge)
 - a. Sampling must occur every business day that runoff or discharges are leaving the site
 - 8. Provide staff trainings as needed and keep records of trainings
 - 9. Organize all paperwork for project closeout
 - 10. Maintain the pH meter and turbidimeter, perform calibration of equipment and provide calibration records.
- B. All weather reports, rain gauge log, inspection reports, sampling records, REAPs, and training records shall be maintained daily in the SWPPP binder at the project site.
- C. SWPPP subconsultant shall be a QSP and responsible for development and maintenance of SWPPP throughout construction and post-construction until acceptance of NOT by Board.
- D. The SWPPP subconsultant shall be registered on SMARTS and linked to the project as Data Submitters.
- E. CONTRACTOR shall be responsible for all means and methods related to implementation of SWPPP throughout construction and post-construction until acceptance of NOT by Board.
- F. SWPPP subconsultant shall attend all weekly construction progress meetings in person.
- G. SWPPP subconsultant shall prepare and submit on a monthly basis a certification that the site is in compliance with all SWPPP requirements and all documentation related to the site has been prepared and submitted in accordance with the General Permit Requirements. Certification shall be made by signing the certification form and submitting it to the CONTRACTOR, with a copy sent to the OWNER.

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- H. SWPPP subconsultant shall be responsible for the following:
 - 1. Prepare ad hoc reports and exceedance reports as needed;
 - 2. Submit such reports to SMARTS, as needed; and,
 - 3. Prepare and upload on SMARTS change of information applications, annual reports and Notice of Termination, as needed.
- I. Signed certification shall be submitted with all Monthly Pay Requests by CONTRACTOR. Failure to submit Certification signed by SWPPP subconsultant shall result in rejection of monthly pay request.

3.2 IMPLEMENTATION

- A. If there is a discrepancy between the project Permit and these special provisions, the Permit language shall supersede. If there is a discrepancy between the SWPPP and these special provisions, the special provisions shall supersede. Unless otherwise specified, upon approval of the SWPPP, the CONTRACTOR shall be responsible throughout the duration of the project for installing, constructing, inspecting, maintaining, replacing, removing, and disposing of temporary water pollution control practices, and installing, constructing, inspecting, maintaining, and replacing permanent water pollution control practices specified in the SWPPP and in the amendments. The duration of work includes that time period between initial mobilization to the site and acceptance of the work. Unless otherwise directed by the ENGINEER, the CONTRACTOR's responsibility for SWPPP implementation shall continue throughout temporary suspensions of work. Requirements for installation, construction, inspection, maintenance, replacement, removal, and disposal of water pollution control practices shall conform to the requirements in these special provisions and to project permits.
- B. Installing, inspecting and maintaining water-pollution control practices on areas outside the designated work area not specifically arranged and provided for by the City for the execution of this contract, will not be paid for.
- C. If the CONTRACTOR or the ENGINEER identifies a deficiency in the implementation of the approved SWPPP or amendments, the deficiency shall be corrected immediately unless requested by the CONTRACTOR and approved by the ENGINEER in writing but shall be corrected prior to the onset of precipitation. If the CONTRACTOR fails to correct the identified deficiency by the date agreed or prior to the onset of precipitation, the project shall be in nonconformance with this section, "Water Pollution Control."
- D. If the CONTRACTOR fails to conform to the provisions of this section, the ENGINEER may order the suspension of construction operations and/or may hire a third party to correct the deficiency. Additional project costs will be deducted from the CONTRACTOR's retention until the CONTRACTOR complies with the requirements.

3.3 YEAR-ROUND IMPLEMENTATION REQUIREMENTS

- A. The CONTRACTOR shall have a year-round program for implementing, inspecting and maintaining water pollution control practices for wind erosion control, tracking control, non-storm water management, and waste management and materials pollution control.
- B. The National Weather Service weather forecast shall be monitored and used by the CONTRACTOR on a daily basis. If 50 percent or greater precipitation is predicted, the

necessary water pollution control practices shall be deployed prior to the onset of the precipitation. If there is less than a 50 percent chance of precipitation, the CONTRACTOR shall still be responsible for ensuring the project site does not result in a discharge of pollutants off-site. Regardless of the chances of precipitation, the CONTRACTOR shall allow adequate time to properly install all required BMPs prior to precipitation.

- C. Disturbed soil areas shall be considered active whenever the soil disturbing activities have occurred, continue to occur or will occur during the ensuing 14 days. Non-active areas shall be stabilized with water pollution control practice within 14 days of cessation of soil disturbing activities or prior to the onset of precipitation, whichever occurs first.

3.4 MAINTENANCE

- A. To ensure the proper implementation and functioning of water pollution control practices, the CONTRACTOR shall regularly inspect and maintain the construction site for the water pollution control practices identified in the SWPPP. The construction site shall be inspected by the CONTRACTOR as follows:
 - 1. Prior to a forecast storm.
 - 2. After a precipitation event which causes site runoff.
 - 3. At 24 hour intervals during extended precipitation events.
 - 4. Routinely, a minimum of once every week
- B. The CONTRACTOR shall use a Storm Water Quality Construction Site Inspection Checklist approved by the ENGINEER. One copy of each site inspection record shall be submitted to the ENGINEER within 24 hours of completing the inspection.

3.5 CONTRACTOR VIOLATIONS:

- A. If noncompliance occurs, immediately (verbally) report noncompliance to the ENGINEER. Submit specific information within 2 days.
- B. Consistent violations of applicable Federal, State, or local laws, orders, regulations, or Water Quality Standards may result in the ENGINEER stopping all site activity until compliance is ensured.
- C. The CONTRACTOR shall not be entitled to extension of time, claim for damage, or additional compensation by reason of such a work stoppage.
- D. Corrective measures required bringing activities into compliance, or fines imposed by a regulating authority, shall be at the CONTRACTOR's expense.

3.6 REPORTING REQUIREMENTS

- A. Report of Discharges, Notices or Orders
 - 1. If the CONTRACTOR identifies discharges from the project site, regardless of source, in a manner causing, or potentially causing, a condition of pollution in surface waters or drainage systems, the CONTRACTOR shall immediately inform the ENGINEER. In addition, the CONTRACTOR shall submit a written Notice of Discharge report to the ENGINEER within 24 hours of the discharge event. The report shall include the following information:

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- a. The date, time, location, nature of the operation, and type of discharge, including the cause or nature of the notice or order.
- b. The water pollution control practices deployed before the discharge event.
- c. The date of deployment and type of water pollution control practices deployed after the discharge event, including additional measures installed or planned to remediate and clean-up the discharge, and/or reduce or prevent reoccurrence.
- d. An implementation and maintenance schedule for affected water pollution control practices.

B. Report of First-Time Non-Storm Water Discharge

1. The CONTRACTOR shall notify the ENGINEER at least 3 days in advance of first-time non-storm water discharge events, excluding exempted discharges. The CONTRACTOR shall notify the ENGINEER of the operations causing non-storm water discharges and shall obtain field approval for first-time non-storm water discharges. Non-storm water discharges shall be monitored at first-time occurrences and routinely thereafter.
2. If the CONTRACTOR receives a written Notice, Order, or other non-compliance action letter from a regulatory agency as a result of storm water or other discharges from the project site, the CONTRACTOR shall immediately notify the ENGINEER. The CONTRACTOR shall be solely responsible for responding to and complying with the Notice, Order, or action letter, unless otherwise directed by the ENGINEER.
3. Unless otherwise directed in this Section, and in addition to the requirements of the Permit, the CONTRACTOR shall submit for approval, all required inspection reports, monitoring reports, action plans, notices, amendments, and other documentation required to satisfy requirements of the Permit, to the ENGINEER within 3 days of their completion. The ENGINEER will have 3 days to approve the documents as complete and sufficient to satisfy the Permit or other agency requirements. If the documents are not complete and sufficient, the ENGINEER will return them to the CONTRACTOR for resubmittal. The CONTRACTOR shall be responsible for submitting complete, accurate, and detailed reporting documents sufficient to satisfy all conditions of the Permit and regulatory agency requirements.

C. Annual Report

1. The CONTRACTOR shall maintain all records for use in the annual report.
2. The CONTRACTOR should prepare the annual report using the SMARTS system by no later July 30. The OWNER will certify and submit the report.

3.7 CONSTRUCTION SITE MANAGEMENT

A. CONTRACTOR Construction Operations:

1. Perform construction activities by methods that will prevent entrance, or accidental spillage, of solid matter, contaminants, debris, or other pollutants or wastes into streams, flowing or dry watercourses, wetlands, or underground water sources.
2. Pollutants and wastes include, but are not restricted to: refuse, garbage, cement, sanitary waste, industrial waste, hazardous materials, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution.
3. Discharge of cement fines, drilling fluids, contaminated water, and other construction byproducts will not be allowed on site.

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4. Discharge from dewatering and unwatering operations shall be contained in an onsite tank or containment/infiltration basin. Discharge to infiltration basins shall be limited to water and groundwater only.
- B. Stockpiled or Deposited Materials:
1. Do not stockpile or deposit excavated materials or other construction materials, near or on, stream banks or other watercourse perimeters where they can be washed away by high water or storm runoff, or can in any way encroach upon the watercourse.
- C. Oil Storage Tanks Management:
1. Place oil or other petroleum product (hereinafter referred to collectively as oil) storage tanks at least 150 feet from the edge of any water body.
 2. Do not use underground storage tanks.
 3. Construct storage area dikes at least 12 inches high or graded and sloped to permit safe containment of leaks and spills equal to the capacity located in each area plus a sufficient amount of freeboard to contain the 25-year rainstorm.
 4. Line diked areas with an impermeable barrier at least 50 mils thick.
- D. Refueling Operations:
1. Provide areas used for refueling operations with an impermeable liner at least 10 mils thick buried under 2 to 4 inches of soil.

3.8 PAYMENT

- A. General
1. No additional payment will be made to correct deficiencies in the SWPPP or Amendments.
 2. The contract GMP shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing, constructing, removing, and disposing of water pollution control practices, including non-storm water management, and waste management and materials for water pollution control practices as provided for in the approved SWPPP, except those for which there is a contract item of work as specified in the Standard Specifications and these special provisions, and as directed by the ENGINEER.
 3. Full compensation for Permit reporting and compliance, including all monitoring, preparation of inspection reports, and stormwater sampling and analysis, and maintenance costs of Water Pollution Control Practices, Amendments, and Implementation of Amendments as specified in this section, "Water Pollution Control," shall be considered as included in the contract lump sum price paid for water pollution control and no additional compensation will be allowed therefore.
 4. No additional payment will be made for Water Pollution Control Practices necessary to correct deficiencies in the approved SWPPP or Amendments.
 5. Water pollution control practices, for which there is a contract item of work, will be measured and paid for as that contract item of work.
- B. Retention of Funds:
1. Notwithstanding any other remedies authorized by law, the CITY may retain money due the CONTRACTOR under the contract, in an amount determined by the CITY, up to and including the entire amount of Penalties proposed, assessed, or levied as a result of the CONTRACTOR's violation of the Permit, or Federal or State law,

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regulations or requirements. Funds may be retained by the CITY until final disposition has been made as to the Penalties. The CONTRACTOR shall remain liable for the full amount of Penalties until such time as they are finally resolved with the entity seeking the Penalties.

2. Retention of funds for failure to conform to the provisions in this section, "Water Pollution Control," shall be in addition to the other retention amounts required by the contract. The amounts retained for the CONTRACTOR's failure to conform to provisions in this section will be released for payment on the next monthly estimate for partial payment following the date when an approved SWPPP has been implemented and maintained, and when water pollution has been adequately controlled, as determined by the ENGINEER.
3. When a regulatory agency identifies a failure to comply with the Permit and modifications thereto, or other Federal, State or local requirements, the CITY will retain money due the CONTRACTOR, in the amount of 10 percent of the work done to date or any fine whichever is greater, this amount is in addition to the retention specified in Section 9-3.2, Partial and Final Payment, subject to the following. The CITY will give the CONTRACTOR written notice of the CITY's intent to retain funds from partial payments which may become due to the CONTRACTOR prior to recording of the Notice of Completion.
4. During the first estimate period that the CONTRACTOR fails to conform to the provisions in this section, "Water Pollution Control," the CITY may retain an amount equal to 25 percent of the estimated value of the contract work performed.
5. The CONTRACTOR shall notify the ENGINEER immediately upon request from the regulatory agencies to enter, inspect, sample, monitor, or otherwise access the project site or the CONTRACTOR's records pertaining to water pollution control work. The CONTRACTOR shall provide copies of correspondence, notices of violation, enforcement actions or proposed fines by regulatory agencies to the requesting regulatory agency.

3.9 REMOVAL

- A. Remove temporary works in accordance with Section 01810, Cleaning.

3.10 SUPPLEMENTS

- A. Water Pollution Control Cost Break-Down
- B. Certification Form

+ + END OF SECTION + +

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Section 01140 Water Pollution Control Cost Break-down				
Item Description	Unit	Estimated Quantity	Value	Amount
Erosion Control (Temporary)	ACRE			
Erosion Control (Permanent)	ACRE			
Straw Mulch	ACRE			
Geotextiles, Plastic Covers & Erosion Control Blankets/Mats	SQYD			
Wood Mulching	SQYD			
Earth Dikes/Drainage Swales & Lined Ditches	LF			
Outlet Protection/Velocity Dissipation Devices	EA			
Slope Drains	EA			
Silt Fence	LF			
Desilting Basin	EA			
Sediment Trap	EA			
Gravel Check Dam	TON			
Fiber Rolls	LF			
Gravel Bag Berm	LF			
Street Sweeping and Vacuuming	LS			
Sandbag Barrier	LF			
Straw Bale Barrier	LF			
Storm Drain Inlet Protection	EA			
Wind Erosion Control	LS			
Stabilized Construction Entrance/Exit	EA			
Stabilized Construction Roadway	EA			
Entrance/Outlet Tire Wash	EA			
Water Conservation Practices	LS			
Dewatering Operations	EA			
Paving and Grinding Operations	LS			
Temporary Stream Crossing	EA			
Clear Water Diversion	EA			
Illicit Connection/Illegal Discharge Detection and Reporting	LS			
Potable Water/Irrigation	LS			
Vehicle and Equipment Cleaning	LS			
Vehicle and Equipment Fueling	LS			
Vehicle and Equipment Maintenance	LS			
Material Delivery and Storage	LS			
Material Use	LS			
Stockpile Management	LS			
Spill Prevention and Control	LS			
Solid Waste Management	LS			

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Hazardous Waste Management	LS			
Contaminated Soil Management	LS			
Item Description	Unit	Estimated Quantity	Value	Amount
Concrete Waste Management	LS			
Sanitary/Septic Waste Management	LS			
Liquid Waste Management	LS			
TOTAL:				

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SWPPP COMPLIANCE FORM

As the QSP for the Project, I hereby certify the project site is in full compliance with applicable local, State and Federal regulations and requirements for water pollution prevention and control.

Printed Name

Signature

Date

QSP Number

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SECTION 01145

ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Requirements for Environmental Protection. During the progress of the work, keep Contractor occupied work areas in a neat and clean condition and protect the environment both onsite and offsite, throughout and upon completion of the construction project.

1.2 SUBMITTALS

- A. Develop a detailed Environmental Protection Plan and submit to the Engineer for review and approval prior to the beginning of construction. Distribute the favorably reviewed plan to all employees and to all subcontractors and their employees. The Environmental Protection Plan shall include, but not be limited to, the following items:
 - 1. Copies of required permits.
 - 2. Proposed disposal sites.
 - 3. Copies of any agreements with public or private landowners regarding equipment, materials storage, borrow sites, fill sites, or disposal sites. Any such agreement made by the Contractor shall be invalid if its execution causes violation of local or regional grading or land use regulations.

1.3 MITIGATION OF CONSTRUCTION IMPACTS

- A. All operations shall comply with federal, state and local regulations pertaining to water, air, solid waste and noise pollution.
- B. Definitions of Contaminants:
 - 1. Sediment: Soil and other debris that have been eroded and transported by runoff water.
 - 2. Solid Waste: Rubbish, debris, garbage and other discarded solid materials resulting from construction activities, including a variety of combustible and non-combustible wastes, such as ashes, waste materials that result from construction or maintenance and repair work, leaves and tree trimmings.
 - 3. Chemical Waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, disinfectants, organic chemicals and inorganic wastes. Some of the above may be classified as "hazardous."
 - 4. Sanitary Wastes:
 - a. Sewage: That which is considered as domestic sanitary sewage.
 - b. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing and consumption of food.
 - 5. Hazardous Materials: As defined by applicable laws and regulations. Undisclosed hazardous material contamination, if encountered will constitute a changed site condition. In the event that occurs, Contractor shall coordinate with Owner consistent with final EIR Mitigation Measure 4.9-1 as described in Section 1.3.D of this Specification.

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C. Protection of Natural Resources:

1. General: It is intended that the natural resources within the project boundaries and outside the limits of grading performed under this Contract be preserved in their existing condition or be restored to an equivalent or improved condition upon completion of the work. Confine construction activities to areas defined by the public roads, easements, and work area limits shown on the Drawings. Return construction areas to their preconstruction elevations except where surface elevations are otherwise noted to be changed. Maintain natural drainage patterns except where surface drainage is otherwise noted to be changed. Conduct construction activities to avoid ponding stagnant water conducive to mosquito breeding.
2. Land Resources:
 - a. Do not remove, cut, deface, injure or destroy trees or shrubs outside the work area limits. Do not remove, deface, injure or destroy trees within the work area without permission from the Engineer.
 - b. Temporary Construction:
 - 1) Obliterate all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other vestiges of construction as directed by the Engineer.
 - 2) Level all temporary roads, parking areas and any other areas that have become compacted or shaped.
 - 3) Any unpaved areas where vehicles are operated shall receive a suitable surface treatment or shall be periodically wetted down to prevent construction operations from producing dust damage and nuisance to persons and property, at no additional cost to the Owner.
 - 4) Keep haul roads clear of any object which creates an unsafe condition.
 - 5) Promptly remove any contaminants or construction material dropped from construction vehicles.
 - 6) Do not drop mud and debris from construction equipment on public streets.
 - 7) Sweep clean turning areas and pavement entrances as necessary.
 - 8) Ensure no tracking occurs on City streets.
3. Water Resources:
 - a. Investigate and comply with all applicable federal, state and local regulations concerning the discharge (directly or indirectly) of pollutants to the City storm drain system and waters of the United States. Perform all work under this Contract in such a manner that any adverse environmental impacts are reduced to a level that is acceptable to the Engineer and regulatory agencies.
 - b. Oily Substances:
 - 1) Special measures shall be taken to prevent oily or other hazardous substances from entering the ground, drainage areas or local bodies of water in such quantities as to affect normal use, aesthetics or produce a measurable impact upon the area.
 - 2) Any soil or water which is contaminated with oily substances due to the Contractor's operations shall be disposed of in accordance with applicable regulations consistent with final EIR Mitigation Measure 4.9-1 as described in Section 1.3.D of this Specification.
 - c. Chlorinated Water:
 - 1) Take special measures to prevent chlorinated water from entering the ground or surface waters.
 - 2) De-chlorinate chlorinated water prior to discharge.
4. Cultural Resources:

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- a. The project does not pass through any known archaeological sites. However, it is conceivable that unrecorded archaeological sites could be discovered during the construction.
 - b. In the event that artifacts, human remains, or other cultural resources are discovered during excavations at locations of the Work, the Contractor shall protect the discovered items, notify the Engineer, and comply with applicable law consistent with final EIR Mitigation Measure 4.8-1 as described in Section 1.3.D of this Specification.
5. Dust Control, Air Pollution and Odor Control:
- a. Employ measures to prevent the creation of dust, air pollution and odors consistent with final EIR Mitigation Measure 4.4-1 and 4.4-3 as described in Section 1.3.D of this Specification.
 - b. Comply with Placer County Air Pollution Control District's (PCAPCD) rules and regulations.
 - c. Unpaved areas where vehicles are operated shall be periodically wetted down or given an equivalent form of treatment, to eliminate dust formation.
 - d. Store all volatile liquids, including fuels or solvents in closed containers and provide secondary containment as needed.
 - e. No open burning of debris, lumber or other scrap will be permitted.
 - f. Properly maintain equipment to reduce gaseous pollutant emissions.
6. Construction Storage Areas:
- a. It is the responsibility of the Contractor to secure a storage area for Contractor use. Storage of construction equipment and materials shall be limited to the designated Contractor's storage area.
 - b. Oil wastes (from equipment, etc.) shall not be allowed to flow onto the ground or into surface waters.
 - c. Containers shall be required at the construction site for the disposal of materials such as paint, paint thinner, solvents, motor oil, fuels, concrete wash water, resins and other environmentally deleterious substances.
 - d. No dumping of surplus concrete or grout on the site will be permitted.
7. Sanitation:
- a. During the construction period, provide adequate and conveniently located chemical sanitation facilities, properly screened, for use of construction crews.
 - b. Facilities shall be placed behind sidewalks and at least fifty (50) feet from any drainage ditch, drain inlet, or water way.
 - c. Facilities shall be regularly maintained.
8. Fire Prevention:
- a. Take steps to prevent fires including, but not limited to:
 - 1) Provide spark arrestors on all internal combustion engines.
 - 2) Store and handle flammable liquids in accordance with the Flammable and Combustible Liquids Code, NFPA 30.
 - 3) Provide fire extinguishers at hazardous locations or operations, such as welding.
9. Erosion and Sediment Transport Control:
- a. Keep disturbed areas to the minimum necessary for construction.
 - b. Keep runoff away from disturbed areas during construction.
 - c. Trap sediment before it leaves the site, using such techniques as check dams, sediment ponds, or siltation fences.
 - d. Confine earthwork operations to dry periods, whenever possible. If earthwork needs to be scheduled for a wet period, ensure that erosion and sediment

transport control measures are ready for implementation prior to the onset of the storm.

- e. Stabilize disturbed areas as quickly as possible.
- f. Note that waterways under the jurisdiction of governmental agencies other than the City of Roseville may be subject to additional erosion and sediment control measures or criteria and it is the responsibility of the Contractor to obtain and adhere to these additional requirements.

D. Environment Impact Report (EIR) Mitigation Measures

- 1. The following West Roseville Specific Plan (WRSP) EIR Mitigation Measures shall be implemented:

- a. 4.4-1 Dust Control

- 1) After review and approval by the PCAPCD, the developer, if required, shall apply approved chemical soil stabilizers according to manufacturer's specifications, to all inactive construction areas (previously graded areas which remain inactive for 96 hours).
- 2) Reduce traffic speeds on all unpaved surfaces to 15 miles per hour or less.
- 3) Create a dust control plan.
- 4) No open burning of vegetation during project construction.
- 5) Reestablish ground cover as soon as possible after construction.
- 6) Suspend grading activities when winds exceed 25 mph.

- b. 4.4-3 Reduction of Construction Emissions

- 1) The prime contractor shall submit to the PCAPCD a comprehensive inventory (i.e., make, model, year, emission rating) of all the heavy-duty off-road equipment (50 horsepower or greater) that will be used an aggregate of 40 or more hours for the construction project. District personnel, with assistance from the California Air Resources Board, will conduct initial Visible Emission Evaluations of all heavy-duty equipment on the inventory list.
- 2) An enforcement plan shall be established by the contractor in conjunction with the air district to weekly evaluate project-related on-and-off- road heavy-duty vehicle engine emission opacities, using standards as defined in California Code of Regulations, Title 13, Sections 2180–2194. An Environmental Coordinator, CARB-certified to perform Visible Emissions Evaluations (VEE), shall routinely evaluate project related off-road and heavy-duty on-road equipment emissions for compliance with this requirement. Operators of vehicles and equipment found to exceed opacity limits will be notified and the equipment must be repaired within 72 hours.
- 3) Contractors shall provide a plan for approval by the PCAPCD demonstrating that the heavy-duty (>50 horsepower) off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project-wide fleet average 30 percent NOx reduction and 45 percent particulate reduction compared to the most recent CARB fleet average. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.
- 4) Minimize idling time to 10 minutes.
- 5) Use low sulfur fuel for stationary construction equipment, if feasible.
- 6) Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators.
- 7) Use low emission on-site stationary equipment.

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c. 4.7-6 Avoid Nesting Sites

- 1) To ensure that fully protected bird and raptor species are not injured or disturbed by construction in the vicinity of nesting habitat, implement the following measures:
 - a) When feasible, all tree removal shall occur between August 30 and February 15 to avoid the breeding season of any raptor species that could be using the area, and to discourage hawks from nesting in the vicinity of an upcoming construction area. This period may be modified with the authorization of the California Department of Fish and Wildlife (CDFW); or
 - b) Prior to the beginning of mass grading, including grading for major infrastructure improvements, during the period between February 15 and August 30, all trees and potential burrowing owl habitat within 350 feet of any grading or earthmoving activity shall be surveyed by the City for active raptor nests or burrows by a qualified biologist no more than 30 days prior to disturbance. Biologist will be hired by the City. If active raptor nests or burrows are found, and the site is within 350 feet of potential construction activity, a fence shall be erected around the tree or burrow(s) at a distance of up to 350 feet, depending on the species, from the edge of the canopy to prevent construction disturbance and intrusions on the nest area. The appropriate buffer shall be determined by the City in consultation with CDFW.
 - c) No construction vehicles shall be permitted within restricted areas (i.e., raptor protection zones), unless directly related to the management or protection of the legally protected species.
 - d) In the event that a nest is abandoned, despite efforts to minimize disturbance, and if the nestlings are still alive, the City shall contact CDFW and, subject to CDFW approval, fund the recovery and hacking (controlled release of captive reared young) of the nestling(s).
 - e) If a legally protected species nest is located in a tree designated for removal, the removal shall be deferred until after August 30th, or until the adults and young of the year are no longer dependent on the nest site as determined by a qualified biologist.
 - f) The City will conduct a pre-construction survey within the phases of the project site that are scheduled for construction activities. The survey shall be conducted by a qualified biologist to determine if burrowing owls are occupying the project site. The survey shall be conducted no more than three weeks prior to grading of the project site. If the above survey does not identify burrowing owls on the project site, then no further mitigation would be required. However, should burrowing owls be found on the project site, the following measures shall be required:
 - g) Avoid all potential burrowing owl burrows that may be disturbed by project construction during the breeding season between February 15 and August 30 (the period when nest burrows are typically occupied by adults with eggs or young). Avoidance shall include the establishment of a 350-foot diameter non-disturbance buffer zone around any occupied burrows. The buffer zone shall be delineated by highly visible temporary construction fencing. Disturbance of any occupied burrows shall only occur outside of the breeding season (August 30 through February 15). Based on approval by the CDFW, preconstruction and nonbreeding season exclusion measures may be implemented to preclude burrowing owl occupation of the project site prior to project related disturbance (such as

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grading). Burrowing owls may be passively excluded from burrows in the construction area by placing one-way doors in the burrows according to current CDFW protocol. The one-way doors must be in place for a minimum of three days. All burrows that may be occupied by burrowing owls, regardless of whether they exhibit signs of occupation, must be cleared. Burrows that have been cleared through the use of the one-way doors shall then be closed or backfilled to prevent owls from entering the burrow. The one-way doors shall not be used more than two weeks before construction to ensure that owls do not recolonize the area of construction.

- d. 4.8-1 Cease Work and Consult with Qualified Archaeologist
 - 1) Should any cultural resources, such as structural features, any amount of bone or shell, artifacts, human remains, or architectural remains be encountered during any subsurface development activities, work shall be suspended within 100 feet of the find, and the City of Roseville shall be immediately notified. At that time, the City shall coordinate any necessary investigation of the site with qualified archaeologists as needed to assess the resource and provide proper management recommendations.
- e. 4.8-9 Provide Proper Management Recommendations
 - 1) Possible management recommendations for important resources could include resource avoidance or data recovery excavations. The Contractor shall implement any measures deemed necessary for the protection of the cultural resources.
 - 2) In addition, pursuant to section 5097.98 of the State Public Resources Code, and section 7050.5 of the State Health and Safety Code, in the event of the discovery of human remains, the County Coroner shall be immediately notified. If the remains are determined to be Native American, guidelines of the Native American Heritage Commission shall be adhered to in the treatment and disposition of the remains.
- f. 4.8.10 Cease Work Until Review Conducted by Qualified Paleontologist and Recommendations Implemented.
 - 1) Should any evidence of paleontological resources (e.g., fossils) be encountered during grading or excavation, work shall be suspended within 100 feet of the find, and the City of Roseville shall be immediately notified. At that time, the City shall coordinate any necessary investigation of the site with a qualified paleontologist to assess the resource and provide proper management recommendations.
 - 2) Possible management recommendations for important resources could include resource avoidance or data recovery excavations. The contractor shall implement any measures deemed necessary by the paleontologist for the protection of the paleontological resources.
- g. 4.9-1 Identify and Remediate Soil Contamination
 - 1) If evidence of soil contamination is encountered in previously unidentified locations in the WRSP Area, work shall cease until the area can be tested, and, if necessary, remediated.
 - 2) Remediation activities could include removal of contaminated soil and/or on-site treatment.
 - 3) As part of this process, the City shall ensure that any necessary investigation and/or remediation activities conducted in the WRSP Area are coordinated with the Roseville Fire Department, Placer County Division of Environmental Health, and, if needed, other appropriate state and/or local agencies.

- 4) Once a site is remediated, construction may continue. The City shall also continue to update its records concerning contamination or hazards that could be present at facilities or sites adjacent to WRSP Area and take necessary action to ensure that the health and safety of the public is protected.

1.4 RESPONSIBLE PARTY

- A. The Contractor shall comply with all environmental pollution control rules, regulations, ordinances and statutes which apply to any work performed pursuant to the Contract (Refer to General Conditions Section 5 and Section D. Environmental Impact Report Mitigation Measures for additional requirements). In the event of any violations, Contractor shall be fully responsible for all fines, citations, penalties and all other judgements that shall be imposed.

PART 2 - PRODUCTS

2.1 INLET FILTERS

- A. Drain inlet filters may be employed.
- B. Horizontal mesh filters attached to the top of or below the drain inlet grate shall not be allowed.
- C. Only high flow volume, bag type filters or others as approved by the City of Roseville, Construction Inspector shall be used.

2.2 EROSION CONTROL BLANKETS

- A. Straw or curled wood fiber blanket between jute netting
- B. Biodegradable, containing no plastic
- C. Contains no weed seeds

2.3 STRAW WATTLES

- A. 100% biodegradable, containing no plastic
- B. Wrapped in medium weight natural burlap

2.4 HYDROMULCH

- A. Mixture of shredded wood fiber, water and tackifier.
 1. Wood fiber
 - a. Thermally processed and free of weed or plant seeds.
 - b. Colored with green dye tracer so applied mulch is easily visible
 - c. Produce a uniform slurry when mixed with water and not be toxic to plants or wildlife.
 - d. Apply at 2000 pounds per acre.
 2. Tackifier
 - a. Water soluble and, upon drying, will form a stable, nonflammable plastic film with a one-year effective life.
 - b. Non-toxic to plants and wildlife.
 - c. Apply at 150 pounds per acre.

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PART 3 - EXECUTION

3.1 DISPOSAL OPERATIONS

- A. Solid Waste Management:
 - 1. Supply solid waste transfer containers. Daily remove all debris such as spent air filters, oil cartridges, cans, bottles, combustibles and litter. Take care to prevent trash and papers from blowing onto adjacent property. Encourage personnel to use refuse containers. Convey contents to a sanitary landfill.
 - 2. Washing of concrete containers without Contractor having a washout facility or system in place will not be permitted. Concrete on bare soil is prohibited. Remove any excess concrete to the sanitary landfill.
- B. Chemical Waste and Hazardous Materials Management:
 - 1. Furnish containers for storage of spent chemicals used during construction operations. Provide secondary containment. Dispose of chemicals and hazardous materials in accordance with applicable regulations.
- C. Garbage:
 - 1. Store garbage in covered containers, pick up daily and dispose of in a sanitary landfill.
- D. Dispose of vegetation, weeds, rubble, and other materials removed by the clearing, stripping and grubbing operations off site at a suitable disposal site in accordance with applicable regulations.
- E. Excavated Materials:
 - 1. Native soil complying with the requirements of Section 02300, Earthwork, may be used for backfill, fill and embankments as allowed by that section.
 - 2. Spoil Material:
 - a. Remove all material which are excavated in excess of that required for backfill, and such excavated material which is unsuitable for backfill, from the site and dispose of offsite in accordance with applicable regulations.
 - b. No additional compensation will be paid to the Contractor for such disposal. Include all such costs in the lump sum prices bid for the project.
 - c. Remove rubbish and materials unsuitable for backfill immediately following excavation. Remove material in excess of that required for backfill immediately following backfill operations.
 - d. Rubbish shall consist of all materials not classified as suitable materials or rubble and shall include shrubbery, trees, timber, trash and garbage.

PART 4 - PRODUCTS (NOT USED)

PART 5 - EXECUTION (NOT USED)

++ END OF SECTION ++

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SECTION 01200

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 GENERAL

- A. Payment will be made at the price bid for each item listed on the bidding form or as extra work as provided in the General Conditions.
- B. No initial progress payment (other than a single mobilization payment as described in Article 1.3 below) will be made prior to acceptance by the OWNER of the CPM Construction Schedule, the associated Schedule of Costs, and the list of anticipated submittals.
- C. No subsequent progress payment will be made prior to receipt by the OWNER of the monthly update of the Construction Progress Schedule, as specified in Sections 01310, Project Meetings and 01320, Progress Schedule.
- D. No subsequent progress payment will be made prior to receipt by the OWNER of Certified Payrolls for the previous month.

1.2 SCHEDULE OF COSTS FOR PAYMENTS

- A. Submit to the OWNER, within 5 days of acceptance of the Construction Schedule, five (5) copies of a Schedule of Costs. The Schedule of Costs shall be a form showing a detailed breakdown of quantities and prices of work and materials required to perform and complete the contract.
- B. The Schedule of Costs shall provide a cost breakdown for each element detailed in the approved Construction Schedule. The total of the price breakdown must agree with the lump-sum price bid. The elements listed and price breakdown shall not be front end loaded or unbalanced, shall be subject to adjustment between the OWNER and the CONTRACTOR, and will be used as a basis for progress payments.
- C. The Schedule of Costs will be used as a basis for determining the amount of the monthly progress payments.
- D. Acceptance of the Schedule of Costs by the OWNER shall not relieve the CONTRACTOR of the responsibility of performing all the work needed to complete the project at the lump-sum price bid.

1.3 PAYMENT FOR MOBILIZATION

- A. Mobilization Cost Breakdown:

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1. As soon as practicable after receipt of the Notice to Proceed, the CONTRACTOR shall submit a breakdown to the OWNER for approval, which shall show the estimated value of each major component of mobilization.
 2. When approved by the OWNER, the breakdown will be the basis for initial progress payments in which mobilization is included.
 3. Said breakdown shall not be "front end loaded" or unbalanced.
- B. One CONTRACTOR payment may be made prior to acceptance of the Construction Schedule, Schedule of Costs, and list of anticipated submittals.
1. Payment shall be limited to mobilization items only.
 2. The Construction Schedule is described in Section 01320, Construction Schedule.
 3. Mobilization items are described in Section 01505, Mobilization.
 4. The Schedule of Costs is described in Article 1.2 of this Section.
 5. The list of anticipated submittals is described in Section 01330, Submittal Procedures.

1.4 PROGRESS PAYMENTS

- A. Progress Payment Request Submittal:
1. Unless otherwise mutually agreed, by the 25th of each month, the CONTRACTOR shall prepare and submit monthly progress payment requests for work completed through the 25th day of the month.
 2. Said payment request shall be based on the breakdown of activities as specified in the Schedule of Costs described in Article 1.2 above.
 3. The monthly schedule update shall be submitted as part of the monthly progress payment report.
- B. The OWNER will review progress payment requests and make a determination of the percent completion of all activities (rounded to the nearest whole percent) based on an approximate measurement of all materials supplied and work performed.
- C. In the event that the CONTRACTOR fails to provide the OWNER with an acceptable Monthly Contract Record Drawing Submittal in accordance with Section 01330, the OWNER shall deduct compensation for such monthly submittal as provided in Section 01320. Said deduction shall become the sole property of the OWNER.
- D. Retention:
1. From the amount thus determined, five percent thereof will be deducted as retention by OWNER for performance security.
 2. Acceptance of separate components shall not operate to release performance retention.
 3. The amount of all payments previously made to the CONTRACTOR and any amounts due the OWNER from the CONTRACTOR for supplies, materials, services, damages, or otherwise deductible under the terms of the contract will be deducted from the remainder.
 4. The remaining amount will be paid as a progress payment by the OWNER to the CONTRACTOR on the third Friday of the succeeding month or as soon thereafter as is practical.

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- E. In addition to the retention under Paragraph D above, the whole or part of any payment of the estimated amount due the CONTRACTOR may be withheld as an additional retention if such course be deemed necessary to protect the OWNER from loss due to the CONTRACTOR's failure to perform any of the following: (1) meet CONTRACTOR's payment obligations; (2) execute the work; (3) correct defective work; (4) settle damages as provided; or (5) produce substantial evidence that no stop notices will or have been filed, and/or if it has been determined that unpaid balances may be insufficient to complete the work.
- F. All material and work covered by progress payments thereupon become the sole property of the OWNER, but this provision shall not be construed as relieving the CONTRACTOR from sole responsibility for all materials and work upon which payments have been made or the restoration of any damaged work or as a waiver of the OWNER's right to require fulfillment of all of the contract terms. Said CONTRACTOR's obligation extends through the close of the warranty period.
- G. Payment for Materials:
1. No payment shall be made for materials stored offsite.
 2. Payment may be made for those materials delivered to the site but not incorporated in the work to the extent that the materials are included in the Construction Schedule as cost-loaded material delivery activities.
 3. Only material items manufactured specifically for this project and that cost individually in excess of \$20,000 will be considered for partial payment as stored materials.
 4. Partial payment for materials delivered will not be made before the respective shop drawings, installation instructions and O&M manuals have been submitted, reviewed, and accepted in accordance with Section 01330, Submittal Procedures.
 5. To receive partial payment for materials delivered to the site, but not incorporated in the work, it shall be necessary for the CONTRACTOR to submit to the OWNER, at least 7 days prior to the end of said month, a list of such materials.
 6. At their sole discretion, the OWNER will approve items for which partial payment is to be made.
 7. The list of materials and invoices shall be clearly identified by referencing the associated activity or item on the price breakdown.
 8. Partial payment for materials delivered to the site or a bonded warehouse will be made in an amount equal to 75% of the respective suppliers' invoices(s) for the actual net cost for the item(s) delivered plus delivery charges.
 9. The CONTRACTOR's actual net cost for the materials must be supported by invoices of suppliers.
 10. Proper storage and protection of materials shall be provided by the CONTRACTOR. Final payment shall be made only for materials actually incorporated in the work and, upon acceptance of the work, all materials remaining for which advance payments had been made shall revert to the CONTRACTOR, unless otherwise agreed, and partial payments made for these items shall be deducted from the final payment for the work.

1.5 FINAL PAYMENT AND RELEASE OF CLAIMS

1. Upon the completion of the work as determined by the OWNER, a Notice of Acceptance will be issued and recorded with the County.

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2. The OWNER will pay to the CONTRACTOR within 35 days after filing of the Notice of Acceptance, or as soon thereafter as practicable, the remaining amount due the CONTRACTOR including retainage, less all prior payments and advances whatsoever to or for the account of the CONTRACTOR for supplies, materials, services, damages, stop notices, or otherwise deductible under the terms of the contract.
3. All prior estimates and payments including those relating to extra work shall be subject to correction by this payment, which throughout this contract is called "Final Payment".

1.6 RELEASE OF CLAIMS:

- A. Neither the final payment nor any part of the retained percentage shall become due until the CONTRACTOR shall have delivered to the OWNER a complete release of all claims against the OWNER arising under and by virtue of this contract and related to undisputed amounts, including claims of Subcontractors and suppliers of either materials or labor.
- B. If disputed contract claims in stated amounts are unresolved 35 days after issuance of the Notice of Acceptance, a progress payment of undisputed amounts and retained funds will be made by OWNER upon receipt of a release specifically excluding the disputed contract claims.
- C. Claims by the OWNER against the CONTRACTOR for liquidated damages or actual damages or other causes will be a valid basis for withholding of funds by the OWNER.
- D. Upon resolution of disputed claims the CONTRACTOR shall execute a supplemental release and, upon delivery the OWNER will make final payment.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

+ + END OF SECTION + +

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City of Roseville
West Side Tank and Pump Station

17-083

January 2021
Operations Crew
Facility
Concept Technical
Specifications

SECTION 01310
PROJECT MEETINGS

PART 1 - GENERAL

1.1 PRE-CONSTRUCTION CONFERENCE

- A. Upon receipt of the Notice to Proceed, or at an earlier time if mutually agreeable, the ENGINEER will arrange a preconstruction conference to be attended by the CONTRACTOR's superintendent or other project representative authorized to commit on the behalf of the CONTRACTOR and to direct the performance of the work by others, the OWNER, the ENGINEER or ENGINEER's representative, and representatives of utilities, major subcontractors, and others involved in the execution of the work.
- B. The purpose of this conference will be to establish a working relationship and understanding between the parties and to discuss subjects as may be pertinent for the execution of the work.
- C. CONTRACTOR shall be prepared to discuss the following subjects, as a minimum:
 - 1. Required schedules.
 - 2. Status of Bonds and insurance.
 - 3. Sequencing of critical path work items.
 - 4. Progress payment procedures.
 - 5. Project changes and clarification procedures.
 - 6. Use of site, access, office and storage areas, security and temporary facilities.
 - 7. Major product delivery and priorities.
 - 8. CONTRACTOR's safety plan and representative.

1.2 PROGRESS MEETINGS

- A. The ENGINEER will arrange and conduct progress meetings. The ENGINEER will prepare and circulate a draft agenda of each meeting. The CONTRACTOR may add items as appropriate to the draft agenda.
- B. Progress meetings will be conducted on a regular basis, at such frequency as the OWNER and CONTRACTOR may mutually agree. Progress meetings shall be attended by the ENGINEER, OWNER Operations personnel, CONTRACTOR's superintendent or other project representative, and representatives of all subcontractors involved in the work at the time of the meeting, required by the CONTRACTOR, or requested by the OWNER.
- C. The purpose of the meetings will be to facilitate the work of the CONTRACTOR and any subcontractor or other organization that is not up to schedule, resolve conflicts, identify and resolve any potential delays or necessary changes in the work and in general, coordinate and facilitate the execution of the work.
- D. The agenda of progress meetings shall include review of work progress, the latest Construction Schedule submittal (monthly), potential project delays, the status of key shop drawings, submittal reviews, information requests, safety concerns, record drawings, and extra work items.

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1.3 CONSTRUCTION SCHEDULE REVIEW

- A. The Construction Schedule will be reviewed monthly during an agreed upon progress meeting to verify at a minimum:
 - 1. Actual start and finish dates of completed activities since the last progress meeting.
 - 2. Durations and progress of all activities not completed.
 - 3. Critical submittals/materials delivery problems.
 - 4. Potential project delays.
 - 5. Any activity behind schedule and CONTRACTOR's plan to bring it back on schedule.
 - 6. Reason, logic, time, and cost data for Change Order work that is to be incorporated into the Construction Schedule or payment request form.
 - 7. Payment due to the CONTRACTOR based on percentage complete of items in the submittal payment request form.
- B. At the progress meeting, the CONTRACTOR shall provide an update of the Construction Schedule as described in Section 01320, Progress Schedule.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

++ END OF SECTION ++

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SECTION 01320
PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. The work specified in this Section includes the preparation and submittal of a computerized Critical Path Method (CPM) Construction Schedule and of updates and revisions to the Construction Schedule.
- B. The computerized CPM schedule shall be completed using Microsoft Project for Windows or Primavera Project Planner scheduling system and software.
- C. The requirements specified under Section 01330, Submittal Procedures, also apply to the Construction Schedule initial submittal(s) and subsequent updates and revisions.

1.2 REFERENCE

- A. General:
 - 1. Applicable Reference shall be the Associated General Contractors of America (AGC) Publication No. 1107.1, "Construction Planning and Scheduling", latest edition.
 - 2. The preparation of the Construction Schedule, its principles, definitions and terms shall be as set forth in that reference.
 - 3. In case of conflict, the provisions specified in this Section shall govern and supersede conflicting provisions in such reference.

1.3 PREPARATION AND SUBMITTAL PROCEDURE

- A. Responsible Person:
 - 1. Within five days after Notice to Proceed, the CONTRACTOR shall designate, in writing, the person responsible for the preparation of the Construction Schedule.
 - 2. Such person shall have the authority to act on behalf of the CONTRACTOR and be knowledgeable in the preparation of CPM schedules of similar complexity.
 - 3. This person shall meet with the Engineer, within 10 days of the Notice to Proceed for a joint review and approval of the CONTRACTOR's approach.
- B. Initial Schedule Submittal:
 - 1. The Construction Schedule shall be completed and submitted to the Engineer within 30 days after Notice to Proceed.
 - 2. If the initial Construction Schedule submittal is not acceptable to the Engineer, it shall be revised in coordination with observations and comments from the Engineer and resubmitted within 7 days of the return of the schedule to the CONTRACTOR.
- C. By preparing and submitting the Construction Schedule the CONTRACTOR represents that the CONTRACTOR can and intends to execute the work and portions thereof within the specified times and constraints and that the CONTRACTOR's bid covers the costs associated with the execution of work in accordance with the Construction Schedule.

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D. Submittal package.

1. Submittal of the Baseline Construction Schedule shall include the following:
 - a. Network Diagram:
 - 1) A graphic network diagram with legible letters with individual sheets sized approximately 24" by 48".
 - 2) Each activity shall be shown on the diagram with the activity number, description and duration in working days.
 - 3) Five copies and one reproducible shall accompany the submittal.
 - b. Five sets of supporting data, if not indicated on the graphic network diagram, including:
 - 1) Number of work days per week.
 - 2) Holidays that will be observed during construction.
 - 3) Number of shifts per day.
 - 4) Major construction equipment used, identifying the time period and activity of use.
 - 5) Average manpower for each week and for each trade.
 - 6) Lost time allowance for weather or other conditions that can be anticipated or projected based on the requirements herein.
 - a) Contractor schedule shall include a minimum of 20 working days total, of lost time allowance.
 - c. Five computer printouts as follows:
 - 1) Listing of all activities sorted by total float including early start (ES), late start (LS), early finish (EF), late finish (LF) and Total Float duration for each activity or work item. Each activity or work item will not take more than two lines.
 - 2) Lists of all activities sorted numerically including ES, LS, EF, LF, Total Float.
 - 3) List of all activities sorted numerically with Predecessor/Successor information of precedence network.
2. Submittals of updated Construction Schedules shall include, in addition to the items specified in the preceding subparagraph 1a, 1c, and 1d, the following:
 - a. Changes in the schedule due to approved Change Order or Change Directives or Force Account work.
 - b. CONTRACTOR elected changes in schedule logic, activity duration, or activity start or stop dates.
 - c. A narrative report as needed to define:
 - 1) Changes in logic, activity duration, and manpower and equipment utilization.
 - 2) Problem areas, anticipated delays, and the impact on the schedule.
 - 3) Corrective action recommended and its effect.
 - 4) The effect of changes on schedules of other contractors involved with the work.
 - 5) Coordination of work with others.
 - d. Percentage completion for each activity as agreed to for the monthly progress payments.

- E. If the Construction Schedule, its updates or its revisions, reflect anything not accepted by the Engineer, such Construction Schedule, update, or revision shall be considered as not having been accepted by the Engineer.

1.4 CONSTRUCTION SCHEDULE CONTENT

- A. The Construction Schedule shall be calendar-based, time-scaled, manpower and cost-loaded, using a precedence method diagram in the Critical Path Method (CPM) format indicating the critical path for the execution of the work utilizing the entire contract time.
1. In the preparation of the Construction Schedule, the CONTRACTOR shall take into account all constraints and requirements specified.
 2. Allowance in the Construction Schedule shall be made for Excusable Delays, as defined in the Agreement. These days shall be included as part of the 20 days of lost time allowance specified herein.
 3. The diagram shall be clear, legible, and accurate, and show complete sequence of construction by activity and interdependence of activities. Separate discrete lines shall connect linked activities.
 4. Activities related to the same physical areas of the work shall be grouped in the same area of the diagram.
 5. Activities within each area of the work shall be numbered in separate sequential series, with no overlap of activity numbers between different areas of the work.
 6. The diagram shall clearly show a continuous critical path, all constraints, and all required project milestones.
 7. The schedule shall describe work activities in appropriate segments so that work in specific areas can be assessed for progress and completion. Activities labeled "start", "continue", or "completion" without measurable increments of work will not be acceptable.
 8. The individual work activities in the schedule shall:
 - a. Identify major submittals and submittals for long-lead time Critical Path items and associated review times. Twenty (20) working days shall be used for OWNER review times, unless otherwise specified.
 - b. For equipment with a cost in excess of \$20,000 and all control systems the CONTRACTOR shall allow adequate time for an initial submittal and OWNER review plus (at a minimum) a second (re) submittal and associated OWNER review.
 - c. Identify at a minimum, the execution of the following as separate items for each area of work.
 - 1) Notice to Proceed.
 - 2) Mobilization.
 - 3) Dewatering.
 - 4) Shoring.
 - 5) Excavation.
 - 6) MSE.
 - 7) Backfill.
 - 8) Grading, subbase, base, paving, and curb and gutters.
 - 9) Other site work.
 - 10) Concrete, including installation of forms and reinforcement, placement of concrete, curing, stripping, patching and finishing.
 - 11) Masonry.
 - 12) Metal fastenings, framing structures, and fabrications.
 - 13) Wood structures, finish carpentry, architectural woodwork, and plastic fabrications.
 - 14) Waterproofing and dampproofing, insulation, roofing and flashing, and sealants.

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- 15) Doors and windows (including glass walls), including hardware and glazing.
 - 16) Finishes including coating and painting, flooring, ceiling, and wall covering.
 - 17) Building specialties including furnishings, equipment, and toilet and bath accessories.
 - 18) Process equipment, including separate activities for manufacturing, delivery, and installation.
 - 19) Pumps and drives, including separate activities for manufacturing, delivery, and installation.
 - 20) Conveying equipment including hoists and cranes, conveyor systems, and materials handling equipment, including separate activities for manufacturing, delivery and installation.
 - 21) Other mechanical equipment including fans and heating, ventilating, and air conditioning equipment, with separate activities for manufacturing, delivery and installation.
 - 22) Case work, including separate activities for fabrication, delivery and installation.
 - 23) Storage shelving, including separate activities for fabrication, delivery and installation.
 - 24) Trenching and pipe laying.
 - 25) Piping, including a separate activity for ordering lead time.
 - 26) Valves and gates, including a separate activity for ordering lead time.
 - 27) Plumbing specialties.
 - 28) Electrical transmission, service, and distribution equipment, including separate activities for ordering, manufacturing, delivery, installation.
 - 29) Other electrical work including lighting, heating and cooling, and special systems, including separate activities for ordering, manufacturing, delivery and installation.
 - 30) Instrumentation and controls, including separate activities for ordering lead time, manufacturing, delivery and installation.
 - 31) Separate activities for functional, performance, and operational testing, for each major system.
 - 32) Separate activities for operation and maintenance training for each major system.
 - 33) Site cleanup.
 - 34) Demobilization.
 - 35) Procurement of critical (long lead time) equipment.
 - 36) Separate activities for design, ordering, delivery and installation of turn key systems.
 - 37) Separate activities for Operational Completion, Contract Completion and other contractually required milestones.
 - 38) Any items to be OWNER-furnished which are to be incorporated into the work as part of these Contract Documents.
- d. Provide a monthly activity for preparation of Contract Record Drawings, in accordance with Section 01330, Submittal Procedures with a minimum monthly cost of \$5,000.
 - e. Have a duration of not more than 5 working days.
9. Information on each activity shall include:
 - a. Concise description of the activity.
 - b. Duration in working days.
 - c. The dates for the beginning and completion of each activity.
 - d. Total float.

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- e. Numerical designation of work items.
 - f. Cost with a breakdown by labor (by man-hours by trade), materials (by type and quantity), equipment (by type and hours) and overhead and profit.
 - g. Reference to associated Scope Area as described in Breakdown of Guaranteed Maximum Price.
10. The schedule shall be referenced to calendar dates, and the beginning of the contract time shall be the date of receipt of the Notice to Proceed.
 11. The schedule shall indicate for every month the total dollar amount of work planned in such month. The sum of monthly amounts shall equal the total bid amount.
- B. Failure to include an activity required for the execution of the work shall not excuse the CONTRACTOR from completing the work and portions thereof within the specified times and at the price specified in the Contract Documents, and from meeting the constraints specified for sequence of work and control dates.

1.5 UPDATING THE CONSTRUCTION SCHEDULE

- A. The CONTRACTOR shall update the Construction Schedule prior to the progress and schedule review at the monthly progress meetings, as specified in Section 01310, Project Meetings.
- B. The schedule update shall reflect progress to date. The schedule update shall incorporate all revisions to logic and duration, as described below.
- C. The updated Construction Schedule shall be submitted by the CONTRACTOR as specified herein and under Subparagraph 1.3.D.2 in this Section.
 1. Logic changes to the schedule shall be approved by the Engineer prior to incorporating them into the schedule.
 2. The schedule update submittal shall be provided to the Engineer three working days prior to the monthly progress meeting.
 3. If at the progress meeting the Engineer determines that the updated schedule does not accurately reflect the progress of the work to date or project the anticipated progress to date or is otherwise unacceptable to the OWNER, the CONTRACTOR shall revise the schedule within 5 working days thereafter.
 4. If the CONTRACTOR fails to submit to the Engineer the updated Construction Schedule, in accordance with the findings at the progress meeting, as described above, or if it is submitted and found unacceptable by the Engineer, no monthly progress payment will be made.
- D. Updates shall be performed on the most recent accepted version of the Construction Schedule.

1.6 REVISIONS TO CONSTRUCTION SCHEDULE

- A. The cost of revision to the Construction Schedule not resulting from contract change orders shall be borne by the CONTRACTOR.
- B. Except as specified in the preceding Subparagraph A, the cost of revisions to the Construction Schedule resulting from contract change orders in the work shall be included in the cost for the contract change orders.

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- C. Corrections resulting from the Engineer's review and comments shall be carried out as specified for Construction Schedule update.
- D. Revisions shall be made on the most recent accepted version of the Construction Schedule.

1.7 ADJUSTMENT OF THE CONTRACT TIME AND CHANGE ORDERS

- A. Adjustments of the contract time due to delays, additional work, or any other cause will only be issued through a contract change order in accordance with the General Conditions.
 - 1. In the event the CONTRACTOR requests an adjustment of the contract time, the CONTRACTOR shall furnish such justification, Construction Schedule data, and supporting evidence as the Engineer may deem necessary, for a determination as to whether or not the CONTRACTOR is entitled to an adjustment of time under the provisions of the Contract.
 - a. The CONTRACTOR shall submit proof based on revised activity logic, durations, and costs with each request.
 - 2. The Construction Schedule shall clearly indicate that the CONTRACTOR has used, in full, all the float time available for the work involved in the request.
 - 3. Total and free float is not for the exclusive use or benefit of either the OWNER or the CONTRACTOR, but is a resource available to both parties for the benefit of the project on a first needed basis.
 - 4. The CONTRACTOR shall not be entitled to additional compensation due to schedule impacts for change order work that extends the contract beyond the scheduled completion date, but not beyond the contract completion date.
 - 5. The Engineer's determination as to the adjustment of the contract time will be based upon the latest version of the Construction Schedule accepted at the time of the alleged delay, and all other relevant information.
 - 6. Actual delays in activities which, according to the Construction Schedule, do not affect the critical path work, will not be the basis of for an adjustment to the contract time.
 - 7. If the Construction Schedule shows that the project is behind schedule (i.e., has negative float) then no time extensions will be allowed for contract change orders unless they create a critical path delay in excess of that already occurring. In that case, the time extension allowed will only be that amount which exceeds the already occurring delay.
- B. Change Order Requests:
 - 1. The CONTRACTOR shall include, as part of each change order request for which the Contractor is requesting an adjustment in the contract duration, a subnetwork showing logic revisions, duration changes, and cost changes, for the work in question and its relationship to other activities on the Construction Schedule.
 - 2. The CONTRACTOR shall incorporate each Change Order into the Project Schedule.
- C. The Engineer will, within 15 working days after receipt of such request and supporting evidence, review the facts and advise the CONTRACTOR in writing thereof.
- D. The new Construction Schedule data, if accepted by the Engineer, shall be included in the next monthly updating of the schedule.

- E. Where the Engineer has not yet made a final determination as to the adjustment of the contract time, and the parties are unable to agree as to the amount of the adjustment to be reflected in the Construction Schedule, the CONTRACTOR shall reflect that amount of time adjustment in the Construction Schedule as the Engineer may determine as appropriate for such interim purpose.
1. It is understood and agreed that any such interim determination by the Engineer shall not be binding and shall be made only for the purpose of continuing to schedule the work, until such time as final determination as to any adjustment of the contract time acceptable to the Engineer has been made.
 2. The CONTRACTOR shall revise the Construction Schedule prepared thereafter in accordance with the final decision.

PART 2 - NOT USED

PART 3 - EXECUTION

3.1 IDENTIFICATION OF SUBMITTALS

- A. Completely identify each Construction Schedule submittal and resubmittal by showing at least the following information:
1. Name and address of submitter, plus name and telephone number of the individual who may be contacted for further information.
 2. Name of project as it appears in this Specification and specification number.
 3. Whether this is an original or updated submittal or resubmittal.
 4. Number all submittals sequentially in accordance with Section 01330, Submittal Procedures.

+ + END OF SECTION + +

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SECTION 01322

WEB BASED DOCUMENT CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. The project team will use and maintain a web-based database as the primary means of communication related to the Project's correspondence, submittals, requests for information (RFIs), advisory notices, and non-compliance issues. Correspondence from the Contractor shall be sent to the Construction Manager via the PROCORE System.
- B. The Construction Manager and Contractor shall utilize PROCORE's system for electronic submittal of all data and documents (unless specified otherwise by the Construction Manager) throughout the duration of the Contract. PROCORE is a web-based electronic media site that is hosted by PROCORE LLC utilizing their PROCORE web solution. PROCORE will be made available to all Contractor's project personnel. The joint use of this system is to facilitate; electronic exchange of information, automation of key processes, and overall management of the Contract. PROCORE shall be the primary means of project information submission and management. When required by the Construction Manager, paper documents will also be required. In the event of discrepancy between the electronic version and paper documents, the paper documents will govern. PROCORE is a registered trademark of PROCORE LLC.

1.2 USER ACCESS LIMITATIONS

- A. The Construction Manager will control the Contractor's access to PROCORE by allowing access and assigning user profiles to accepted Contractor personnel. User profiles will define levels of access into the system; determine assigned function-based authorizations (determines what can be seen) and user privileges (determines what they can do).

1.3 AUTOMATED SYSTEM NOTIFICATION AND AUDIT LOG TRACKING

- A. Review comments made (or lack thereof) by the Construction Manager and Design Consultant on Contractor submitted documentation shall not relieve the Contractor from compliance with requirements of the Contract Documents. The Contractor is responsible for managing, tracking, and documenting the Work to comply with the requirements of the Contract Documents. The Construction Manager's acceptance via automated system notifications or audit logs extends only to the face value of the submitted documentation and does not constitute validation of the Contractor's submitted information.

1.4 CONTRACTOR RESPONSIBILITY

- A. The Contractor shall be responsible for the validity of their information placed in PROCORE and for the abilities of their personnel. Accepted users shall be knowledgeable in the use of computers, including Internet Browsers, email programs, CAD drawing applications, and Adobe Portable Document Format (PDF) document distribution

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program. Adobe PDF documents will be created through electronic conversion rather than optically scanned whenever possible. The Contractor is responsible for the training of their personnel in the use of PROCORE (outside what is provided by the Construction Manager) and the other programs indicated above as needed.

1.5 USER ACCESS ADMINISTRATION

- A. Provide a list of Contractor's key PROCORE personnel for the Construction Manager's acceptance. The Construction Manager is responsible for adding and removing users from the system. The Construction Manager reserves the right to perform a security check on all potential users.

1.6 CONNECTIVITY PROBLEMS

- A. PROCORE is a web-based environment and therefore subject to the inherent speed and connectivity problems of the Internet. The Contractor is responsible for its own connectivity to the Internet. PROCORE response time is dependent on the Contractor's equipment, including processor speed, Internet access speed, etc. and current traffic on the Internet. The Owner and Construction Manager will not be liable for any delays associated from the usage of PROCORE including, but not limited to: slow response time, down time periods, connectivity problems, or loss of information. The Contractor will ensure that its connectivity to the PROCORE system (whether at the home office or job site) is accomplished through some form of high-speed communications with 128 kb/s as the minimum bandwidth requirements for using the system. It is recommended a faster connection be used when uploading pictures and files into the system. Under no circumstances shall the usage of PROCORE be grounds for a time extension or cost adjustment to the Contract. If there are problems that persist with the PROCORE site for more than 24 consecutive hours that prevent the electronic submission of data by the Contractor, the Contractor may submit documents in paper form to the Construction Manager until such time that the Construction Manager notifies the Contractor that the PROCORE site is operable and available for use. Construction Manager shall likewise send documents to Contractor in paper form during such disruption of the Procure system.

1.7 TRAINING

- A. The Construction Manager has arranged for the following training to be provided to the Contractor. The Construction Manager will provide a one-hour training class to the Contractor within ten (10) days of NTP at a time mutually agreeable to Contractor and Construction Manager. Thereafter the Construction Manager will provide up to one hour of additional training via telephone during the project per month of the project life.

PART 2 - PRODUCTS

2.1 GENERAL

- A. In order to process correspondence, submittals, and RFIs, the Contractor must provide and have in place for its own use the required basic components outlined below.
 - 1. Hardware

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- a. A computer with internet access and sufficient capabilities to perform all project duties; a scanner at least large enough to scan 11" x 17" sheets with sufficient resolution to maintain clarity and legibility of the document at its native size; and a color printer of sufficient size and capacity to accept incoming correspondence as described in this section.
2. Software
 - a. Adobe Acrobat 9 or higher; Microsoft's Internet Explorer v7 or higher; Microsoft Office 2010 or higher, including but not limited to Microsoft Word and Microsoft Excel.
 - b. PROCORE currently supports Mozilla's Firefox v3.5 and newer, Apple's Safari v4 and newer, Google Chrome, and Microsoft's Internet Explorer v7 and v8 web browsers for accessing the application. Certain functions may not be available when using any program other than the newest version of Microsoft's Internet Explorer.
3. Facilities
 - a. The Contractor shall make its own arrangements to provide high-speed (minimum speed: download 1Mbps/upload 256Kbps) internet connection for its own use as soon as practicable.

PART 3 - EXECUTION

3.1 SUMMARY

- A. Items to be uploaded to PROCORE by the Construction Manager include but are not limited to: RFI responses, Submittal comments, Clarification letters, Design Clarifications, Field Orders, et al. These items will be emailed via PROCORE as attachments in PDF file format via PROCORE. These attachments may include files that need to be viewed and/or printed in color. Formal letters, stop notices, Field Orders, Progress Payment Requests, and Contract Change Orders will always include a wet-signed hard copy.
- B. Items to be uploaded to PROCORE by the Constructor include but are not limited to: RFI, Submittals, Request for Clarification letters, Request for Design Clarification letters, et al. These items will be emailed via PROCORE as attachments in PDF file format via PROCORE. These attachments may include files that need to be viewed and/or printed in color. Contractor shall provide wet-signed hard copies of documents required by Contract Documents, as well as any documents requested by the Construction Manager, including but not limited to: Formal letters, Progress Payment Requests, and Contract Change Orders, et al.

3.2 PROCURE UTILIZATION

- A. All project related correspondence (RFIs, submittals, etc.) originated by the Contractor or Subcontractor, Supplier, et al. shall be directed to the Construction Manager, unless otherwise indicated in the Specifications.

3.3 SUBMITTALS

- A. The use of the electronic communication does not waive the requirement for the provision of hard copies of all formal correspondence and submittals. The hard copies of all documents must match the electronic copies of all correspondence and submittals.
- B. Submittals shall be in accordance with Section 01300. The provisions of Section 01300 shall apply both to electronic copies and hard copies of submittals.
- C. In addition to above, PROCORE shall be utilized in connection with submittal preparation and information management required by but not limited to Sections:
 - 1. Section 01320, **PROGRESS SCHEDULES**.
 - 2. Section 01300, **SUBMITTALS**.
- D. PROCORE will be utilized by all other Sections not listed above and as required by the Construction Manager.
- E. If a submittal package has multiple items that are not directly related, each item shall be considered a separate submittal and shall be sent separately. For example, "Concrete Mix Design," and "Concrete Curing Compound" shall be submitted as separate items to the Construction Manager.

3.4 TERMINATION IN USE

- A. The Owner may request a termination of the use of PROCORE for the electronic submission of data, and alternatively the use of paper documents submitted in accordance with the Contract Documents by providing notification in writing with ten (10) days' notice that it intends to discontinue use of PROCORE.

3.5 ADOBE PDF

- A. All information, comments, questions, and statements shall be scanned and/or converted to the PDF file format and attached to the email via PROCORE. Items to be sent via email via PROCORE include but are not limited to large-format plan sheets (22" x 34" or larger), small-format plan sheets, pages within tabbed binders, RFIs, transmittal sheets, et al. The PDF attachments supplied to the Construction Manager shall be in a sufficient resolution to be fully legible at its native size.
- B. All separate files within a given piece of correspondence shall be combined into a single PDF document (e.g. An RFI that contains a text file and two photo files shall be combined into a single PDF document prior to delivery to the Construction Manager.)

3.6 LABELING FORMAT

- A. The subject line of each email via PROCORE, and the file name of any attached files, shall be in accordance with Section 01330-1.3.A.2 for submittals and as directed by Construction Manager other correspondence (RFIs, Letters, Transmittals, Proposed Change Orders, et al.)
- B. Label shall include the type of correspondence (i.e. RFI, etc.), a unique number, sequentially assigned for the given piece of correspondence. The Contractor will

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indicate the subject at the end of the numbering scheme with a description (key words) of the item. Each piece of correspondence shall be sent in a separate email via PROCORE.

3.7 ORIGINAL DOCUMENTS

- A. Where possible, the Contractor will obtain the electronic document from its original source to maintain the integrity, legibility, and searchability of the document.

3.8 ORGANIZATION

- A. The information included in the attachments shall be organized in a logical and thoughtful manner. Where the information originated in a tabbed format (a binder, for example), the scanned and/or converted PDF file shall be electronically bookmarked accordingly using the "bookmark" function of Adobe Acrobat 9 Std.

3.9 PRINTING

- A. Except where otherwise indicated, the Contractor will receive no hard copies of the above outlined correspondence. The Contractor will be required to print for its use, in color if necessary, any record copies, field copies, sub-Contractor copies, etc., if such copies are desired.

3.10 PROJECT FORMS

- A. The Contractor may use its own correspondence forms to be attached to correspondence emails via PROCORE as long as the Contractor's forms comply with this and all submittal sections.

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O&M MANUAL REVIEW CHECKLIST

SUBMITTAL NO. _____ SPEC. SECTION. _____ SUBJECT _____ EQUIP. ITEM _____ _____	DATED _____ REVIEW DATE _____ REVIEWER _____ SUPPLIER _____ MANUFACTURER _____
--	---

ACCEPTABLE _____ UNACCEPTABLE _____	PROJECT TITLE: _____ PROJECT NO. 17-083
--	--

DISPOSITION	ACCEPTABLE?			COMMENTS
	YES	NO	NA	
HARD-COPY O&M MANUALS				
▪ Minimum five (5) copies.....	_____	_____	_____	_____
▪ Three-ring binder with hard-back cover.....	_____	_____	_____	_____
▪ Cover Label and Title Page:				
Project title and Project number	_____	_____	_____	_____
Specification section	_____	_____	_____	_____
System/Equipment names.....	_____	_____	_____	_____
Facility	_____	_____	_____	_____
Equipment number	_____	_____	_____	_____
▪ Typed table of contents.....	_____	_____	_____	_____
▪ Heavy section dividers w/numbered plastic index tabs .	_____	_____	_____	_____
▪ Sections parallel equipment specifications	_____	_____	_____	_____
▪ Pages punched for 3 ring binder (punching does not obliterate data)	_____	_____	_____	_____
▪ Info larger than 8-1/2"x11" folded showing title block, or included in binder pockets	_____	_____	_____	_____
▪ Multiple volumes labeled "Vol. 1", "Vol. 2", etc.....	_____	_____	_____	_____
▪ Table of contents for entire set in each binder.....	_____	_____	_____	_____
ELECTRONIC O&M MANUALS				
▪ Minimum one (1) copy on CD-ROM.....	_____	_____	_____	_____
▪ Full version of O&M manual in PDF format.....	_____	_____	_____	_____
▪ Separate text and drawing files used to create PDF O&M manual.....	_____	_____	_____	_____
▪ Index on CD-ROM as separate file titled "index"	_____	_____	_____	_____
▪ CD-ROM and case labeled	_____	_____	_____	_____
TECHNICAL CONTENT				
▪ Diagrams and illustrations, including pump curves	_____	_____	_____	_____
▪ Detailed description of function of principal components.....	_____	_____	_____	_____

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DISPOSITION	ACCEPTABLE?			COMMENTS
	YES	NO	NA	
▪ Performance and nameplate data	_____	_____	_____	_____
▪ Installation instructions.....	_____	_____	_____	_____
▪ Starting procedure	_____	_____	_____	_____
▪ Proper adjustment procedure.....	_____	_____	_____	_____
▪ Test procedures	_____	_____	_____	_____
▪ Operating procedure.....	_____	_____	_____	_____
▪ Shutdown instructions	_____	_____	_____	_____
▪ Emergency operating instructions & troubleshooting....	_____	_____	_____	_____
▪ Safety instructions	_____	_____	_____	_____
▪ Maintenance and overhaul instructions.....	_____	_____	_____	_____
▪ Lubrication instructions.....	_____	_____	_____	_____
▪ List of electrical relay settings and control and alarm contact settings	_____	_____	_____	_____
▪ Electrical interconnection wiring diagrams, including control and lighting systems	_____	_____	_____	_____
▪ Recommended spare parts and special tools.....	_____	_____	_____	_____
▪ Project specific warranty statement	_____	_____	_____	_____

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SECTION 01400
QUALITY CONTROL

PART 1 - GENERAL

1.1 OBSERVATION AND SUPERVISION

- A. The OWNER or OWNER'S appointed representative will review the Work and the CONTRACTOR shall provide facilities and access to the Work at all times as required to facilitate this review.
- B. Responsibility:
 - 1. The CONTRACTOR shall be solely responsible to supervise and direct the entire Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to complete the Work in accordance with the Contract Documents.
 - 2. The CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, quality control, and procedures of construction and safety precautions and programs incidental thereto.
 - 3. The foregoing includes work performed by the CONTRACTOR's Subcontractors.
 - 4. The CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.
- C. Superintendent:
 - 1. The CONTRACTOR shall designate in writing and keep on the work site at all times during its progress a technically qualified, English-speaking superintendent, who shall not be replaced without written acceptance of the OWNER.
 - 2. The superintendent shall be the CONTRACTOR's representative at the job site and shall have authority to act on behalf of the CONTRACTOR.
 - 3. All communications given to the superintendent shall be as binding as if given to the CONTRACTOR.
 - 4. The CONTRACTOR's superintendent shall be present at the site of the Work at all times while work is in progress. Failure to observe this requirement shall be considered as suspension of the Work by the CONTRACTOR until such time as such superintendent is again present at the site.

1.2 RESPONSIBILITY

- A. The CONTRACTOR is responsible for conducting all testing and inspection specifically required by the Specifications and otherwise necessary to ensure compliance with the Contract Documents.
 - 1. Approval of Testing Laboratories:
 - a. All laboratory work under this contract shall be performed by a laboratory approved by the OWNER, whether the laboratory is employed by the CONTRACTOR, or is owned and operated by the CONTRACTOR.
 - b. The basis of approval includes the following:

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- 1) Testing laboratories performing work in connection with concrete, steel, and bituminous materials shall comply with ASTM E 329 and ASTM D 3666, respectively.
 - 2) Testing laboratories performing work not in connection with concrete, steel, bituminous materials, soils and non-destructive testing shall comply with ASTM E 548.
- B. The OWNER may conduct periodic independent testing and inspection to verify compliance with the Contract Documents.
- C. Retesting:
1. The OWNER reserves the right to back-charge the CONTRACTOR for retesting of deficient or defective work or products upon written notification.
 2. Compensation for retesting on behalf of the OWNER will be made through deductions from the Progress Payments.
- D. The CONTRACTOR is responsible for correcting all defective work discovered prior to final acceptance of the Contract, despite the failure of the Inspector(s) to discover it.

1.3 TESTS AND INSPECTIONS

- A. The CONTRACTOR shall be responsible for scheduling all inspections and tests required.
1. The ENGINEER shall be given a minimum 48 business hours notice prior to any inspections or tests.
- B. The CONTRACTOR shall pay for all tests including, but not limited to:
1. Inspections and tests necessary to comply with laws, ordinances, rules, regulations and orders of public authorities pursuant to General Conditions.
 2. Mix designs, including tests of trial batches, on concrete mixes.
 3. Tests of materials, inspections, and certifications required by the Specifications.
 4. Testing, adjusting, and balancing of equipment and systems required by the Specifications.
 5. One tension and elongation test for each 5 tons of steel or fractional part thereof for each size will be required, unless the steel can be identified by heat or melt numbers and is accompanied by mill analysis and test reports. Commercial stock may be used, subject to approval of the ENGINEER.
 6. Any testing performed by the CONTRACTOR for their own quality control (e.g., compaction tests).
 7. Retests or re-inspections by the OWNER, if required, and tests or inspections required due to CONTRACTOR error or lack of required identifications of material.
 8. Any and all water used by the CONTRACTOR in any testing.
- C. Two copies of the agency or laboratory report of each test or inspection shall be provided to the OWNER. All tests of materials shall be made in accordance with the commonly recognized standards of national technical organizations, and such other special methods and tests as are prescribed in the Contract Documents.
- D. Purchase Orders:
1. One copy of each of the CONTRACTOR's purchase orders for materials forming a portion of the work shall be furnished to the OWNER, if requested.

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2. Each such purchase order shall contain a statement that the materials included in the order are subject to inspection by the OWNER.
3. Materials purchased locally will be inspected at the point of manufacture or supply, and materials supplied from points more than 50 miles from the job site will be inspected upon arrival at the job, except when other inspection requirements are provided for specific materials in other Sections of this Specification.

E. Samples:

1. The CONTRACTOR shall furnish samples of materials as are required by the OWNER, without charge.
2. No material shall be used until the OWNER has had the opportunity to test or examine such materials.
3. Samples will be secured and tested whenever necessary to determine the quality of the material.
4. Samples and test specimens prepared at the job site, such as concrete test cylinders, shall be taken or prepared by the CONTRACTOR.

1.4 AUTHORITY AND DUTIES OF INSPECTOR

- A. Inspectors employed by the OWNER shall be authorized to inspect all work done and materials and equipment furnished to complement the CONTRACTOR furnished independent inspector.
1. Such inspection may extend to all or any part of the work, and to the preparation, fabrication, or manufacture of the materials and equipment to be used.
 2. The Inspector will not alter or waive the provisions of the Contract Documents.
 3. The Inspector will keep the ENGINEER informed as to the progress of the work and the manner in which it is being done.
 4. The Inspector will call the CONTRACTOR's attention to nonconformance with the Contract Documents that the Inspector may have observed.
 5. The Inspector will not be responsible for the adequacy or correctness of the CONTRACTOR's means, methods, techniques, sequences, or procedures for construction.
 6. The Inspector will not approve or accept any portion of the work, issue instructions contrary to the Contract Documents, or act as foreman for the CONTRACTOR.
 7. The Inspector may reject defective materials, equipment, or work when it is not in compliance with the Contract Documents.
 8. The Inspector will not be responsible for:
 - a. The CONTRACTOR's quality control program.
 - b. The CONTRACTOR's safety program.
 - c. Coordinating the work or activities of the CONTRACTOR or their Subcontractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

+ + END OF SECTION + +

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SECTION 01420

REFERENCE STANDARDS AND ABBREVIATIONS

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

- A. The standards referred to, except as modified, shall have full force and effect as though printed in this Specification, and shall be the latest edition or revision thereof in effect on the bid opening date, unless a particular edition or issue is indicated. Copies of these standards are not available from the OWNER.
- B. Abbreviations and terms, or pronouns in place of them, shall be interpreted as follows:

AAMA:	Architectural Aluminum Manufacturer's Association
AAN:	American Association of Nurserymen
AAR:	Association of American Railroads
AASHTO:	American Association of State Highway and Transportation Officials, Standard Specifications
AATCC:	American Association of Textile Chemists and Colorists
ACI:	American Concrete Institute, Standards
AFBMA:	Anti-Friction Bearing Manufacturer's Association, Inc.
AGA:	American Gas Association
AGC:	Associated General Contractors
AGMA:	American Gear Manufacturer's Association
AHAM:	Association of Home Appliance Manufacturer's
AI:	The Asphalt Institute
AIA:	American Institute of Architects
AISC:	American Institute of Steel Construction, Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings, and the AISC Code of Standard Practice
AISI:	American Iron and Steel Institute
AITC:	American Institute of Timber Construction
AMCA:	Air Moving and Conditioning Association, Standards
ANS:	American Nuclear Society
ANSI:	American National Standards Institute
APA:	American Plywood Association
API:	American Petroleum Institute
APWA:	American Public Works Association, Standard Specifications for Public Works Construction
ASA:	Acoustical Society of America
ASAE:	American Society of Agriculture Engineers
ASCE:	American Society of Civil Engineers
ASHRAE:	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASLE:	American Society of Lubricating Engineers

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ASME:	American Society of Mechanical Engineers
ASQC:	American Society of Quality Control
ASSE:	American Society of Sanitary Engineers
ASTM:	American Society for Testing and Materials, Standards
AWG:	American Wire Gauge
AWPA:	American Wood-Preservers' Association, Standards
AWPI:	American Wood Preservers Institute
AWS:	American Welding Society
AWWA:	American Water Works Association, Standards
BBC:	Basic Building Code, Building Officials and Code Administrators International
BHMA:	Builders Hardware Manufacturer's Association
CAL/OSHA:	California/Occupational Safety and Health Administration, Standards
CBM:	Certified Ballast Manufacturer's
CCR:	California Code of Regulations
CEMA:	Conveyors Equipment Manufacturer's Association
CGA:	Compressed Gas Association
CISPI:	Cast Iron Soil Pipe Institute, Standards
CLPCA:	California Lathing and Plastering Contractors Association
CLFMI:	Chain Link Fence Manufacturer's Institute
CMAA:	Crane Manufacturers' Association of America
CMA:	Concrete Masonry Association
CRSI:	Concrete Reinforcing Steel Institute, Standards
CSS:	CalTrans Standard Specifications, State of California, Department of Transportation
DCDMA:	Diamond Core Drill Manufacturer's Association
DOSH:	Division of Occupational Safety and Health, State of California, Department of Industrial Relations
EIA:	Electronic Industries Association
ETL:	Electrical Test Laboratories
FED/OSHA:	Federal Occupational Safety and Health Administration, Standards
FM:	Factory Mutual
ICBO:	International Conference of Building Officials
ICEA:	Insulated Cable Engineers Association
IEEE:	Institute of Electrical and Electronic Engineers
IES:	Illuminating Engineering Society
IME:	Institute of Makers of Explosives
IP:	Institute of Petroleum (London)
IPC:	Institute of Printed Circuits
IPCEA:	Insulated Power Cable Engineers Association
ISA:	Instrument Society of America
ISO:	International Organization of Standardization
ITE:	Institute of Traffic Engineers
MBMA:	Metal Building Manufacturer's Association
MPTA:	Mechanical Power Transmission of Association
MTI:	Marine Testing Institute

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MSS:	Manufacturers Standardization Society
NAAM:	National Association of Architectural Metal Manufacturers
NACE:	National Association of Corrosion Engineers, Standards
NBS:	National Bureau of Standards
NCCLS:	National Committee for Clinical Laboratory Standards
NEC:	National Electric Code
NEMA:	National Electrical Manufacturers' Association, Standards
NFPA:	National Fire Protection Association
NFPA:	National Forest Products Association
NGLI:	National Lubricating Grease Institute
NMA:	National Microfilm Association
NWMA:	National Woodwork Manufacturers Association
OSHA:	Occupational Safety and Health Administration
PCA:	Portland Cement Association
PCI:	Prestressed Concrete Institute
RIS:	Redwood Inspection Service, Standard Specifications
RVIA:	Recreational Vehicle Industry Association
RWMA:	Resistance Welder Manufacturer's Association
SAE:	Society of Automotive Engineers
SAMA:	Scientific Apparatus Makers Association
SDI:	Steel Door Institute
SIS:	Swedish Standards Association
SMA:	Screen Manufacturer's Association
SMACNA:	Sheet Metal and Air Conditioning Contractors National Association
SPR:	Simplified Practice Recommendation
SSBC:	Southern Standard Building Code, Southern Building Code Congress
SSPC:	Steel Structures Painting Council, Specifications
SSPWC:	Standard Specifications for Public Works Construction
TAPPI:	Technical Association of the Pulp and Paper Industry
TFI:	The Fertilizer Institute
UBC:	Uniform Building Code of the International Conference of Building Officials
UPC:	Uniform Plumbing Code
UL:	Underwriters Laboratories
WCLA:	West Coast Lumbermen's Association, Standard Grading and Dressing Rules
WCLIB:	West Coast Lumber Inspection Bureau
WCRSI:	Western Concrete Reinforcing Steel Institute
WIC:	Woodwork Institute of California
WRI:	Wire Reinforcement Institute, Inc.
WWPA:	Western Wood Products Association

1.2 OTHER ABBREVIATIONS

- A. Other common abbreviations that may be found in the Specifications are, but may not be limited to:

acrylonitrile butadiene	ABS	styrene alternating current	a-c, AC
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American wire gauge	AWG	gallons per second	gps, gal/s
ante meridiem	am	gram	g
ampere	A, amp	ground fault current interrupter	GFCI
average	avg		
biochemical oxygen demand	BOD	hand/off/automatic heating, ventilating, and air conditioning	HOA HVAC
brake horsepower	bhp	Hertz	Hz
British thermal unit	Btu	hour	hr
Centigrade	C	horsepower	hp
chlorinated polyvinyl chloride	CPVC	inch	in
company	Co	inch-pound	in-lb
cubic inch	cu in, in ³	input/output	I/O
cubic foot	cu ft, CF, ft ³	inside diameter	ID
cubic yard	cu yd, CY, yd ³	instrumentation and control	I&C
cubic feet per minute	cfm, ft ³ /min		
cubic feet per second	cfs, ft ³ /s		
decibel	dB	kilovolt	kV
decibels, A-weighted	dBA	kilovolt-ampere	kVA
degree Centigrade (Celsius)	°C, C	kilowatt	kW
degree Fahrenheit	°F, F	kilowatt-hour	kWhr
diameter	diam, ø	length	L
direct current	d-c, DC	length to least radius of gyration	L/r
dollars	\$	light emitting diode	LED
ductile iron	DI	linear	lin
each	ea, @	linear foot	lin ft
efficiency	eff	liter	l
elevation	El., Elev		
ethylene propylene rubber	EPDM	manhole	MH
exhaust fan	EF	maximum	max
		mean sea level	MSL
Fahrenheit	F	mercury	Hg
feet	ft	miles per hour	mph
feet per hour	fph, ft/h	milli-amp	mA
feet per minute	fpm, ft/min	milliampere DC	mAdc
feet per second	fps, ft/s	milligram	mg
fiberglass reinforced plastic	FRP	milligrams per liter	mg/l
figure	Fig.	milliliter	ml
flange	flg	millimeter	mm
foot-pound	ft-lb	million gallon	mil
		million gallons per day	mgd
		minimum	min
gallon	gal	motor control center	MCC
gallons per hour	gph, gal/hr		
gallons per minute	gpm, gal/min	net positive suction	

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head available	NPSHA	revolutions per minute	rpm
net positive suction			
head required	NPSHR	second	sec, s
number	No., #	specific gravity	sp gr
National Pipe Thread	NPT	square foot	sq ft, SF, ft ²
		square inch	sq in, in ²
Operation and Maintenance	O&M	square yard	sq yd, SY, yd ²
ounce	oz	stainless steel	SS
outside diameter	OD	standard	std
		standard cubic feet	
parts per million	ppm	per minute	scfm
post meridiem	pm	symmetrical	sym.
plus or minus	+/-, ±		
polytetrafluorethylene	PTFE	total dynamic head	tdh
polyvinyl chloride	PVC	totally-enclosed, fan-	
pound	lb	cooled	TEFC
pounds per square foot	psf, lb/ft ²	totally-enclosed, non-	
pounds per square inch	psi, lb/in ²	ventilated	TENV
pounds per square inch		twisted shielded	TWSH
absolute	psia		
pounds per square inch		ultraviolet	UV
gage	psig	United States	US, USA
Process and Instrumentation			
Diagrams	P&ID	variable frequency drive	VFD, AFD
		volt	V
random access memory	RAM	volts alternating current	VAC
reinforced concrete pipe	RCP	volts direct current	VDC
reinforced concrete cylinder			
pipe	RCCP	water to cement	W/C, wc
relative humidity	RH	water column	W.C.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

+ + END OF SECTION + +

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SECTION 01500

TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES

PART 1 - GENERAL

1.1 CONTRACTOR'S STAGING AREA AND WORK ACCESS PLAN

- A. The CONTRACTOR shall limit the location of the storage of equipment and materials to the staging area(s) designated on the Drawings and as directed by the ENGINEER.
- B. The CONTRACTOR shall make their own arrangements for additional space that may be required and shall bear all associated costs.
- C. The CONTRACTOR shall submit a work access plan showing the planned access route for deliveries of supplies and mobilization of work force for OWNER's approval prior to mobilization.
- D. On-Site Project Office:
 - 1. The CONTRACTOR shall maintain near the work in progress a suitable office or other protected area in which shall be kept project copies of the Contract Documents, project progress records, project schedule, shop drawings and other relevant documents which shall be accessible to the OWNER and ENGINEER during normal working hours.
 - 2. The CONTRACTOR shall make their own arrangements for additional space that may be required and bear all associated costs.
- E. Temporary Facilities Plan:
 - 1. The CONTRACTOR shall submit to the OWNER for approval, as part of the mobilization effort, the proposed plan and layout for all temporary offices, sanitary facilities, temporary construction roads, storage buildings, storage yards, temporary water service and distribution, temporary telephone and temporary power service and distribution.
 - 2. The plan shall show all temporary fencing and gates and all proposed access to the work areas.
 - 3. Prior to the removal of existing fence, the CONTRACTOR shall provide temporary security fencing at least equal to the existing chain link and barbed wire fencing to protect the existing facilities and structures.
- F. Access Roads:
 - 1. The CONTRACTOR shall "winterize" all access roads to provide a surface reasonably satisfactory for traffic during wet winter months.
 - 2. The roads shall be gravel surfaced, even, free from humps and depressions.
 - 3. All costs of complying with this requirement shall be included in the lump sum bid.

1.2 STORAGE - GENERAL

- A. The CONTRACTOR shall provide any temporary storage required for the protection of equipment and materials as recommended by manufacturers of such materials.

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1.3 STORAGE BUILDINGS

- A. The CONTRACTOR shall erect or provide temporary storage buildings of the various sizes as required for the protection of mechanical and electrical equipment and materials as recommended by manufacturers of such equipment and materials.
- B. The buildings shall be provided with such environmental control systems that meet recommendations of manufacturers of all equipment and materials stored in the buildings.
- C. The buildings shall be of sufficient size and so arranged or partitioned to provide security for their contents and provide ready access for inspection and inventory.
- D. At or near the completion of the work, the temporary storage buildings shall be dismantled, removed from the site, and remain the property of the CONTRACTOR.
- E. Combustible materials (paints, solvents, fuels, etc.) shall be safely stored and separated in accordance with the manufacturer's requirements and in compliance with hazardous material storage requirements. CONTRACTOR shall be responsible for providing proper storage buildings for combustible materials.

1.4 STORAGE YARDS

- A. The CONTRACTOR shall provide temporary storage yards as required for the storage of materials that are not subject to damage by weather conditions.
- B. Materials such as pipe, reinforcing and structural steel, shall be stored on pallets or racks, off the ground, and stored in a manner to allow ready access for inspection and inventory.
- C. Temporary gravel surfacing of the storage yards shall meet with the approval of the ENGINEER.

1.5 PARKING AREAS

- A. Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, OWNER's operations, or construction operations.

1.6 VEHICULAR TRAFFIC

- A. Comply with Laws and Regulations regarding closing or restricting use of public streets or highways. No public or private road shall be closed, except by written permission of proper authority. Assure the least possible obstruction to traffic and normal commercial pursuits.
- B. Conduct the Work to interfere as little as possible with public travel, whether vehicular or pedestrian.

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- C. Whenever it is necessary to cross, close, or obstruct roads, driveways, and walks, whether public or private, provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.

1.7 DELIVERY-STORAGE-HANDLING

A. General:

1. The CONTRACTOR shall deliver, handle, and store materials and equipment in accordance with supplier's written recommendations and by methods and means which will prevent damage, deterioration, and loss including theft.
2. Delivery schedules shall be controlled to minimize long-term storage at the site and overcrowding of construction spaces.
3. In particular, the CONTRACTOR shall provide delivery/ installation coordination to ensure minimum holding or storage for material or equipment recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other sources of loss.

B. Transportation and Handling:

1. Materials and equipment shall be transported by methods to avoid damage and shall be delivered in dry, undamaged condition in supplier's unopened containers or packaging.
2. The CONTRACTOR shall provide equipment and personnel to handle the materials, and equipment by methods that will prevent soiling and damage.
3. The CONTRACTOR shall provide additional protection during handling to prevent marring and otherwise damaging packaging, and surrounding surfaces.

C. Storage and Protection:

1. Materials and equipment shall be stored in accordance with supplier's written instructions, with seals and labels intact and legible. Exposed metal surfaces of valves, fittings and similar materials shall be coated with grease in accordance with manufacturer's recommendations to prevent corrosion. Sensitive materials and equipment shall be stored in weather-tight enclosures and temperature and humidity ranges shall be maintained within tolerances required by supplier's written instructions.
2. For exterior storage of fabricated materials, they shall be placed on sloped support above ground. Materials or equipment subject to deterioration shall be covered with impervious sheet covering; ventilation shall be provided to avoid condensation.
3. Loose granular materials shall be stored on solid surfaces in a well-drained area and shall be prevented from mixing with foreign matter.
4. Inspection:
 - a. Storage shall be arranged to provide access for inspection.
 - b. The CONTRACTOR shall periodically inspect to assure materials and equipment are undamaged and are maintained under required conditions.
5. Storage shall be arranged in a manner to provide access for maintenance of stored items.

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1.8 PROJECT SECURITY

- A. The CONTRACTOR shall make adequate provision for the protection of the work area against fire, theft and vandalism, and for the protection of the public and OWNER personnel against exposure to injury, and for the security of any off-site storage areas.
- B. All costs for this protection shall be included within the CONTRACTOR's bid.

1.9 TEMPORARY UTILITIES

- A. The CONTRACTOR shall provide and pay for all necessary temporary telephones, fuel, power, potable water, sanitary, and proper toilet accommodations. CONTRACTOR shall not use OWNER-owned utilities.
- B. The temporary facilities to be provided by the CONTRACTOR as described above shall conform to all requirements in regard to operation, safety, and fire hazards of State and local authorities and of Underwriters.
- C. CONTRACTOR shall return the site and facilities to their original "as-found" condition, unless otherwise specified in the Contract Documents, at the completion of the project.

1.10 SOUND CONTROL

- A. The CONTRACTOR shall comply with all local sound control and noise level rules, regulations and ordinances which apply to any work performed pursuant to the contract.
- B. Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer, so as to produce a maximum noise level of 85 dBA at 5 feet.
- C. No internal combustion engine shall be operated on the project without said muffler.
- D. Special Precautions for Inhabited Areas:
 - 1. In inhabited areas, particularly residential, operations shall be performed in a manner to minimize unnecessary noise generation.
 - 2. In residential areas, special measures shall be taken to suppress noise generated by repair and service activities during the night hours.

1.11 DUST/AIR POLLUTION CONTROL

- A. The CONTRACTOR shall take whatever steps, procedures, or means as are required to prevent dust conditions being caused by operations in connection with the execution of the Work; and on any road which the CONTRACTOR or any of their Subcontractors are using, excavation or fill areas, demolition operations, or other activities.
- B. Control shall be by sprinkling, use of dust palliatives, modification of operations, or any other means acceptable to agencies having jurisdiction.

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- C. Damage to personal property, etc., resulting from the CONTRACTOR's construction operations shall be borne by the CONTRACTOR at no cost to the OWNER.
- D. The CONTRACTOR shall keep the streets and work area clean at all times by means of mechanical sweepers or hand sweeping. Water will be used for dust control only, and not for cleaning streets.
- E. Burning of waste, rubbish, or other debris will not be permitted on or adjacent to site.

1.12 WASTE DISPOSAL

- A. The CONTRACTOR shall dispose of surplus materials, waste products, and debris and shall make necessary arrangements for such disposal. The CONTRACTOR shall obtain written permission from property owner prior to disposing surplus materials, waste products, or debris on private property.
- B. All waste disposal shall be done in accordance with applicable laws and regulations.
- C. Landfill Disposal:
 - 1. If the CONTRACTOR proposes to dispose of construction debris, trench spoils, excavation spoils, etc., at a landfill, the CONTRACTOR shall be responsible to provide and pay for all permits and analyses required by the landfill.
 - 2. If the analyses determine that the material is hazardous, then an equitable adjustment of the Contract for the cost of hazardous waste disposal will be made in accordance with the General Conditions, and the following:
 - a. Time extension or contract costs will not be granted for delays that could have been avoided by the CONTRACTOR redirecting their forces and equipment to perform other work on the contract.
- D. Ditches, washes, or drainageways shall not be filled.
- E. Disposal operations shall not create unsightly or unsanitary nuisances.
- F. The CONTRACTOR shall maintain the disposal site in a condition of good appearance and safety during the construction period.
- G. Prior to final acceptance of the work, the CONTRACTOR shall have completed the leveling and cleanup of the disposal site.

1.13 CLEAN UP

- A. Throughout the period of construction, the CONTRACTOR shall keep the work site free and clean of all rubbish and debris, and shall promptly remove from the site, or from property adjacent to the site of the work, all unused and rejected materials, surplus earth, concrete, plaster, and debris.
- B. Upon completion of the work, and prior to final acceptance, the CONTRACTOR shall remove from the vicinity of the work all plant, surplus material, and equipment belonging to the CONTRACTOR or used under their direction during construction.

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1.14 TEMPORARY ENCLOSURES

- A. When sandblasting, spray painting, spraying of insulation, or other activities inconveniencing or dangerous to property or the health of employees, the public or construction workers, are in progress, the area of activity shall be enclosed adequately to contain the dust, over spray, or other hazard.
- B. In the event there are no permanent enclosures of the area, or such enclosures are incomplete or inadequate, the CONTRACTOR shall provide suitable temporary enclosures as required by the ENGINEER to meet field conditions in accordance with the recommendations of the owner-furnished equipment supplier (if applicable) and the CONTRACTOR's equipment supplier requirements.
- C. Said temporary or permanent enclosures shall be adequately ventilated to ensure the safety of the workers.

1.15 DRAINAGE

- A. The CONTRACTOR shall take all necessary actions as required to meet discharge requirements of the State of California and other pertinent local ordinances and regulations pertaining to dewatering and/or site drainage discharged into storm drains and creeks. This may include, but may not be limited to, the use of retention basins and silt basins to settle most of the solids prior to discharge.
- B. In excavation, fill, and grading operations, care shall be taken to disturb the pre-existing drainage pattern as little as possible.
- C. Particular care shall be taken not to direct drainage water onto private property or into streets or drainageways inadequate for the increased flow.
- D. Drainage means shall be provided to protect the work.

1.16 TEMPORARY LIGHTING

- A. The CONTRACTOR shall provide temporary lighting in all work areas sufficient to maintain a lighting level during working hours not less than the lighting level required by OSHA standards.

1.17 CONSTRUCTION FACILITIES

- A. Construction hoists, elevators, scaffolds, stages, shoring, and similar temporary facilities shall be of ample size and capacity to adequately support and move the loads to which they will be subjected. Railings, enclosures, safety devices, and controls required by law or for adequate protection of life and property shall be provided.
- B. Temporary supports shall be designed with an adequate safety factor to assure adequate load bearing capability. Whenever required by safety regulations, the CONTRACTOR shall submit design calculations for staging and shoring prior to application of loads.

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1.18 REMOVAL OF TEMPORARY FACILITIES AND UTILITIES

- A. At such time or times as any temporary construction facilities and utilities are no longer required for the work, the CONTRACTOR shall notify the OWNER of their intent and schedule for removal of the temporary facilities and utilities and obtain the OWNER's approval before removing the same.
- B. As approved, the CONTRACTOR shall remove the temporary facilities and utilities from the site as CONTRACTOR's property and leave the site in such condition as specified, as directed by the ENGINEER, and/or as shown on the Drawings.
- C. In unfinished areas, such as planted medians, the condition of the site shall be left in a condition that will restore original drainage, evenly graded, seeded or planted as necessary, and left with an appearance equal to, or better than original.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

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SECTION 01505

MOBILIZATION

PART 1 - GENERAL

1.1 GENERAL

- A. Mobilization shall include the obtaining of all bonds, insurance, and licenses; moving onto the site of all plant and equipment; furnishing and erecting plants, temporary buildings, and other construction facilities; all as required for the proper performance and completion of the work.
- B. Mobilization shall include but not be limited to the following principal items:
 - 1. Moving on to the site of all CONTRACTOR's plant and equipment.
 - 2. Installing temporary construction power, wiring, and lighting facilities.
 - 3. Establishing fire protection system.
 - 4. Developing construction water supply.
 - 5. Furnishing the work access plan as specified in Section 01500, Temporary Construction Facilities and Utilities.
 - 6. Providing all on-site CONTRACTOR communication facilities, including telephones, and radio pagers and any radio communications facilities required for the CONTRACTOR to coordinate their forces.
 - 7. Providing on-site sanitary facilities and potable water facilities as specified in Section 01500, Temporary Construction Facilities and Utilities.
 - 8. Arranging for and erection of the CONTRACTOR's work and storage yard, including site security.
 - 9. Posting all EPA and OSHA required notices and establishment of safety programs.
 - 10. Post all required labor and EEOE notices.
 - 11. Have the CONTRACTOR's superintendent at the job site full time.
 - 12. Submittal and OWNER acceptance of the Construction Schedule.
 - 13. Establishing site security, lighting, fencing, and signing.
 - 14. Obtaining all bonds, insurance and licenses.
 - 15. Providing an organization chart of the project and for the CONTRACTOR's firm. The project chart shall include the name, title and responsibilities of each position which is involved in the work.
 - 16. Other mobilization items approved by the ENGINEER required to support the complete work (e.g., Health and Safety Plans for Hazardous Waste).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

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SECTION 01610

GENERAL PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SCOPE

- A. All products furnished and installed under this contract shall conform to the general stipulations set forth in this Section except as otherwise specified in other Sections.

1.2 COORDINATION

- A. The CONTRACTOR shall coordinate all details of the products and equipment with other related parts of the work, including verification that all structures, piping, wiring, and equipment components are compatible. The CONTRACTOR shall be responsible for all structural and other alterations in the work required to accommodate products or equipment differing in dimensions or other characteristics from that contemplated in the Contract Drawings or Specifications.

1.3 DESIGN REQUIREMENTS

- A. Where CONTRACTOR design is specified, design and installation of systems, equipment, and components, including supports and anchorage, shall be in accordance with provisions of 2016 edition of the California Building Code (CBC).
 - 1. Basic Wind Speed: 115 mph, Exposure C.
 - 2. Seismic:
 - a. S_s (maximum short-term spectral response acceleration) = 0.538
 - b. S_1 (maximum 1-second spectral response acceleration) = 0.260
 - c. S_{DS} (design short-term spectral response acceleration) = 0.491
 - d. S_{D1} (design 1-second spectral response acceleration) = 0.326
 - e. I_e (Seismic Importance Factor) = 1.5
 - f. Risk Category = IV
 - g. Seismic Use Group = III
 - 3. Maximum Rain Intensity: 3-inches/hour
- B. Proof of Compliance:
 - 1. Structural integrity and anchorage shall be certified by an approved calculation that demonstrates the adequacy of the anchorage system for seismic forces. This calculation may be based on principles of structural analysis and engineering mechanics, or based on similarity to approved shake-table tests.
 - 2. The CONTRACTOR shall submit for review and approval test data or calculations certified by a Civil or Structural Engineer registered in the State of California to show compliance with the above requirements.

1.4 ENVIRONMENTAL REQUIREMENTS

- A. Altitude: Provide materials and equipment suitable for installation and operation under rated conditions at 100 feet above sea level.

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- B. Provide equipment and devices installed outdoors or in unheated enclosures capable of continuous operation within an ambient temperature range of 15 degrees F to 120 degrees F.

1.5 WORKMANSHIP AND MATERIALS

- A. The CONTRACTOR shall guarantee all equipment against faulty or inadequate design, improper assembly or erection, defective workmanship or materials, and leakage, breakage, or other failure. Materials shall be suitable for service conditions.
- B. All equipment shall be designed, fabricated, and assembled in accordance with recognized and acceptable engineering and shop practice. Individual parts shall be manufactured to standard sizes and gages so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable. Equipment shall not have been in service at any time prior to delivery, except as required by tests.
- C. Except where otherwise specified, structural and miscellaneous fabricated steel used in equipment shall conform to AISC standards. All structural members shall be designed for shock or vibratory loads. Unless otherwise specified, all steel which will be submerged, all or in part, during normal operation of the equipment shall be at least 1/4 inch thick.
- D. Except where otherwise specified, all metal which will be exposed to weather, submerged or otherwise exposed to moisture shall be either non-ferrous or stainless steel, as the application may require.

1.6 LUBRICATION

- A. Equipment shall be adequately lubricated by systems which require attention no more frequently than weekly during continuous operation. Lubrication systems shall not require attention during startup or shutdown and shall not waste lubricants.
- B. Lubricants of the type recommended by the equipment manufacturer shall be provided in sufficient quantity to fill all lubricant reservoirs and to replace all consumption during testing, startup, and operation prior to acceptance of equipment by OWNER. Unless otherwise specified or permitted, the use of synthetic lubricants will not be acceptable.
- C. Lubrication facilities shall be convenient and accessible. Oil drains and fill openings shall be easily accessible from the normal operating area or platform. Drains shall allow for convenient collection of waste oil in containers from the normal operating area or platform without removing the unit from its normal installed position.

1.7 ELECTRIC MOTORS

- A. Unless otherwise specified, motors furnished with equipment shall meet the following requirements:
 - 1. Designed and applied in accordance with NEMA, ANSI, IEEE, AFBMA, and NEC for the duty service imposed by the driven equipment, such as frequent starting, intermittent overload, high inertia, mounting configuration, or service environment.

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2. Rated for continuous duty at 40oC ambient, unless the application is well recognized for intermittent duty service as a standard industry practice.
3. Insulated with Class F insulation and designed for a service factor of 1.15, or greater.
4. Three phase motors used in conjunction with variable speed drives shall have Class F insulation with a Class B temperature rise at rated nameplate horsepower, and 1.15 service factor.
5. When operating at service factor load, maximum observable temperature rise of insulation and motor parts, as determined by resistance or thermometer methods, shall not exceed the NEMA allowable limits for the type of motor, the type of enclosure, and the particular application with regard to continuous or intermittent duty.
6. To ensure long motor life, nameplate horsepower, regardless of service factor, shall be at least 115 percent of the maximum load imposed by the driven equipment.
7. Designed for full voltage starting.
8. Designed to operate from an electrical system that may have a maximum of 5 percent voltage distortion per IEEE Standard 519.
9. Derated, if required, for the altitude at which the equipment is installed.
10. Clamp-type grounding terminal shall be inside motor conduit box.
11. External conduit boxes shall be oversized at least one size larger than NEMA standard.
12. Totally enclosed motors shall have a continuous moisture drain which also excludes insects.
13. Bearings shall be either oil or grease lubricated.
14. Manufacturer's standard motor may be supplied on integrally constructed, packaged assemblies such as appliances, tools, unit heaters, and similar equipment specified by model number, in which case a redesign of the unit would be required to furnish motors of other than the manufacturer's standard design. However, in all cases, totally enclosed motors are preferred and shall be furnished if offered by the manufacturer as a standard option.
15. Totally enclosed motors shall be furnished on:
 - a. Equipment for installation below grade.
 - b. Equipment operating in wet or dust-laden locations.
16. Drip-proof motors, or totally enclosed motors at the supplier's option, shall be furnished on equipment in indoor, above-grade, clean, and dry locations.
17. Explosion-proof or submersible motors shall be furnished as required by applicable codes, as specified in other Sections, or at the supplier's option.
18. Motors shall be rated and constructed as follows:
 - a. Below 1/2 hp:
 - 1) 115 volts, 60 Hz, single phase.
 - 2) Built-in manual-reset thermal protector, or integrally mounted stainless steel enclosed manual motor starter.
 - b. 1/2 hp and above:
 - 1) 460 volts, 60 Hz, 3 phase.
 - 2) Where specified or required by the drawings, motors used on 240 volt systems shall be 230 volts, 60 Hz, 3 phase.

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1.8 DRIVE UNITS

- A. The nominal input horsepower rating of each gear or speed reducer shall be at least equal to the nameplate horsepower of the drive motor. Drive units shall be designed for 24 hours continuous service.
- B. Unless otherwise specified, the use of gearmotors will not be acceptable.
- C. Gear reducers:
 - 1. Each gear reducer shall be a totally enclosed unit with oil or grease lubricated antifriction, rolling element bearings throughout.
 - 2. Helical, spiral bevel, combination bevel-helical, and worm gear reducers shall have a service factor of at least 1.50 based on the nameplate horsepower of the drive motor. Shaft-mounted and flange-mounted gear reducers shall be rated AGMA Class II. Helical gear reducers shall have a gear strength rating to catalog rating of 1.5. Each gear reducer shall bear an AGMA nameplate.
 - 3. The thermal horsepower rating of each unit shall equal or exceed the nameplate horsepower of the drive motor. During continuous operation, the maximum sump oil temperature shall not rise more than 100°F above the ambient air temperature in the vicinity of the unit and shall not exceed 200°F.
 - 4. Bearings:
 - a. Each grease lubricated bearing shall be installed in a bearing housing designed to facilitate periodic regreasing of the bearing by means of a manually operated grease gun.
 - b. Each bearing housing shall be designed to evenly distribute new grease, to properly dispose of old grease, and to prevent overgreasing of the bearing.
 - c. The use of permanently sealed, grease lubricated bearings will not be acceptable.
 - d. An internal or external oil pump and appurtenances shall be provided if required to properly lubricate oil lubricated bearings.
 - e. A dipstick or sight glass arranged to permit visual inspection of lubricant level shall be provided on each unit.
 - 5. Gear reducers that require the removal of parts or periodic disassembly of the unit for cleaning and manual regreasing of bearings will not be acceptable.
 - 6. Certification shall be furnished by the gear reducer manufacturer indicating that the intended application of each unit has been reviewed in detail by the manufacturer and that the unit provided is fully compatible with the conditions of installation and service.
- D. V-belt drives:
 - 1. Each V-belt drive shall include a sliding base or other suitable tension adjustment. V-belt drives shall have a service factor of at least 1.6 at maximum speed based on the nameplate horsepower of the drive motor.

1.9 SAFETY GUARDS

- A. All belt or chain drives, fan blades, couplings, and other moving or rotating parts shall be covered on all sides by a safety guard.
- B. Safety guards shall be fabricated from 16 USS gauge or heavier galvanized or aluminum-clad sheet steel or 1/2 inch mesh galvanized expanded metal.

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- C. Each guard shall be designed for easy installation and removal.
- D. All necessary supports and accessories shall be provided for each guard. Supports and accessories, including bolts, shall be galvanized.
- E. All safety guards in outdoor locations shall be designed to prevent the entrance of rain and dripping water.

1.10 ANCHOR BOLTS

- A. Equipment suppliers shall furnish suitable anchor bolts for each item of equipment.
- B. Anchor bolts, together with templates or setting drawings, shall be delivered sufficiently early to permit setting the anchor bolts when the structural concrete is placed.
- C. Anchor bolts shall comply with Section 05051, Anchors, Inserts and Epoxy Dowels and, unless otherwise specified, shall have a minimum diameter of 1/2-inch.
- D. Unless otherwise indicated or specified, anchor bolts for items of equipment mounted on baseplates shall be long enough to permit 1-1/2 inches of grout beneath the baseplate and to provide adequate anchorage into structural concrete.

1.11 EQUIPMENT BASES

- A. Unless otherwise indicated or specified, all equipment shall be installed on concrete bases at least 6 inches high.
- B. Cast iron or welded steel baseplates shall be provided for pumps, compressors, and other equipment.
- C. Each unit and its drive assembly shall be supported on a single baseplate of neat design.
- D. Baseplates shall have pads for anchoring all components and adequate grout holes.
- E. Baseplates for pumps shall have a means for collecting leakage and a threaded drain connection.
- F. Baseplates shall be anchored to the concrete base with suitable anchor bolts and the space beneath filled with grout as specified in Section 03600, Grout.

1.12 SPECIAL TOOLS AND ACCESSORIES

- A. Equipment requiring periodic repair and adjustment shall be furnished complete with all special tools, instruments, and accessories required for proper maintenance. Equipment requiring special devices for lifting or handling shall be furnished complete with those devices.

1.13 SHOP PAINTING

- A. Surface Protection:

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1. All steel and iron surfaces shall be protected by suitable paint or coatings applied in the shop.
 2. Surfaces that will be inaccessible after assembly shall be protected for the life of the equipment.
 3. Exposed surfaces shall be finished smooth, thoroughly cleaned, and filled as necessary to provide a smooth uniform base for painting.
 4. Electric motors, speed reducers, starters, and other self-contained or enclosed components shall be shop primed or finished with a high-grade oil-resistant enamel suitable for coating in the field with an alkyd enamel.
 5. Coatings shall be suitable for the environment where the equipment is installed.
- B. Shop Primer:
1. Surfaces to be painted after installation shall be prepared for painting as recommended by the paint manufacturer for the intended service, and then shop painted with one or more coats of the specified primer.
 2. Unless otherwise specified, the shop primer for steel and iron surfaces shall be:
 - a. Cook "391-N-167 Barrier Coat",
 - b. Koppers "No. 10 Inhibitive Primer",
 - c. Tnemec "37H Chem-Prime HS",
 - d. Valspar "13-R-28 Chromox Primer",
 - e. Or equal.
- C. Machined, polished, and nonferrous surfaces which are not to be painted shall be coated with rust-preventive compound, Houghton "Rust Veto 344", Rust-Oleum "R-9", or equal.

1.14 PREPARATION FOR SHIPMENT

- A. All equipment shall be suitably packaged to facilitate handling and protect against damage during transit and storage. All equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. All equipment shall be protected from exposure to the elements and shall be kept thoroughly dry at all times.
- B. Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. All painted surfaces which are damaged prior to acceptance of equipment shall be repainted to the satisfaction of ENGINEER.
- C. Grease and lubricating oil shall be applied to all bearings and similar items.
- D. Each item of equipment shall be tagged or marked as identified in the delivery schedule or on the Shop Drawings. Complete packing lists and bills of material shall be included with each shipment.

1.15 STORAGE

- A. Upon delivery, all equipment and material shall immediately be stored and protected until installed in the work.
- B. Pumps, motors, electrical equipment, and all equipment with antifriction or sleeve bearings shall be stored in weathertight structures maintained at a temperature above

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60° F. Equipment, controls, and insulation shall be protected against moisture and water damage. All space heaters furnished in equipment shall be connected and operated continuously.

- C. Equipment and materials shall not show any pitting, rust, decay, or other deleterious effects of storage when installed in the work.

1.16 INSTALLATION AND OPERATION

- A. Equipment shall not be installed or operated except by, or with the guidance of, qualified personnel having the knowledge and experience necessary for proper results. When so specified, or when employees of the CONTRACTOR or their subcontractors are not qualified, such personnel shall be field representatives of the manufacturer of the equipment or materials being installed.
- B. Qualified field representatives shall be provided by the equipment manufacturers as required by Section 01750, Testing, Training and Startup.
- C. All equipment installed under this Contract, including that furnished by OWNER shall be placed into successful operation according to the written instructions of the manufacturer or the instructions of the manufacturer's field representative. All required adjustments, tests, operation checks, and other startup activity shall be provided.
- D. Acceptance of work in connection with the installation of equipment furnished by others will be subject to approval of the field representative. The CONTRACTOR shall be responsible for planning, supervising, and executing the installation of work, and the approval or acceptance of ENGINEER or the field representative will not relieve the CONTRACTOR of responsibility for defective work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

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SECTION 01750

TESTING, TRAINING AND STARTUP

PART 1 - GENERAL

1.1 GENERAL

- A. Scope:
 - 1. This Section covers general equipment and system testing and startup requirements, services of the manufacturer's representatives and special coordinating services required of the CONTRACTOR that shall apply during construction and training of the OWNER's personnel for facilities operation.
 - 2. Specific testing and tracking procedures and requirements found in the Technical Specifications shall also apply.
- B. The CONTRACTOR shall inform all Subcontractors and manufacturers of the requirements herein and include the required services in their costs for the work specified in these Contract Documents. Where a minimum amount of time is stated in the Technical Specifications for manufacturers' services, any additional time required to perform the specified services shall be provided at no additional cost to the OWNER.
- C. Scheduling:
 - 1. Equipment testing and plant startup are requisite to satisfactory completion of the Contract and, therefore, shall be completed within the contract time.
 - 2. All equipment testing and plant startup activities shall be realistically allowed for and shown on the CONTRACTOR's Construction Schedule, in accordance with Section 01320, Progress Schedule.
 - 3. All equipment testing and plant startup activities shall be scheduled in conformance with the restrictions specified in Section 01130, Special Project Constraints.
- D. Equipment testing shall be satisfactorily completed prior to commencing plant startup associated with the particular equipment item or equipment package. The equipment shall not be considered ready for testing until the following conditions are satisfied:
 - 1. Manufacturer's certification of equipment installation has been accepted by the ENGINEER.
 - 2. Electrical and/or instrumentation Subcontractor certification of motor control logic has been accepted by the ENGINEER.
 - 3. Related Technical Submittals, O&M Manual and Final Shop Drawings have been accepted by the ENGINEER.
 - 4. Operator training services have been furnished by the CONTRACTOR (operational testing only).
 - 5. Testing procedures have been submitted in writing and accepted by the ENGINEER in accordance with Section 01330, Submittal Procedures. All testing procedures and results shall be submitted in writing.
- E. The requirements of plant startup specified herein shall also apply to the startup of individual treatment plant processes and facilities.

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F. Startup Plan:

1. Not less than 3 months prior to initial equipment or system startup, the CONTRACTOR shall submit to the ENGINEER for review, a detailed Facilities Startup Plan for the associated items of equipment and/or systems.
2. The Startup Plan shall include:
 - a. A detailed sub-network of the CONTRACTOR's Construction Progress Schedule including the following activities:
 - 1) Manufacturer's Services;
 - 2) Installation Certifications;
 - 3) Operator Training;
 - 4) O&M Manual;
 - 5) Functional Testing;
 - 6) Performance Testing;
 - 7) Operational Testing;
 - 8) All other activities necessary to affect a coordinated and successful Testing, Training and Startup.
 - b. Written testing plan with proposed data logs for each item of equipment to be tested.
 - c. A discussion of any coordination required with the Owners staff and/or any system or equipment outage requirements.
 - d. The Plan shall be updated and/or revised as necessary prior to subsequent Construction Progress Meetings.
 - e. Testing shall not be scheduled earlier than 30 days after approval of the Plan.

1.2 SERVICES DURING CONSTRUCTION

A. General:

1. Manufacturer's Representative:

- a. The CONTRACTOR shall provide the services of competent and experienced technical representatives of the manufacturers of all equipment and systems furnished under the contract, for as many days as may be necessary for assembly, installation, testing assistance and operator training.
- b. Manufacturer's field representatives shall observe, instruct, guide, and direct CONTRACTOR's erection or installation procedures, or perform an installation check, as required.
- c. In each case, the CONTRACTOR shall arrange to have the manufacturer's representative revisit the job site as often as necessary until operator training is complete and testing and startup problems have been resolved to the satisfaction of the ENGINEER.
- d. This requirement applies to manufacturers of all equipment furnished (excluding manually operated valves smaller than 24 inches in size, and any other items of equipment specifically exempted by the ENGINEER in writing), whether or not specifically set forth in the Technical Specifications.
- e. The CONTRACTOR shall maintain a service record on each item of equipment and shall deliver these service records to the ENGINEER prior to acceptance of operational testing.

B. Fulfillment of Specified Minimum Services:

1. The CONTRACTOR shall obtain prior written approval from the ENGINEER for providing manufacturers' services.

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2. All requests to the ENGINEER for prior approval shall (1) be in writing, (2) be submitted not less than 10 calendar days prior to the providing of the subject services, (3) state the service to be provided, and (4) state the reason(s) why the timing of the service is appropriate.
 3. Request made to the ENGINEER less than 10 calendar days prior to the manufacturers' services may not receive consideration and response prior to the times the services are provided.
 4. Visits of manufacturers and their representatives to the jobsite or training classroom without prior approval as provided herein may not act to fulfill the specified minimum man-day requirements.
- C. Certificate of Proper Installation:
1. Equipment requiring factory tests shall not be delivered to the jobsite until the CONTRACTOR submits acceptable certified test results to the ENGINEER.
 2. Equipment shall not be considered ready for functional testing until after the following certifications have been submitted and accepted by the ENGINEER.
 - a. Manufacturer Representatives:
 - 1) The CONTRACTOR shall require that each manufacturer's representative furnish to the ENGINEER a written and signed report addressed to the OWNER certifying that the equipment has been properly installed, adjusted, lubricated, is in accurate alignment, is free from any undue stress imposed by connecting piping or anchor bolts, has been operated satisfactorily under full-load conditions and is ready for full-time operation.
 - 2) For pumps, compressors, blowers, engines, motors, and other rotating or reciprocating equipment, the report shall certify that the equipment operates within the manufacturer's allowable limits for vibration.
 - 3) The report shall also certify that all controls, protective devices, instrumentation, and control panels furnished as part of the manufacturer's equipment package are properly installed and calibrated; and that the control logic for equipment startup, shutdown, sequencing, interlocks, and emergency shutdown has been tested and is properly operating.
 - 4) The CONTRACTOR shall also sign said certification.
 - 5) The CONTRACTOR shall submit "Manufacturer's Certification of Proper Installation" on the OWNER form.
 - b. Electrical and Instrumentation Subcontractor:
 - 1) The CONTRACTOR shall require that the electrical and/or instrumentation Subcontractor shall furnish a written and signed report to the ENGINEER certifying that the motor control logic for the equipment item that resides in motor control centers, control panels, control boards, microprocessors, distributed processing units, computers, and the like furnished by the electrical and/or instrumentation Subcontractor has been properly tested and calibrated.
 - 2) The report shall certify that the control logic for equipment startup, shutdown, sequencing, interlocks, and emergency shutdown has been tested and is properly operating.
 - 3) The CONTRACTOR shall also sign said certification.

1.3 STARTUP AND TESTING

A. General:

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1. The CONTRACTOR shall provide the effective coordination of all parties necessary for the successful project startup.
 2. The ENGINEER shall not be responsible to instruct the CONTRACTOR in the startup of the project, however, the ENGINEER will be available prior to and during startup to provide operational and technical support to the CONTRACTOR.
 3. The CONTRACTOR shall furnish all labor, consumables (power, water, chemicals, air, etc.) tools, equipment, instruments, and services required and incidental to completing all functional, performance and operational testing of installed equipment.
 4. The CONTRACTOR shall submit the proposed test procedures to the ENGINEER for review at least 30 days prior to testing.
 5. The CONTRACTOR shall give the ENGINEER written notice confirming the date of testing at least five working days before the time the equipment is scheduled to be tested.
 6. All testing shall be witnessed by the ENGINEER to be considered valid.
 7. Test Reports:
 - a. CONTRACTOR shall submit written detailed results of all functional, performance and operational testing.
 - b. Upon successful completion of Operational testing all equipment installation, testing and maintenance records shall be submitted to the ENGINEER.
 - c. Said records shall be bound separately for each piece of equipment or system and shall be collected by type of record.
 8. For factory tests, written test results shall be submitted to the ENGINEER at least 10 days prior to shipment.
- B. Functional testing:
1. All items of mechanical and electrical equipment shall be functionally tested by the CONTRACTOR after installation for proper operation.
 2. A minimum of ten (10) days prior to the start of functional testing, the CONTRACTOR shall submit interconnection diagrams for the equipment and for the alarms, controls and instruments associated with the equipment. This requirement shall not relieve the CONTRACTOR of meeting any requirements in the technical specifications for earlier submittal of the interconnection diagrams.
 3. Minimum Test Requirements
 - a. The functional test of each piece of mechanical equipment shall continue for not less than eight (8) continuous hours without interruption.
 - b. The functional test shall include checking for proper rotation, alignment, speed, flows, pressure, vibration, sound level, etc. Initial equipment and system adjustment and calibrations shall be performed in the presence of and with the assistance of the manufacturer's representative.
 - c. The functional test shall include a demonstration of the proper performance of all alarms, local and remote controls, instrumentation, equipment functions, and all other electrical, mechanical and piping systems.
 - d. All parts shall operate satisfactorily in all respects, under continuous full load, and in accordance with the specified requirements, for the full duration of the eight-hour test period.
 - e. If any part of a unit shows evidence of unsatisfactory or improper operation during the eight-hour test period, correction or repairs shall be made and the full eight-hour test operation, as specified herein, shall be repeated after all parts operate satisfactorily.

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C. Performance testing:

1. Where performance testing is required by the Technical Specifications, the testing shall be supervised by the manufacturer's representative. These services shall continue until such times as the applicable equipment or system has been successfully tested for performance and has been accepted by the ENGINEER for operational testing.
2. Performance testing shall take place after functional testing is successfully completed in accordance with Article 1.3 B.
3. Performance testing shall demonstrate that the equipment meets all performance requirements specified.

D. Startup/operational testing:

1. Upon successful completion of operator training and the functional, performance and leakage testing, the CONTRACTOR shall startup the plant facilities and test the equipment operation and performance by conducting a seven (7) day, continuous operational test of the completed facilities as an operational process unit to demonstrate to the ENGINEER's satisfaction that all equipment and systems required by these specifications will operate in the manner in which they are intended to perform.
2. The OWNER will provide CONTRACTOR-trained operating personnel for the duration of the operational test. Said operation shall be conducted and under the supervision and direction of the CONTRACTOR and/or manufacturer's representative.
3. Operational Defects:
 - a. All defects in materials or workmanship which appear during the operational test shall be immediately corrected by the CONTRACTOR.
 - b. In the event of a malfunction or deficiency that results in shutdown or partial operation of a system or process unit or results in performance that is less than that specified, the startup duration shall be repeated for that corresponding system or process unit and any other affected equipment so its proper operation and performance as required by the Contract Documents is demonstrated for a minimum of seven (7) continuous and trouble free days.
4. If the operational test is interrupted through no fault of the CONTRACTOR the test may resume at the earliest mutually agreeable time.
5. No unit process or part thereof shall be placed in service until it has successfully completed operational testing.
6. During plant startup, the CONTRACTOR shall provide the appropriate construction trades and the services of authorized Manufacturer's representatives for operational testing and as necessary, to correct faulty equipment operation.
7. After completion of all startup/operational testing, the CONTRACTOR shall repaint, hose, scrub, clean up and otherwise return the work to a "like new" condition, prior to OWNER acceptance.

1.4 TRAINING OF OWNER PERSONNEL

A. General:

1. Operation and maintenance training of OWNER's personnel shall be provided for mechanical, electrical, instrumentation and control equipment as listed in this Section or elsewhere in the Specifications.

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2. For the purposes of this requirement, operations training is considered to be separate from maintenance training. Instructions are to be tailored to the needs of each group.
 3. These training services shall be conducted by the manufacturer's representative and shall ensure measurable and observable means that OWNER personnel are qualified to perform equipment task requirements, including essential knowledge, skills and abilities.
 4. Training shall be conducted by competent representatives who are certified by the manufacturer to be thoroughly familiar with the subject matter as well as instructional methods.
 5. Training materials shall be submitted to the OWNER (see Paragraph 1.4 C below) for review. Acceptance of training materials is required prior to start of training.
 6. All training shall be completed prior to beginning operational testing.
 7. The OWNER shall have the right to videotape any or all training sessions, or may designate separate sessions or portions thereof for the sole purpose of videotaping.
- B. Training coordinator:
1. The CONTRACTOR shall designate and provide one or more persons to be responsible for coordinating and expediting training duties.
 2. The person or persons so designated shall be present at all training coordination meetings with the OWNER.
- C. Training schedule:
1. The CONTRACTOR's coordinator shall coordinate the training periods with OWNER's personnel and manufacturer's representatives, and shall submit a training schedule and the training materials for each piece of equipment or system for which training is to be provided.
 2. The training schedule shall be submitted not less than 21 calendar days prior to the time that the associated training is to be provided and shall be based on the then current Plan of Operation.
 3. Equipment and/or systems shall be deemed suitable for use in training upon satisfactory completion of functional testing.
 4. All training with regards to a unit process or part thereof shall be completed prior to the start of operational testing.
 5. As a minimum, training shall be provided on the following equipment and systems:
 - a. Security Alarm System
 - b. Fire Alarm System
 - c. Access Control System
 6. The CONTRACTOR shall provide distinct and separate training sessions for both operations and maintenance personnel, meeting the following criteria:
 - a. Maintenance Training:
 - 1) Maintenance training shall be provided for all items in 1.4.C.5 above.
 - 2) The CONTRACTOR shall provide two (2) separate training sessions on a day agreed to by the ENGINEER.
 - 3) Training shall emphasize theory of operations, troubleshooting, and preventative maintenance and repair procedures.
 - 4) The discussion shall encompass issues relating to instrumentation, electrical, and mechanical systems.
 - b. Operations training:

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- 1) Operations training shall be provided for each piece of equipment listed in Paragraph 1.4.C.5 above.
- 2) The CONTRACTOR shall provide two (2) separate training sessions for each three (3) operating shifts.
- 3) Sessions are to be provided for each shift within the following time periods.
 - a) Day Shift 8:00 a.m. - 2:00 p.m.
 - b) Swing Shift 4:00 p.m. - 10:00 p.m.
 - c) Grave Shift 12:00 a.m. - 6:00 a.m.
- c. Training session schedules shall be approved by the ENGINEER.
- d. Training shall emphasize theory of operations, startup instructions, emergency and normal shutdown instructions, lockout procedures, troubleshooting, preventative maintenance, and alarm and control logic.
7. The CONTRACTOR shall confirm each training period a minimum of three working days prior to the schedule time.
8. If a manufacturer's representative fails to conduct a scheduled training class, the CONTRACTOR hereby agrees to compensate the OWNER for labor costs, including overhead, for all OWNER personnel in attendance for the entire scheduled training period.
9. If the CONTRACTOR or the manufacturer's representative fails to provide training that qualifies the OWNER personnel to perform equipment task requirements, the CONTRACTOR hereby agrees to provide remedial training to ensure OWNER personnel proficiency at no additional cost to the OWNER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 RECORD KEEPING

- A. The CONTRACTOR shall maintain as a minimum, the following records:
 1. Equipment manufacturer's shop drawings.
 2. Daily logs indicating all equipment testing and startup activities.
 3. Log and time sheets of all manufacturer's representatives performing services on the jobsite.
 4. Updated equipment testing and startup schedules.
 5. Records of system cleaning.
 6. Hydrostatic and pressure test records.
 7. Equipment alignment and vibration measurements and corrective actions.
 8. Equipment lubrication records.
 9. Insulation resistance measurements.
 10. Electrical phase, voltage and amperage measurements.
 11. Electrical breaker inspection, test, and adjustment records.
 12. Logs of abnormal circuits and lifted wires.
 13. Testing and validation of all central and alarm functions.
 14. Data sheets of all testing and calibration of instrumentation devices and control loops including documentation of set points.
 15. Equipment and system release logs (from construction to startup).
 16. Daily work reports.

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3.2 GENERAL PROCEDURES

- A. The general work procedures listed below outline the work to be performed by the CONTRACTOR. Additional procedures applicable to specific equipment items are specified elsewhere.
- B. Technical assistance and support:
 - 1. Obtain the assistance of the appropriate construction trades and the manufacturer or vendor, as required for technical assistance during equipment installation, testing, and startup by the CONTRACTOR and for training of the OWNER's Operation and Maintenance personnel.
 - 2. Furnish names and telephone numbers of manufacturer's and vendor's current technical service representatives for use by the ENGINEER.
- C. Instructions:
 - 1. Maintain an adequate manufacturer's instruction file so that the information will be readily available during equipment testing and startup.
 - 2. Prior to equipment testing, finalize, and transmit to the ENGINEER the applicable technical manuals as required under Section 01330, Submittal Procedures of the Contract Specifications.
- D. Removal of rust preventives:
 - 1. Prior to equipment testing, remove all rust preventives and oils used to protect the equipment during the construction period whenever these protective materials will be detrimental to operation or equipment maintenance.
- E. Lubricants:
 - 1. At least 60 days prior to startup, provide a list of the manufacturer's recommended lubricants for use in the plant. All equipment lubrication shall be listed with the lubricant types and quantities recommended and approved by the equipment manufacturers.
 - 2. Provide the necessary lubricants for startup and the initial 60 days of operation.
 - 3. Flush systems and install the initial charge of all lubricants. Dispose of flushing oil in accordance with applicable regulations.
 - 4. The CONTRACTOR shall lubricate the equipment in accordance with the manufacturer's recommendations until the equipment is accepted by the OWNER.
 - 5. Maintain a lubrication record for each item of equipment. The CONTRACTOR shall submit the lubrication records to the ENGINEER prior to equipment testing.
- F. Packing and seals:
 - 1. Install, adjust, and replace packing, mechanical seals, and accessories, as necessary, during the equipment testing and startup period.
 - 2. Adjust seal water and flushing water flow rates in accordance with the equipment manufacturer's recommendations.
- G. Removal of temporary bracing:
 - 1. Prior to equipment testing, remove all temporary supports, bracing, or other foreign objects that were installed in vessels, transformers, rotating machinery, or other equipment to prevent damage during shipping, storage, and erection, and repair any damage sustained.

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- H. Rotation, alignment, and vibration:
 - 1. Prior to equipment testing, check rotating machinery for correct direction of rotation and for freedom of moving parts before connecting the driver.
 - 2. Prior to equipment testing, perform the cold alignment and hot alignment to the manufacturer's tolerances.
 - 3. Prior to equipment testing, test equipment vibration and correct any vibration in excess of the manufacturer's recommendation.
- I. Tie-ins at the contract limits:
 - 1. Provide proper notification, preparation, and coordination for safe tie-ins and minimal interference with the plant operation.
 - 2. Obtain approval and make the necessary tie-ins at the unit limits as required by the Contract Documents and as approved by the ENGINEER.
 - 3. Prior to startup, remove the temporary blind flanges, plugs, bulkheads, seals, etc.
- J. Leak and pressure tests:
 - 1. Provide the ENGINEER with 3-day advance notification in writing of the schedule for non-operating field leak tests or field pressure tests on piping and field fabricated equipment, unless otherwise directed by the ENGINEER.
 - 2. Provide the water, air and any special media required for the test purposes.
 - 3. Prior to startup, conduct all leak and pressure tests in accordance with applicable codes, regulations, and the Contract Documents, and as approved by the ENGINEER. The CONTRACTOR is advised that the tests shall be witnessed by the ENGINEER, to be considered valid.
 - 4. Maintain a record of the leak and pressure test data and work completed.
 - 5. Dispose of the test media in a manner that is acceptable to and approved by the OWNER and applicable regulatory agencies.
 - 6. Isolate in-line equipment as necessary for protection against test pressure.
- K. Pressure/vacuum safety relief devices:
 - 1. Prior to equipment testing, test and adjust all safety devices as recommended by the equipment manufacturer.
 - 2. Prior to plant startup, provide the ENGINEER with a list of all field or factory equipment settings.
- L. Flushing and chemical/mechanical cleaning:
 - 1. Prior to equipment operation, conduct all flushing, blowing, and chemical/mechanical cleaning operations without using the permanently installed equipment.
 - 2. Provide any special media needed for flushing and/or cleaning purposes.
 - 3. Dispose of all media in a manner that is acceptable to and approved by the OWNER and the applicable regulatory agencies.
 - 4. All systems shall be free of trash and construction debris before initiating startup.
 - 5. Maintain a record of the work completed.
- M. Screens, strainers, and blind flanges:
 - 1. Provide and install temporary strainers, screens, and blind flanges as necessary to protect the equipment and to test the equipment and pipelines.
 - 2. Prior to startup, remove all of the temporary blinds and temporary appurtenances.
 - 3. Clean the screens and strainers as required during startup.
 - 4. At the end of startup, clean all of the permanently installed screens and strainers.

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- N. Purging/inerting:
 - 1. Prior to startup, purge and/or passivate the facilities as specified.
 - 2. Install purge/inerting connections in accordance with the manufacturer's recommendations.
 - 3. Provide purge or inerting materials and conduct the necessary operations as recommended by the equipment manufacturer.
- O. Drying out:
 - 1. Prior to startup, dry out the facilities as specified or recommended by the equipment manufacturer to prevent contamination of catalysts, operating materials, and/or product.
 - 2. Dry out systems, protective coatings, refractories, and linings as specified or recommended by the equipment manufacturers.

3.3 SPECIFIC PROCEDURES

- A. In addition to the work responsibilities described in Subsection 3.2, the procedures outlined below further define the work responsibilities of the CONTRACTOR for specific systems and items of equipment.
- B. Mechanical equipment:
 - 1. Level baseplates and soleplates and grout under all load bearing surfaces.
 - 2. Install suitable supports and flexible connections to alleviate any piping stresses that may be imposed on pumps, compressors, and drivers.
 - 3. In accordance with the manufacturer's recommendations, chemically clean lube oil, seal oil, and cooling systems. Dispose of waste and cleaning media in a manner that is acceptable to and approved by the OWNER and applicable regulatory agencies.
 - 4. In accordance with the manufacturer's recommendations, charge the lube oil, seal oil, and cooling systems with flushing media and circulate for cleaning purposes. Dispose of any flushing media in a manner that is acceptable to and approved by the OWNER and applicable regulatory agencies.
 - 5. Charge the lube oil systems, seal oil systems, and cooling systems with the amount and type of operating oil or coolant recommended by the manufacturer.
 - 6. Operate the equipment and check for excessive vibration, abnormal operating noises, overheating and lubricant leakage, etc., and test any safety shutdown/alarm devices for proper operation, and make any operating tests required by the ENGINEER. The adjustments required for proper operation shall be made prior to operational testing.
 - 7. Utilize manufacturer's representative for technical assistance during installation and startup.
 - 8. Prior to startup, all sidewalks, gratings, handrails, safety chains, safety shields, etc., shall be installed.
 - 9. Prior to startup, demonstrate to the ENGINEER's satisfaction that all chemical solution pipelines are connected to the intended tank(s), feeder(s), pump(s), and application points, and that the pipes, appurtenances contained therein and diffusers will operate at the intended flow rates.
 - 10. Prior to startup, the applicable safety equipment, emergency shower and eyewash units, fire extinguishers, fire suppression equipment, self-contained breathing apparatus, toxic and/or combustible gas detectors (including the respective personnel warning system), protective clothing, emergency repair kits, etc., shall be installed in

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an acceptable manner-subject to the ENGINEER's approval, and be fully ready for operation.

11. All safety hazards, e.g., exposed drive shafts or rotating equipment members, exposed electrical circuitry, open electrical junction boxes and panels, improperly supported piping and conduits, missing safety devices, etc., shall be corrected prior to supplier training of the OWNER's personnel.
12. The CONTRACTOR shall perform a comprehensive safety inspection and correct any safety deficiencies found before implementing plant startup.
13. Roadways that are required for ambulance service, fire fighting access, delivery of treatment chemicals and supplies, and disposal of the treatment byproducts shall be completed prior to startup.
14. Prior to startup, install all warning and safety signs, labels, and devices.

C. Tanks:

1. Test all tanks and internals, as required to demonstrate conformance to the Contract Documents. Dispose of test media in a manner that is acceptable to and approved by the OWNER and the applicable regulatory agencies.
2. Prior to startup, conduct chemical cleaning or flushing operations as specified. Dispose of wastes and cleaning media in a manner that is acceptable to and approved by the OWNER and the applicable regulatory agencies.
3. Prior to startup, install all chemical identification, warning, and safety signs and labels.

D. Electrical power and lighting systems:

1. Provide the ENGINEER with 3-day advance notification in writing of the test schedule. The CONTRACTOR is advised that the tests shall be witnessed by the ENGINEER.
2. Perform insulation resistance tests on all wiring 120 volt and larger. Do not meggar instruments or solid-state devices.
3. Perform insulation resistance tests on all motor and transformer windings from phase to phase and phase to ground.
4. Perform grounding system tests to determine the continuity of connections and the value of resistance to ground.
5. Fill electrical gear with oil and/or other media as recommended by the equipment manufacturer.
6. Prior to substantial completion and startup, test and set switchgear and circuit breaker relays for proper coordination and operation.
7. The CONTRACTOR shall obtain the services of a qualified "independent testing service", member of the National Electric Testing Association, to perform a thermographic survey on all switchgear buses, insulators and power connections when energized and under at least 20 percent load. Significant hot spots shall be further checked by infrared pyrometer for exact temperature rise. The CONTRACTOR shall troubleshoot and correct the thermographic hot spots. Correction shall be verified by repeating the thermographic survey at no additional cost to the OWNER.
8. The CONTRACTOR shall obtain the services of a qualified "independent testing service", member of the National Electric Testing Association, to inspect and test the protective relays and the 800-ampere and larger drawout breakers for proper installation, adjustment, and operation in accordance with the manufacturer recommendations.

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9. The CONTRACTOR shall obtain the services of a qualified "independent testing service", member of the National Electrical Testing Association, to perform DC high potential tests on all cables that will operate at more than 2,000 volts to ground.
 10. Obtain local electrical inspector's approval where required.
 11. Energize all substations, with approval of the Utility Company and the ENGINEER after completion of all electrical testing.
 12. Prior to startup, perform tests and adjustments on all switchgear and motor control equipment to demonstrate proper operation and conformance to the Contract Documents and manufacturer's recommended settings.
 13. Prior to startup, test installation of emergency power and lighting systems for proper operation, including light intensity.
 14. Prior to startup, provide the ENGINEER with a record of all test data and the work completed.
 15. Vacuum clean all electrical equipment prior to startup and acceptance.
- E. Piping systems:
1. Provide the ENGINEER with 3-day advance notification in writing of test schedule.
 2. Hydrostatically or pneumatically test all piping as required by the codes and contract documents.
 3. After successful testing of the piping, slowly drain the system and then flush the system. Orifice plates shall be installed after testing. If installed with the piping, they will be removed and replaced with spacers or pipe spools of equal length prior to the pressure test.
 4. Dewater the system, remove blind flanges, and perform tightness tests, as required by the ENGINEER.
 5. Insulate or paint piping, flanges, threaded joints, or field welds after the specified testing of each item has been completed unless instructed otherwise by the ENGINEER.
 6. Leave exposed all welded joints (longitudinal, girth, and nozzle) in underground piping that have not been shop tested until the specified testing has been completed. After final testing of these joints, cover the system.
 7. Prior to substantial completion and startup, check pipe hangers, supports, guides, and pipe specialties for the removal of all shipping and erection stops and for the correctness of the cold and hot settings for the design service, make adjustments as necessary to obtain proper installation. Provide the ENGINEER with instructions for the hot settings.
 8. As necessary during equipment testing and at the end of substantial completion and startup, clean or replace the screens and filter elements as appropriate for the filter type and service.
 9. Prior to startup, verify, to the extent required by the ENGINEER, that specified valve packing has been provided on valves installed in the plant.
 10. Prior to startup, install all of the valve and piping system identification labels.
 11. Prior to startup, check and record the position of all process system valves.
 12. Prior to startup, correct support, vibration, and thermal expansion problems detected during the preliminary equipment testing.
 13. Prior to the startup, retorque all hot and cold service bolting as required to ensure a permanent and proper installation.
 14. Prior to startup, demonstrate to the ENGINEER's satisfaction that each piping system (e.g., chemical, sample, utility, irrigation process, etc.) functions as designed and required by the Contract Documents.

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+ + END OF SECTION + +

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SECTION 01800

OPERATIONAL COMPLETION AND PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 GENERAL

- A. The Work will be considered operationally complete when all technical and administrative submittals, testing, training and startup are completed satisfactorily in accordance with the Contract Documents.
- B. Operational completion shall apply to the project in its entirety.

1.2 CERTIFICATION OF OPERATIONAL COMPLETION

- A. Prior to requesting the ENGINEER's inspection for certification of each phase as operationally complete, the CONTRACTOR shall certify in writing that each phase of the Work is operationally complete and shall submit a list of known items still to be completed or corrected (punchlist) prior to Contract Completion.
- B. The following items shall be completed:
 - 1. OWNER has been advised of any pending insurance changeover requirements.
 - 2. Specific warranties, maintenance agreements, final certifications and similar documents have been submitted.
 - 3. All tools, spare parts, extra stocks of materials, and similar physical items have been delivered to OWNER.
 - 4. Instruction of OWNER's operation/maintenance personnel, and start up testing has been completed.
 - 5. Submittal and acceptance of all O&M manuals.
 - 6. Changeover of locks to OWNER's cores/keys.
- C. Punchlist:
 - 1. When the CONTRACTOR considers that the Work, or a portion or phase thereof which the OWNER agrees to accept separately, is operationally complete, the CONTRACTOR shall certify in writing that the work is operationally complete and shall prepare and submit to the ENGINEER a comprehensive list of items to be completed or corrected prior to Contract Completion (punchlist).
 - 2. The ENGINEER may add additional work items to the punchlist.
 - 3. Failure to include an item on the punchlist does not alter the responsibility of the CONTRACTOR to complete all Work in accordance with the Contract Documents.
 - 4. Upon receipt of the CONTRACTOR's punchlist, the ENGINEER will make an inspection to determine whether the Work or designated portion thereof is operationally complete.
 - 5. If the ENGINEER's inspection discloses any item, whether or not included on the CONTRACTOR's list, that is not in accordance with the requirements of the Contract Documents, the CONTRACTOR shall, upon notification by the ENGINEER and before an issuance of the Certificate of Operational Completion is provided, complete or correct such item.

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6. The CONTRACTOR shall then submit a request for another inspection by the ENGINEER.
7. When the Work or designated portion thereof is accepted by the ENGINEER to be operationally complete, the ENGINEER will prepare a Certificate of Operational Completion.
8. The date of Operational Completion shall be the date of the ENGINEER's inspection and acceptance.

1.3 DESCRIPTION OF PROJECT CLOSEOUT

- A. Closeout is hereby defined to include general requirements near the end of the Contract Time, in preparation for Final Acceptance, Final Payment, normal termination of Contract, occupancy by OWNER and similar actions evidencing completion of the Work.
- B. Specific requirements for individual units of Work are specified in Sections of Divisions 2 through 16.

1.4 FINAL CLEANUP

- A. At completion, leave project clean and ready for use.
 1. Legally dispose of waste materials, debris and rubbish off the site.
 2. Remove grease, dust, dirt, stains, labels, fingerprints and other foreign materials from exposed and enclosed surfaces.
 3. Repair, patch and touch up all affected curbs, gutters, and sidewalks to match adjacent surfaces.
 4. Broom clean paved surfaces, rake clean other surfaces of grounds. Vacuum clean all interior surfaces, rake clean other surfaces of grounds.

1.5 RECORD DRAWINGS

- A. The CONTRACTOR shall prepare and submit Contract Record Drawings for the OWNER.
 1. The CONTRACTOR shall make a record of changes during construction on prints of the Drawings provided by the OWNER for this purpose (Contract Record Drawings) as described in Section 01330, Submittal Procedures.
 2. The reproducible drawings on which changed conditions are recorded shall be returned to the ENGINEER prior to project completion.

1.6 GUARANTEES

- A. The General Conditions cover the CONTRACTOR's responsibility to remedy defects due to faulty workmanship and materials which appear within one year from the date of Final Acceptance.
- B. Special guarantees are required by various Sections of the Specifications. Assemble written guarantees, label and submit to the ENGINEER.
 1. Provide the "Warranty Form" included in the General Conditions.
 2. Equipment guarantees shall be written in the manufacturer's standard form and shall be countersigned by the Subcontractor or supplier and the CONTRACTOR.
 3. All other guarantees shall be written on the Subcontractor's or supplier's letterhead and shall be countersigned by the CONTRACTOR.

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1.7 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Spare parts and maintenance materials are required by various Sections of the Specifications.
 - 1. Parts and materials shall be packaged so as to preclude damage in normal handling and storage.
 - 2. Packages shall be labeled with full description of contents and project name and clearly identified as to which item of equipment they belong to. CONTRACTOR shall maintain a spare parts inventory list which shall be provided to the OWNER prior to Final Acceptance.
 - 3. Submit packaged parts and materials to ENGINEER.
 - 4. Submit the value of all spare parts.

1.8 FINAL INSPECTION

- A. Prior to requesting ENGINEER's final inspection for certification of Final Acceptance and Final Payment, complete the following and list known exceptions (if any):
 - 1. Submit Final Payment request with final releases and supporting documentation not previously submitted and accepted.
 - 2. Submit copy of final punchlist of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by ENGINEER.
 - 3. Submit Consent of Surety.
 - 4. Revise and submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Certify in writing that the work has been completed in accordance with the Contract Documents, and request ENGINEER's final inspection.
- C. Reinspection:
 - 1. Within seven (7) days after receipt of the CONTRACTOR's notice that the work has been completed, including punchlist items resulting from earlier inspections, and excepting incomplete items delayed because of acceptable circumstance, the ENGINEER will reinspect the work.
 - 2. Upon completion of reinspection, ENGINEER will either prepare a certificate of Final Acceptance or advise the CONTRACTOR of work not complete or obligations not fulfilled as required for Final Acceptance.
 - 3. If necessary, inspection procedure will be repeated.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

+ + END OF SECTION + +

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SECTION 01810

CLEANING

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. This Section covers the work necessary for cleaning during construction and final cleaning on completion of the Work.

1.2 GENERAL

- A. At all times maintain areas covered by the Contract and public properties free from accumulations of waste, debris, and rubbish caused by construction operations.
- B. Pollution Control:
 - 1. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
 - 2. Do not burn or bury rubbish and waste materials on project site.
 - 3. Volatile wastes shall be properly stored in covered metal containers and removed daily.
 - 4. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
 - 5. Do not dispose of wastes into streams or waterways.
- C. Construction materials such as concrete forms and scaffolding shall be neatly stacked by the CONTRACTOR when not in use. The CONTRACTOR shall promptly remove splattered concrete, asphalt, oil, paint, corrosive liquids, and cleaning solutions from surfaces to prevent marring or other damage.
- D. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
- E. Use cleaning materials only on surfaces recommended by cleaning material manufacturers.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 CLEANING DURING CONSTRUCTION

- A. During execution of Work, clean site and public properties and dispose of waste materials, debris, and rubbish to assure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish.
- B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.

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- C. Provide approved containers for collection and disposal of waste materials, debris, and rubbish. Empty containers within one day after they are full.
- D. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from exposed and semi-exposed surfaces.
- E. Repair, patch, and touch up marred surfaces to specified finish to match adjacent surfaces.
- F. Vacuum clean all interior spaces, including inside cabinets. Broom clean paved surfaces, rake clean other surfaces of grounds.
- G. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.
- H. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.
- I. Vacuum clean interior building areas when ready to receive finish painting and continue vacuum cleaning on an as-needed basis until building is ready for substantial completion or occupancy.

3.2 FINAL CLEANING

- A. Refer to the requirements of the General Conditions, Section 6.11 in addition to the requirements of this Section.
- B. See Section 01800, Operational Completion and Project Closeout, for additional requirements.
- C. At the completion of Work on all Contracts and immediately prior to final inspection, cleaning of the entire Project will be accomplished according to the following provisions:
 - 1. The CONTRACTOR shall thoroughly clean, sweep, wash, and polish all work and equipment, including finishes. The cleaning shall leave the structures and site in a complete and finished condition to the satisfaction of the ENGINEER.
 - 2. Should the CONTRACTOR not remove rubbish or debris or not clean the building and site as specified above, the OWNER reserves the right to have the cleaning done at the expense of the CONTRACTOR.
 - 3. Employ professional cleaners for final cleaning.
 - 4. In preparation for substantial completion of occupancy, conduct final inspection of sight-exposed interior and exterior surfaces, and of concealed spaces.
 - 5. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior finished surfaces; polish surfaces so designated to shine finish.
 - 6. Repair, patch, and touch up marred surfaces to specified finish, to match adjacent surfaces.
 - 7. Broom clean paved surfaces; rake clean other surfaces of grounds.
 - 8. Replace air-handling filters if units were operated during construction.
 - 9. Clean ducts, blowers, and coils, if air-handling units were operated without filters during construction.

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10. Clean luminaires in accordance with manufacturer's recommendations. Clean all light fixtures.
11. Remove from the OWNER's property all temporary structures and all materials, equipment, and appurtenances not required as a part of, or appurtenant to, the completed work. See Section 01500 - Temporary Construction Facilities and Utilities.

+ + END OF SECTION + +

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SECTION 02200
SITE PREPARATION

PART 1 - GENERAL

1.1 DEFINITIONS

- A. Interfering or Objectionable Material: Trash, rubbish, and junk; vegetation and other organic matter, whether alive, dead, or decaying; topsoil.
- B. Clearing: Removal of interfering or objectionable material lying on or protruding above ground surface.
- C. Grubbing: Removal of vegetation and other organic matter including stumps, buried logs, and roots greater than 0.5 inch caliper to a depth of 6 inches below subgrade.
- D. Stripping: Removal of topsoil remaining after applicable scalping is completed.
- E. Project Limits: Areas, as shown or specified, within which Work is to be performed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL

- A. Clear, grub, and strip areas actually needed for waste disposal, borrow, or site improvements within limits shown or specified.
- B. Do not injure or deface vegetation that is not designated for removal.

3.2 LIMITS

- A. As follows, but not to extend beyond Project limits.
 - 1. Excavation 5 feet beyond top of cut slopes.
 - 2. Trench Excavation: 4 feet from trench centerline, regardless of actual trench width.
 - 3. Waste Disposal:
 - a. Clearing: 5 feet beyond perimeter.
 - b. Scalping and Stripping: Not required.
 - c. Grubbing: Around perimeter as necessary for neat finished appearance.
 - 4. Structures: 5 feet outside of new structures.
 - 5. Roadways: Clearing , grubbing and stripping 50 feet from centerline.
 - 6. Overhead Utilities:
 - a. Clearing and Grubbing: Entire width of easements and rights-of-way.
 - b. Scalping and Stripping: Wherever grading is required.
 - 7. Other Areas: As shown.

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- B. Remove rubbish, trash, and junk from entire area within Project limits.

3.3 CLEARING

- A. Clear areas within limits shown or specified.
- B. Fell trees so that they fall away from facilities and vegetation not designated for removal.
- C. Cut stumps not designated for grubbing flush with ground surface.
- D. Cut off shrubs, brush, weeds, and grasses to within 2 inches of ground surface.

3.4 GRUBBING

- A. Grub areas within limits shown or specified.

3.5 STRIPPING

- A. Do not remove topsoil until after scalping is completed.
- B. Strip areas within limits to minimum depths shown or specified. Do not remove subsoil with topsoil.

3.6 DISPOSAL

- A. Clearing and Grubbing Debris: Dispose of debris offsite.
- B. Strippings:
 - 1. Dispose of strippings that are unsuitable for topsoil or that exceed quantity required for topsoil offsite or approved by ENGINEER.
 - 2. Stockpile topsoil in sufficient quantity to meet Project needs. Dispose of excess strippings as specified for clearing and grubbing.

+ + END OF SECTION + +

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SECTION 02220

DEMOLITION

PART 1 - GENERAL

1.1 DEFINITIONS

- A. "Demolish": CONTRACTOR shall remove from the site as property of CONTRACTOR. Demolition includes disconnecting, removal, loading, repairs, cleanup, transportation, unloading, disposal permits and fees, disposal, and all other items required to remove the material from the site.
- B. "Salvage": CONTRACTOR shall remove from area of Work and place in location designated by ENGINEER. Equipment is property of OWNER. Salvage includes disconnecting, removal, repairs, cleanup, loading, transportation, unloading, and all other items required to remove and relocate the material.
- C. "OWNER to Remove": OWNER will remove from area of Work prior to CONTRACTOR commencing demolition Work for this area.
- D. "Relocate": CONTRACTOR shall relocate material shown to new locations shown on Drawings or stated herein. Relocation includes disconnecting, removal, reconnecting, attaching, repairs, and all other items required to relocate material to new location.
- E. "Abandon": CONTRACTOR shall disconnect and leave in place as specified.
- F. "Materials": Any and all items and objects that are scheduled, specified, or shown to be demolished, salvaged, removed, relocated, or abandoned.

1.2 SUBMITTALS

- A. Action Submittals:
 - 1. Product Information: Grout, sealants, and bonding agents to be used for patching.
- B. Informational Submittals:
 - 1. Plan and schedule phased demolition, including limits of demolition, as part of and consistent with the progress schedule specified in Section 01320, PROGRESS SCHEDULE.
 - 2. Methods of demolition and equipment proposed to demolish materials.
 - 3. Copies of any authorizations and permits required to perform Work.
 - 4. Copies of Hazardous Materials Inspection Reports.
 - 5. Repair procedures for demolition of materials beyond limits shown on Drawings.

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PART 2 - PRODUCTS

2.1 GENERAL

- A. CONTRACTOR shall provide all materials and equipment in suitable and adequate quantity as required to accomplish the Work shown, specified herein, and as required to complete the Project.

PART 3 - EXECUTION

3.1 GENERAL

- A. Drawings are based on available information. The Work may differ slightly from what is shown. CONTRACTOR shall be responsible for determining the work required by inspecting the site.

3.2 SAFETY REQUIREMENTS

- A. All Work shall be done in conformance with all applicable rules and regulations pertaining to safety.
- B. Hazardous Materials:
 - 1. Existing facilities, or portions thereof, to be demolished may contain hazardous materials such as asbestos cement piping, residual chemicals in existing or abandoned piping, lead-based paint, mercury seals, or other unknown hazardous materials.

3.3 COORDINATION

- A. Coordination with ENGINEER:
 - 1. Verify materials scheduled to be demolished, salvaged, removed, relocated, or abandoned with ENGINEER prior to performing Work.
 - 2. Do not remove materials without prior approval of ENGINEER.
 - 3. Provide at least 3 working days' notice to ENGINEER prior to start of Work.
 - 4. Notify ENGINEER to turn off affected services or facilities before starting Work.
 - 5. Provide temporary services during interruptions to affected services or facilities as acceptable to ENGINEER.
 - 6. ENGINEER will indicate limits of Work if not clearly shown.
- B. Coordination with Utility Owners:
 - 1. Notify utility owners to turn off affected services or facilities before starting Work.
 - 2. Provide not less than 72 hours notice to utility owners prior to shutdown, unless otherwise directed by utility owners.
 - 3. Provide temporary services during interruptions to affected services or facilities as acceptable to utility owners.

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3.4 LIMITS

- A. Rough cuts or breaks may be made to limits of demolition shown. If rough cuts or breaks are made exceeding limits shown, CONTRACTOR shall repair the cuts or breaks back to the dimensions shown on Drawings at CONTRACTOR's expense.
- B. All areas not within the limits of demolition Work shown on the Drawings, or as specified herein, shall be left undisturbed, unless necessary for demolition of materials.

3.5 DEMOLITION

- A. General:
 - 1. Inspect condition of materials to be demolished prior to bidding to assess potential for salvage value.
 - 2. Remove all materials associated with existing equipment that is to be demolished.
 - 3. Materials within limits of demolition will become the property of CONTRACTOR.
 - 4. All materials from the demolition process shall be removed safely from the project site as soon as possible. They shall be disposed of in accordance with applicable federal, state, and city regulations. CONTRACTOR is responsible for determining these regulations and shall bear all costs associated with disposal of the materials.
- B. Pavement and Curbs:
 - 1. Provide saw cut at all concrete and pavement surfaces and curb removal limits and where neat connection lines are required.
 - 2. Surfaces exposed by demolition activities shall be repaired and finished to provide a uniform, smooth, level transition between adjacent surfaces.
- C. Concrete, CMU, and Reinforcing:
 - 1. In areas where concrete or CMU portions are to be removed from a structure, the edge of removal shall be cut with a concrete saw to leave a perpendicular edge or by core-drilling where a circular hole is required.
 - 2. Damaged concrete shall be removed to solid concrete. Damaged concrete shall include concrete that is soft, spalled, cracked, or otherwise damaged as determined by ENGINEER.
 - 3. Depth of removal shall be as determined by ENGINEER unless otherwise shown or specified.
 - 4. Reinforcing shall be cut and removed unless otherwise shown or instructed by ENGINEER.
 - 5. Spalled edges may be required to be resawn at the discretion of the ENGINEER.
 - 6. Protect adjacent structures and equipment from damage during Work.
 - 7. Exposed surfaces following demolition activities shall be repaired and finished to provide a uniform, smooth, and level transition between adjacent surfaces.
 - 8. Remove and repair designated cracked and damaged concrete areas shown in accordance with this section and Section 03300, CAST-IN-PLACE CONCRETE.
- D. Concrete Embedded Items:
 - 1. Except for core drills, demolish anchor bolts, reinforcing steel, conduit, and other materials that are concrete embedded to a minimum of 1 inch below final finished surface. For core drills, coat rebar exposed by core drilling with System No. 304 in accordance with Section 09900, PAINTING.

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2. Plug empty pipes and conduits with fireproof sealant to maintain fire ratings for floors or walls.
 3. Patching:
 - a. Demolish damaged concrete. Damaged concrete shall be removed to solid concrete. Damaged concrete shall include concrete that is soft, spalled, cracked, or otherwise damaged as determined by ENGINEER.
 - b. Coat with approved bonding agent.
 - c. Patch with nonshrink, nonmetallic grout.
- E. Piping:
1. Pressurized Services: Install restrained caps or plugs at the demolished ends, unless otherwise shown.
 2. Gravity Services: Install concrete plugs, 5-foot minimum length.
- F. Utilities:
1. Excavate utility lines serving structures to be demolished.
 2. Demolish electrical, sanitary, and storm drainage lines serving structures to be demolished.
 3. Support or relocate utility lines exposed by Work.
 4. For water and gas lines to be demolished or capped and terminated, provide a permanent leakproof closure. Closure type shall be as recommended by utility owner.
- G. Electrical:
1. Remove conduits and wiring from materials to be demolished back to nearest junction box.
 2. For existing circuits to remain operational, intercept existing conduit at the most convenient location, or as shown, and splice and extend conduit to new location. Install new conductors as required to accomplish intended results. New conductors shall be continuous without splices between junction boxes.
 3. For existing circuits no longer needed, demolish conductors from conduits.
 4. Demolish all surface-mounted conduit which is no longer needed.
 5. For conduit below grade or concealed within walls, cap and abandon in place.

3.6 SALVAGE

- A. Salvage materials for OWNER's own use where shown.
- B. Remove materials with extreme care so as not to damage.
- C. Promptly remove materials from Work area.
- D. Store materials in location designated by ENGINEER.
- E. Clean and protect materials from dust, dirt, natural elements, and store as directed.

3.7 RELOCATION

- A. ENGINEER will determine condition of materials prior to removal.
- B. Remove all materials associated with items to be relocated.

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- C. Existing materials shall not be damaged during removal.
- D. Properly store and maintain materials in same condition as when removed.
- E. Clean and protect materials from dust, dirt, natural elements, and store as directed.

3.8 ABANDONMENT

- A. Structures: Break holes into or core drill floor slabs, catch basins, and other below-grade concrete structures to be abandoned in place to allow water to freely migrate through.
- B. Piping and Conduits:
 - 1. General: Piping and conduits to be abandoned shall be capped with a watertight plug at demolished end in a manner that will prevent entrance of soil, groundwater, or moisture.
 - 2. Pressurized Services: Install restrained caps or plugs at the demolished ends, unless otherwise shown.
 - 3. Gravity Services: Install concrete plugs, 5-foot minimum length.

3.9 REPAIR AND REPLACEMENT

- A. Any damaged materials scheduled to be salvaged or relocated shall be repaired by the CONTRACTOR to the satisfaction of ENGINEER or replaced at the CONTRACTOR's expense.
- B. Any damage to areas not within the limits of demolition Work shown on the Demolition Photographs, Drawings, or as specified herein shall be repaired or replaced to original precontract conditions at the CONTRACTOR's sole expense.

3.10 DISPOSAL

- A. Dispose of materials offsite in licensed landfills and in accordance with all local, state, and federal regulations. CONTRACTOR is responsible for obtaining any and all necessary permits for disposal.

+ + END OF SECTION + +

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SECTION 02300

EARTHWORK

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Section includes: All excavating, backfilling, filling, grading, subgrade preparation and disposing of earth materials as required. It also includes all temporary means needed to prevent discharge of sediment to watercourses from dewatering systems or erosion.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM C33, Standard Specification for Aggregate Material.
 - 2. ASTM D422, Method for Particle-Size Analysis of Soils.
 - 3. ASTM D423, Liquid Limit of Soils.
 - 4. ASTM D427, Shrinkage Factors of Soils.
 - 5. ASTM D698, Test Method for Laboratory Compaction Characteristics of Soil.
 - 6. ASTM D1556, Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
 - 7. ASTM D2922, Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 - 8. ASTM D2166, unconfined compressive strength of soils.
- B. Occupational Safety and Health Administration (OSHA)
 - 1. Title 29, Code of Federal Regulations, Part 1926

1.3 SYSTEM DESCRIPTION

- A. Permits and Regulations:
 - 1. Perform excavation Work in compliance with applicable requirements of governing authorities having jurisdiction.
 - 2. Obtain all necessary permits for Work in roads, rights-of-way, railroads, etc. Also, obtain permits as required by local, state and federal agencies for discharging water from excavations, for erosion control, and for prevention of air and water pollution.

1.4 SUBMITTALS

- A. Test Reports - Borrow, Backfill, and Grading: Testing laboratory shall submit copies of the following reports directly to ENGINEER:
 - 1. Tests on borrow material.
 - 2. Tests on footing subgrade.
 - 3. Field density tests.
 - 4. Optimum moisture - maximum density curve for each soil used for backfill.
 - 5. Reports of observations for conformance of borrow material to the Project Geotechnical Report.

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6. Quality Control Plan: Names and phone numbers of independent testing companies that will be used to perform soil and asphalt concrete testing, qualifications, and proposed procedures for performing tests and providing test results to ENGINEER.
- B. Submit to the ENGINEER samples of all materials, including select backfill, general backfill, bedding, crushed stone, sand and topsoil. Submit samples of the proposed material at least seven days in advance of its anticipated use.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General:
 1. All material will be tested by the laboratory and approved by the ENGINEER.
 2. No material shall be placed without the approval of the ENGINEER.
- B. Marking Tape:
 1. Plastic:
 - a. Inert polyethylene, impervious to known alkalis, acids, chemical reagents, and solvents likely to be encountered in soil.
 - b. Thickness: Minimum 4 mils.
 - c. Width: 12 inches.
 - d. Identifying Lettering: Minimum 1-inch high, permanent black lettering imprinted continuously over entire length.
 - e. Manufacturers and Products:
 - 1) Reef Industries; Terra Tape.
 - 2) Allen; Markline.
 - 3) Or equal.
 2. Metallic:
 - a. Solid aluminum foil, visible on unprinted side, encased in a protective high visibility, inert polyethylene plastic jacket.
 - b. Foil Thickness: Minimum 5.5 mils.
 - c. Width: 12 inches.
 - d. Identifying Lettering: Minimum 1-inch high, permanent black lettering imprinted continuously over entire length.
 - e. Joining Clips: Tin or nickel-coated, furnished by tape manufacturer.
 - f. Manufacturers and Products:
 - 1) Reef Industries; Terra "D".
 - 2) Allen; Detectatape.
 - 3) Or equal.
 3. Marking tape shall be marked with the following statements:
 - a. Sanitary Sewer Pipeline: "CAUTION - SANITARY SEWER PIPELINE BURIED BELOW."
 - b. For Existing Utilities Within Trench Limits: "CAUTION - BURIED PIPELINE/CONDUIT" or as specified by utility owner.
 4. Color:
 - a. Sanitary Sewer Pipeline: Green, as specified in ANSI Z53.1 Safety Color Code.
 - b. Others Disturbed: Color, as specified for specific utility in ANSI Z53.1 Safety Color Code.

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- C. Pipe Locating Wire:
1. Pipe locating wire shall be bare AWG No. 10, soft drawn, single-strand copper wire.
 2. Provide at least 6-mil PVC electrical tape insulation around wire where adjacent to metal pipe, valves, and in all valve boxes.
- D. Fill Material:
1. Classification:
 - a. Fill adjacent to structures to a distance measured horizontally from the structure that is equal to the depth from the finished grade is classified as Select Fill.
 - b. Outside these limits, the fill is classified as Common Fill, unless otherwise specified.
 2. Common Fill:
 - a. Common Fill materials shall consist of soils obtained from on-site excavations or off-site sources that are uniformly mixed, contain no organic material, and have been passed through a 3" screen.
 - b. The maximum expansion of off-site materials shall be 1.5% as performed on a sample remolded to approximately 9% of the maximum dry density as determined in accordance with ASTM D 698 at 2% below optimum moisture content under a 100 psf surcharge pressure.
 - c. If on-site material is unsuitable as determined by the ENGINEER, imported fill shall be used.
 3. Select Fill:
 - a. Select fill or backfill is material selected by the ENGINEER from the excavation.
 - b. Select material shall be free of organic or other unsuitable materials and shall not contain rocks, or unbroken masses of soil larger than 4" in greatest dimension.
- E. Aggregate Base:
1. Class 2, $\frac{3}{4}$ " maximum conforming to Section 26 of the Caltrans Standard Specifications.
- F. Granular Bedding:
1. Well-graded sand and gravel materials.
 2. Unfrozen, friable, and no clay balls, roots, or other organic material.
 3. Clean or gravelly sand with less than 5 percent passing No. 200 sieve, as determined in accordance with ASTM D1140, or gravel or crushed rock within maximum particle size and other requirements as follows unless otherwise specified.
 4. 3/4-inch maximum particle size, except 1/4 inch for stainless steel pipe, copper pipe, tubing, and plastic pipe under 3-inch diameter.
 5. Conduit and Direct-Buried Cable:
 - a. Sand, clean or clean to silty, less than 12 percent passing No. 200 sieve.
 - b. Individual Particles: Free of sharp edges.
 - c. Maximum Size Particle: Pass a No. 4 sieve.
 - d. If more than 5 percent passes No. 200 sieve, the fraction that passes No. 40 sieve shall be non-plastic as determined in accordance with ASTM D4318.
- G. Sand:
1. Natural or manufactured granular material, containing no organic material.
 2. Sand will be non-plastic, when tested in accordance with ASTM D 4318, 100% passing a 1/2" screen and no more than 20% passing a No. 200 screen.

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- H. Crushed Stone:
 - 1. Crushed stone will be crushed rock or gravel conforming to the requirements of ASTM C33, Size #57.
- I. Gravel Surfacing
 - 1. Gravel Surfacing will be crushed rock, angular, and well-graded.
 - 2. Maximum size of $\frac{3}{4}$ ", at least 50% passing the No 4. screen, between 10 and 30% passing the No. 10 screen and no more than 15% passing the No. 40 screen.
 - 3. Color to be selected by OWNER.
- J. Controlled Low Strength Material (CLSM):
 - 1. Select and proportion ingredients to obtain compressive strength between 50 and 150 psi at 7 days in accordance with ASTM D4832. Sufficient cement shall be added to meet the strength and material requirements given below and as required to provide sufficient strength for compacting overlying trench backfill. Provide certified mix design and test results in accordance with submittal requirements.
 - 2. Materials:
 - a. Cement: ASTM C150, Type I or II, two sacks minimum per cubic yard.
 - b. Aggregate: ASTM C33, maximum Size 7. The amount of material passing a No. 200 sieve shall not exceed 12 percent. The above No. 200 sieve material shall be well graded so as to avoid segregation. The minus #200 sieve fraction shall be nonplastic.
 - c. Fly Ash (if used): ASTM C618, Class C or F.
 - d. Water: Clean, potable, containing less than 500 ppm of chlorides.
 - 3. Mix Design:
 - a. The CONTRACTOR and its suppliers shall determine the materials and proportions used to meet the requirements of these Specifications. Make daily checks of the aggregate gradation and adjust the mix design as required. Modify the CLSM mix as necessary to meet the flowability, pumpability, and set time requirements for each individual pour.
 - b. At least 30 days before placing CLSM, submit to the ENGINEER a mix design for each CLSM to be used. The mix design shall include trial lab and field data, with pairs of 6-inch by 12-inch cylinder breaks performed at 7, 14, and 28 days. Molds shall be plastic or waxed cardboard. The mix design shall be performed by an independent laboratory under the direction of an engineer licensed in California.
 - c. No CLSM shall be placed until the ENGINEER has approved the mix design. The ENGINEER's approval of the mix design shall be understood to indicate conditional acceptance. Final acceptance will be based on tests conducted on field samples and conformance with these Specifications.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Inspection:
 - 1. Provide ENGINEER with sufficient notice and with means to examine the areas and conditions under which excavating, filling, and grading are to be performed.
 - 2. ENGINEER will notify CONTRACTOR if conditions are found that may be detrimental to the proper and timely completion of the Work.

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3. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.
- B. "Pot-holing":
1. Excavate and backfill, in advance of the construction, test pits to determine conditions or location of the existing utilities and structures.
 2. Define the location of each existing facility involved within the area of his excavation for Work under this Contract.
 3. Exercise care during such location work to avoid damaging and/or disrupting the affected facility.
 4. CONTRACTOR is responsible for repairing, at his expense, damage to any structure, piping, or utility caused by his Work.
- C. Temporary Fencing:
1. Furnish and install a temporary fence surrounding excavations and work area, including the stockpile and storage areas.
 2. Provide fence openings only at vehicular, equipment and worker access points.

3.2 EROSION CONTROL

- A. General: Implement the construction procedures outlined herein to assure minimum damage to the environment during construction. Take all additional measures required to conform to the requirements of applicable codes and regulations.
1. Whenever possible, locate and construct access and temporary roads to avoid environmental damage. Make provisions to regulate drainage, avoid erosion and minimize damage to vegetation.
 2. Where areas must be cleared for storage of materials or temporary structures, provisions will be made for regulating drainage and controlling erosion, subject to the ENGINEER'S approval.
 3. Remove only those shrubs and grasses that must be removed for construction. Protect the remainder to preserve their erosion-control value.
- B. Control Measures: Apply measures to control erosion and to minimize the siltation of the existing waterways, and natural ponding areas. Such measures include, but are not limited to, the use of berms, baled straw silt barriers, gravel or crushed stone, mulch, slope drains and other methods.
1. Install erosion and sediment control practices where shown and according to applicable standards, codes and specifications. The practices will be maintained in effective working condition during construction and until the drainage area has been permanently stabilized.
 2. Temporary measures will be coordinated with the construction of permanent drainage facilities and other Work to the extent practicable to assure economical, effective, and continuous erosion and siltation control.
 3. CONTRACTOR will provide special care in areas with steep slopes. Disturbance of vegetation will be kept to a minimum to maintain stability.
 4. After stabilization, remove all straw bale dikes, debris, etc., from the site.
- C. Dust Control:
1. Prevent blowing and movement of dust from exposed soil surfaces and access roads to reduce on- and off-site damage and health hazards.

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2. Control may be achieved by irrigation in which the site is sprinkled with water until the surface is moist.
 3. Repeat the process as needed.
- D. Failure to Comply: In the event CONTRACTOR repeatedly fails to satisfactorily control erosion and siltation, the OWNER reserves the right to employ outside assistance or to use its own forces to provide the corrective measures indicated. The cost of such work, plus engineering costs, will be deducted from monies due CONTRACTOR.

3.3 DEWATERING

A. General:

1. Continuously control all water during the course of construction, including surface water and ground water, to prevent any damage to any excavation or to the construction activities occurring within those excavations.
2. Maintain all dewatering systems full time (24-hours/day) during the entire time the excavation is open. Do not shut down dewatering systems at night, on weekends or on holidays, or any other time the excavation is open.
3. Each excavation will be kept dry during subgrade preparation and continually thereafter until the structure to be built, or the pipe to be installed therein is inspected by the ENGINEER and backfill operations have been completed.
4. Provide adequate alarm, monitoring and back-up systems for all dewatering systems to maintain control of all water during all times any excavation is open.

B. Surface Water:

1. Provide and maintain adequate drainage and dewatering system to prevent surface water from entering excavations and to remove and dispose of all rainwater entering excavations, trenches, or other parts of the Work.
2. Keep the different working areas on the site free of surface water at all times. Special care will be taken to eliminate depressions that could serve as mosquito pools.
3. The diversion and removal of surface water will be performed in a manner that will prevent the accumulation of water behind temporary structures or at any other locations within the construction area where it may be detrimental.

C. Ground Water:

1. Provide, operate and maintain dewatering system to permit excavation and subsequent construction activities in a dry, safe environment.
2. System shall be of sufficient size and capacity to maintain groundwater level a minimum of 2 feet below the lowest point of excavation.
3. Contractor shall make an assessment of the potential for dewatering induced settlement of surrounding soils and structures. Contractor shall provide all necessary equipment and facilities, including re-injection wells, cutoff walls, infiltration trenches, etc, to prevent damage to adjacent structures.

D. Disposal of water:

1. Disposal of discharge water shall conform to any and all applicable permit requirements.

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3.4 EXCAVATION SUPPORT SYSTEMS

A. Trench Support

1. Provide, install and maintain trench shields for all trench excavations for which trench shields are required (at a minimum, as required by OSHA).
2. Follow all OSHA guidelines and other applicable laws and ordinances.
3. Elevation of Bottom:
 - a. Excavation of earth material below the bottom of a shield will not exceed the limits established by ordinances, codes, laws and regulations.
 - b. When using a shield for pipe installation, the bottom of the shield will not extend below the mid-diameter of installed pipe at any time.
 - c. When using a shield for the installation of structures, the bottom of the shield shall not extend below the top of the bedding for the structures.
4. Moving Shield: When a shield is removed or moved ahead, extreme care will be taken to prevent the movement of pipe or structures or the disturbance of the bedding for pipe or structures. Pipe or structures that are disturbed are to be removed and reinstalled as specified.

B. Below Grade Structure Excavation Support

1. Provide, install and maintain excavation support systems for all structural excavations where excavation support is required (at a minimum, as required by OSHA).
2. Follow all OSHA guidelines and other applicable laws and ordinances.
3. Prepare excavation support plan addressing the following topics:
 - a. Details of shoring, bracing, sloping or other provisions for worker protection from the hazards of caving ground
 - b. Design assumptions and calculations
 - c. Methods and sequencing of installing excavation support
 - d. Proposed locations of stockpiled excavated materials
 - e. Minimum lateral distance from the crest of slopes for vehicles, equipment and materials
 - f. Location of vertical and horizontal monitoring points on structures and recommended frequency of monitoring for excavation support system stability and performance
4. Design of excavation support systems and excavation support plan shall be prepared by a civil or structural engineer registered in the state in which the system is installed.
 - a. Excavation support system shall consist of h-pile and lagging, sheet piles, or other reliable method of excavation support.
 - b. The use of below-ground tiebacks is allowed, however, Contractor is responsible for locating and avoiding potential conflicts with existing utilities in the area in which the tie-backs are installed. All tiebacks shall be further than 3 feet from any conflicting utility. Tiebacks shall not use existing structures for support.

C. Removal of Excavation Support

1. Completely remove all excavation support unless ENGINEER specifically allows requested excavation support to remain in place after backfill.
2. Remove all excavation support in a manner that will maintain support as excavation is backfilled and will not leave voids in the backfill.

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3.5 EXCAVATION

A. General:

1. Material removed: Excavations include earth, sand, clay, gravel, hardpan, boulders, rock, pavements, rubbish and all other materials within the excavation limits.
2. Excavations for structures and pipelines will be open excavations. Provide excavation protection system(s) required by ordinances, codes, law and regulations to prevent injury to workmen and to prevent damage to new and existing structures or pipelines. Unless shown or specified otherwise, protection system(s) will be utilized under the following conditions.
 - a. Excavation Less Than 5' deep: Excavations in stable rock or in soil conditions where there is no potential for a cave-in may be made with vertical sides. Under all other conditions, excavations will be sloped and benched, shielded, or shored and braced.
 - b. Excavations More Than 5' deep: Excavations in stable rock where there is no potential for a cave-in may be made with vertical sides. Under all other conditions, excavations will be sloped and benched, shielded or shored and braced.
 - c. Excavation protection system(s) will be installed and maintained in accordance with the excavation plan submitted.

B. Structural Excavation:

1. The elevation of the bottom of footings shown is approximate only. ENGINEER may order such changes in dimensions, and elevations as may be required to secure a satisfactory footing.
2. Hand-trim all structure excavations to permit the placing of full widths and lengths of footings on horizontal beds. Rounded and undercut edges will not be permitted.
3. Excavations shall allow for aggregate base, forms, working space, installation of shoring or bracing or the safe sloping of banks.

C. Pipe Trench Excavation:

1. No more than 100' of trench may be opened in advance of pipe laying.
2. Minimize trench width to the greatest extent practical, but conform to the following:
3. Sufficient to provide room for installing, jointing and inspecting piping, but in no case wider at top of pipe than pipe barrel outside diameter plus 3'.
4. Enlargements at pipe joints may be made, if required, and approved by ENGINEER.
5. Sufficient for shoring and bracing, or shielding and dewatering.
6. Sufficient to allow thorough compaction of backfill adjacent to bottom half of pipe.
7. Depth of trench will be as shown. If required and approved by ENGINEER, depths may be revised.

D. Subgrades:

1. Subgrades for roadways, structures and trench bottoms shall be firm, dense, and thoroughly compacted and consolidated; free from mud, muck, and other soft or unsuitable materials; and remain firm and intact under all construction operations.
2. Subgrades that are otherwise solid, but which become soft or mucky on top due to construction operations, shall be reinforced with select fill.
3. The finished elevation of stabilized subgrades shall not be above subgrade elevations shown.

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- E. Material Storage: Stockpile satisfactory excavated materials in approved areas, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.
 - 1. Locate and retain soil materials away from edge of excavations.
 - 2. Dispose of excess soil material and waste materials as specified hereinafter.
- F. Unauthorized Excavation:
 - 1. All excavation outside the lines and grades shown, and which is not approved by ENGINEER, together with the removal and disposal of the associated material is at the CONTRACTOR'S expense.
 - 2. Unauthorized excavations shall be filled and compacted with select fill by the CONTRACTOR at his expense.

3.6 PLACEMENT OF FILL AND BACKFILL

- A. General:
 - 1. Backfill excavations as promptly as Work permits, but not until completion of the following:
 - a. Acceptance by the ENGINEER of construction below finish grade.
 - b. Inspection, testing, approval, and recording of locations of underground piping and ductwork.
 - c. Removal of concrete formwork.
 - d. Removal of shoring and bracing, and backfilling of voids with satisfactory materials.
 - e. Removal of trash and debris.
 - 2. Remove and replace with approved fill material, as specified, fill containing organic materials or other unacceptable material.
 - 3. Compact all fill and backfill as specified in Subsection 3.7.
- B. Structural Backfill:
 - 1. Select fill shall be placed as structural backfill where shown on the Drawings or indicated herein.
 - 2. Constraints:
 - a. Backfill water-holding basins or structures only after satisfactory leakage tests have been conducted as specified in Sections Concrete and Precast Concrete.
 - b. No backfill or fill material shall be placed when free water is standing on the surface of the area.
 - c. No compaction of fill will be permitted with free water on any portion of the fill to be compacted.
 - d. No fill shall be placed or compacted in a frozen condition or on top of frozen material.
 - e. Any fill containing organic materials or other unacceptable material previously described shall be removed and replaced with approved fill material prior to compaction.
 - 3. Levels of backfill against concrete walls are not to differ by more than 2' on either side of walls, unless walls are adequately braced or all floor framing is in place up to and including grade level slabs.
 - 4. Wherever a pipe passes through a structure backfill, the structure backfill shall be placed and compacted to an elevation 12" above the top of the pipe before the trench is excavated.

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C. Backfill in Pipe Trenches:

1. Pipeline trenches may be backfilled prior to pressure testing, but no structure shall be constructed over any pipeline until it has been tested.
2. Unless otherwise shown, place all pipe on a minimum 6" thick layer of Granular Bedding. The bedding shall extend 12" above the top of the pipe.
3. Install bedding as follows:
 - a. Spread bedding and grade to provide a uniform and continuous support beneath the pipe at all points between bell holes or pipe joints.
 - b. After each pipe section is placed, deposit and compact sufficient bedding material under and around each side of the pipe to hold the pipe in proper position and to maintain alignment during subsequent pipe jointing and bedding operations.
 - c. Bedding material shall be deposited and compacted uniformly and simultaneously on each side of the pipe to prevent lateral displacement. Then place and compact the bedding material to an elevation 12" above the top of pipe.
4. Above the level of bedding, place Select or Common Fill, as specified elsewhere in these specifications.
5. Controlled Low Strength Material (CLSM):
 - a. When CLSM pipe zone material is indicated, the pipe may be supported above the trench floor on pea gravel bags or sandbag supports. The CONTRACTOR shall demonstrate to the ENGINEER, 7 days prior to full pipeline backfill installation, placement of CLSM as described below. This demonstration shall occur on the first 300 feet of trench, The CLSM pipe zone material shall be installed as indicated.
 - 1) Bedding and Embedment: Place and compact CLSM pipe zone material using the following techniques:
 - a) Following placement and anchoring of the pipe, remove all loose soil from trench walls and floor. Remove any unstable soil at the top of the trench which might fall into the trench during placement of the CLSM.
 - b) Deliver the CLSM to the trench in ready mix trucks or traveling pug mill and utilize pumps or chutes to place the CLSM in the trench. Direct CLSM to one side of the pipe, taking care not to displace the pipe at any time. Continue placing CLSM on one side of the pipe until CLSM has gone under the pipe and up the other side to a depth of 6 inches above the pipe bottom. Use at least two handheld vibrators to continuously liquefy and move CLSM into all voids. Adjust water in mixture to maintain fluid consistency but maintain strength requirements. Continue placing CLSM on both sides of the pipe continuously using two vibrators for every 30 feet of pipe run.
 - c) Maintain stability of pipe and conduit throughout CLSM placement and curing. CLSM will likely require placement in lifts to prevent pipe flotation. No movement of the pipe caused by flotation will be allowed. If any movement occurs, the CLSM material shall be removed and/or repaired in full conformance with these Contract Documents at no additional cost to the OWNER. Remove all sloughed material or other debris from top of previously placed CLSM.
 - d) CLSM shall be allowed to cure a minimum of 4 hours prior to placing each lift as well as trench zone material. A smaller cure period will be allowed if it can be demonstrated to the ENGINEER that it will support the individual lift or trench zone material. The CLSM shall be sufficiently strong to

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support trench backfill material and the compaction effort required to achieve the specified compaction.

D. Marking Tape:

1. Continuously install marking tape along centerline of all buried piping, on top of last lift of pipe zone material unless otherwise shown. Coordinate with piping installation drawings. Install in accordance with manufacturer's recommendations.
 - a. Metallic Marking Tape: Install with nonmetallic piping and waterlines. Join ends with clips provided by the manufacturer.
 - b. Plastic Marking Tape: Install with metallic piping.

E. Pipe-Locating Wire:

1. Pipe-locating wire shall be provided for the entire length of all nonmetallic pipelines and shall be continuous around restrained joint sections.
2. Install pipe locating wire by strapping to the top of the pipe with PVC tape, polyethylene-backed tape, or tie locks. Test pipe locating wire with pipe locator equipment prior to final acceptance.
3. Stub the pipe-locating wire up inside each valve box or flush-mounted Type C corrosion monitoring stations. Sufficient excess length shall be provided at terminal connections to allow continuation of the pipe-locating wire to the terminal connection.
4. Wire splices shall be made with compression fittings or soldering; wrapped with Tac-Tape, Aqua-Seal, or equal, and wrapped with electrical tape. Prevent bare copper wire from contacting metallic appurtenances including, but not limited to, pipe, buried valves, or fittings.

F. Resume backfilling operations using the techniques described above to complete the pipe zone backfill. ENGINEER will approve the pipe zone backfill prior to initiating the trench zone backfill.

G. Embankments:

1. To the maximum extent available, use excess earth obtained from structure and trench excavations for construction of embankments. Obtain additional material from borrow pits, if such pits are shown, otherwise obtain additional material from offsite sources as necessary.
2. Strip, scarify, level and roll the subgrade so that surface materials of the subgrade will be compact and well bonded with the first layer of the embankment.
3. Wherever a pipe is to pass through a fill or embankment, place and compact the fill or embankment material to an elevation 12" above the top of the pipe before the trench is excavated.

H. Crushed Stone:

1. Place where shown on the Drawings, to the limits shown.
2. Place in hand-tamped lifts, not to exceed 6".

I. Replacement of Unacceptable Excavated Materials: In cases where over-excavation for the replacement of unacceptable soil materials is required, backfill the excavation to the required subgrade with select backfill material and thoroughly compacted.

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3.7 COMPACTION

A. General:

1. Compaction by inundation with water will not be permitted.
2. Provide equipment capable of discing, aerating, and mixing the soil to ensure reasonable uniformity of moisture content throughout the material and to reduce the moisture content by air drying, if necessary.
3. Perform compaction with equipment suitable for the type of fill material being placed. Select equipment that is capable of providing the minimum density required by these Specifications. Use hand-operated compacting equipment within a distance of 3 feet from the wall of any completed below grade structure. Between 3 feet and 12 feet adjacent to below grade structures, compaction may be completed with lightweight compaction equipment weighing less than 15,000 pounds. Beyond 12 feet adjacent to below grade structures, there are no equipment weight restrictions. Provide equipment that is capable of compacting in restricted areas next to structures and around piping.

B. Compaction Density Requirements: The degree of compaction required for several types of fill is listed below. Moistened or aerated material as necessary to provide the moisture content specified, or if not specified, that will facilitate obtaining the specified compaction.

MATERIAL	Required Minimum Density (ASTM D 1557)	Maximum Uncompacted Lift*
Common Fill/Prepared Subgrade:	90%	8"
Select Fill/Trench Backfill above pipe:		
More than 2 feet below final grade	90%	8"
Less than 2 feet below final grade	95%	8"
Aggregate Base:	95%	8"
Granular Bedding	90%	6"
Sand	90%	6"
Gravel Surfacing	95%	6"

*Where large areas of backfill allow for use of large, heavy equipment, ENGINEER may, at their option, allow uncompacted lifts up to 12".

C. Moisture Content: All fill and backfill shall be prepared and thoroughly mixed to achieve optimum moisture content, $\pm 3\%$, with the following exception: On site clayey soils optimum to $+3\%$.

D. Testing: Testing will be as specified under Paragraph 3.10, "Field Quality Control".

3.8 GRADING

A. General:

1. Uniformly grade areas within limits of grading under this Section, including adjacent transition areas.

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2. Smooth subgrade surfaces within specified tolerances, and compact with uniform levels or slopes between points where elevations are shown or between such points and existing grades.
- B. Adjacent to Structures: Grade areas adjacent to structures to drain away from structures (including masonry fences) and to prevent ponding.
 - C. Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 1" above or below the required subgrade elevation.
 - D. Pavements: Shape surface of areas under pavement to line, and grade and cross-section with finish surface not more than 1/2" above or below the required subgrade elevation.
 - E. Under Building Slabs: Grade smooth and even, free of voids, compacted as specified and to required elevation. Provide final grades within a tolerance of 1/2" when tested with a 10' straightedge.
 - F. Special Areas: In turfed areas or areas covered with gravel, stone, wood chips, or other special cover, grade to within not more than 1-inch above or below the required subgrade elevations.
 - G. Compaction: After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.

Area	Required Minimum Density (ASTM D 1557)
Beneath Treatment Structures and Buildings	95%
Beneath Pavement	90%
Landscaped and other areas	85%

3.9 PAVEMENT BASE COURSE

- A. Shoulders:
 1. Place shoulders along edges of base course to prevent lateral movement.
 2. Construct shoulders of acceptable soil materials, placed in such quantity to compact to thickness of each base course layer.
 3. Compact and roll at least a 12" width of shoulder simultaneously with compacting and rolling of each layer of base course.
- B. Placing:
 1. Place base course material on prepared subgrade in layers of uniform thickness conforming to indicated cross-section and thickness.
 2. Maintain optimum moisture content for compacting base material during placement operations.

3.10 FIELD QUALITY CONTROL:

- A. General: Testing by a testing laboratory of materials, testing for moisture content during placement and compaction of fill materials, and of compaction requirements for compliance with technical requirements of the Specifications.

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- B. The CONTRACTOR shall retain one or more independent testing agencies to perform all quality control testing required for all materials except portland cement concrete. The required testing is for soil, aggregates, imported gravel, aggregate base, asphalt concrete, and CLSM. Each independent testing agency shall perform the testing under the supervision of an engineer registered in California. Technicians performing the testing shall be certified to operate the equipment and have at least 1 full year of experience in the type of tests being performed.
- C. A Quality Control Plan shall be submitted by the CONTRACTOR to the ENGINEER at least 30 days before field testing is required. It shall include the names, addresses, and phone number of the companies, the major personnel that will be involved, and resumes of the individuals that will be supervising and performing the tests. Copies of certificates held by the companies and the testing personnel shall be included.
- D. CONTRACTOR's independent testing agency shall perform all field and laboratory testing as described in these Specifications. Test shall include specific gravity, sand equivalent, durability, abrasion resistance, soundness, gradation, compaction curves, lab and field moisture contents, compressive strength, and field density. Other tests shall be performed by the CONTRACTOR's independent testing agency as may be required to meet the Specifications. Mix design testing for portland cement concrete, CLSM, and asphalt concrete shall also be performed by the CONTRACTOR. Field testing for portland cement concrete will be performed by the ENGINEER.
- E. CONTRACTOR shall schedule all lab testing so that materials arriving at the site have been approved by the ENGINEER for use on the Project.
- F. All lab tests shall be performed on Samples obtained from the source of actual material that will be used on the Project. No test results more than 90 days old shall be submitted for review.
- G. The location of field density tests shall be determined by the ENGINEER.
- H. Frequency of tests: Frequency will be not less than as follows:
 - 1. For trenches:
 - a. In open fields: 2 locations every 1,000 linear feet, for each layer
 - b. Along dirt, gravel, or paved roads or off traveled right-of-way: 2 locations every 500 linear feet, for each layer
 - c. Crossing roads: 2 locations along each crossing, for each layer
 - 2. For structural backfill: 1 every 50 cubic yards.
 - 3. In embankment or fill: 1 every 200 cubic yards.
 - 4. Base material: 1 every 50 cubic yards.
 - 5. Footing Subgrade: 1 every 50 linear feet, for each layer.
 - 6. Paved Areas and Building Slab Subgrade: 1 every 500 square feet, but in no case less than 3 tests, for each layer.
- I. The ENGINEER may modify the frequency or spacing of tests to provide for testing at specific structures or locations where the ENGINEER deems additional testing is required. The CONTRACTOR shall perform such additional testing up to 10 percent above the frequency and total number of tests specified at no additional cost to the OWNER.

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- J. Verbal and hand-written test results shall be provided to the ENGINEER and CONTRACTOR immediately following the field testing. Written test data sheets shall be provided to the ENGINEER not more than 12 hours following completion of the field test. Typed lab test results shall be provided to the ENGINEER not more than 7 calendar days following completion of the tests; however, the results must be reviewed and approved by the ENGINEER prior to placing the material in the trenches or incorporating it in the Work.
- A. Any location where a failing test occurs shall be recompacted and retested until a passing test is obtained. Specified testing values are minimums and no tests shall be accepted below the specified minimums. No material shall be placed over the failing test area until the failing material is recompacted and a passing test is obtained, and the area is approved by the ENGINEER. The limits of the failing test shall be assumed to be halfway between the failing location and the nearest passing location. Additional tests may be taken to determine the limits of unsatisfactory compaction.
- B. At the first of each month, the CONTRACTOR shall provide to the ENGINEER a typed summary of all tests performed for the previous month including test location by station, depth below finished grade, material tested, wet density, moisture content, dry density, maximum density curve used, and percent relative compaction. Lab test results shall also be included in the monthly report with clear description of material tested, intended use on the Project, and a statement of compliance or noncompliance with the Project Specifications.
- C. Any material which does not meet the Specifications shall be removed from the site and replaced with material in compliance.
- D. Material which has been softened or modified prior to placing the overlying lift shall be removed down to material which is in compliance.

3.11 DISPOSAL OF EXCAVATED MATERIALS

- A. Material removed from the excavations that does not conform to the requirements for fill or is in excess of that required for backfill shall be hauled away from the Work site and disposed of by CONTRACTOR in compliance with ordinances, codes, laws and regulations at no additional cost to the OWNER.
- B. A site is not available to dispose of excess material.

+ + END OF SECTION + +

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SECTION 02500
SITE IMPROVEMENTS

PART 1 - GENERAL

1.1 SYSTEM DESCRIPTION

- A. The site improvements consist of pavements and pavement related features, landscaping and other exterior site development work related to this project. Provide a pavement design by a licensed Professional Engineer familiar with conditions local to the project site. Site design, including but not limited to design of parking and pedestrian circulation, will include coordination with the Civil Engineer and the Landscape Architect.

1.2 GENERAL SYSTEMS REQUIREMENTS

- A. Provide site improvements as required to make a useable facility that meets functional and operational requirements, incorporates all applicable anti-terrorism, force protection and physical security requirements and blends into the existing environment.
- B. Identify and obtain permits to comply with federal, state, and local regulatory requirements associated with this work. Complete the Permits Record of Decision (PROD) form with the first design submittal package. Determine correct permit fees and pay said fees. Forward copies of permits, permit applications, and the completed PROD form to the Government's Civil Reviewer. Perform work in accordance with the obtained permits.
- C. Minimize the impact of construction activity on operations and neighboring facilities.
- D. Locate new site improvements at locations indicated on the drawings in another part of this RFP. If specific locations are not provided, site the improvements to develop appropriate and positive relationships with other facilities and to conform to existing development patterns.

PART 2 - PRODUCTS

2.1 ROADWAYS

- A. PARKING LOTS
 - 1. Provide parking for 10 vehicles and 2 handicapped spaces. The design of pavements must include the anticipated daily traffic (12 cars, 2 single unit trucks, 1 H2O loadings) over the life of the project (20 years) as well as the existing soil conditions at the site.

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4. Provide parking lots of asphaltic pavement where indicated on the drawings.
5. Provide striping as required for complete parking lot installation.
6. Provide handicapped parking in accordance with local handicapped parking codes.

B. CURBS AND GUTTERS

1. Provide parking curbs at front of parking spaces and along pedestrian pathways for complete parking lot installation.
2. Provide storm drainage system in parking lot design including but not limited to: gutters, storm drain inlets, culverts, and storm drainage piping to connect to existing storm drain system.

C. SIDEWALK AND ENTRYWAYS

1. Provide sidewalks and entry ways as shown in the drawings. Consult with OWNER and ENGINEER for final sidewalk layout design.
2. Provide adequate access routes to every entry point to the building.

2.2 EROSION CONTROL MEASURES

- A. Prevent erosion from occurring by providing erosion control measures as required by city, state and federal requirements.

++End of Section++

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SECTION 02770

ASPHALT CONCRETE PAVING

PART 1 - GENERAL

1.1 SUBMITTALS

A. Information Submittals:

1. Asphalt Concrete Mix Formula:
 - a. Submit minimum of 15 days prior to start of production.
 - b. Submittal to include the following information:
 - 1) Gradation and portion for each aggregate constituent used in mixture to produce a single gradation of aggregate within specified limits.
 - 2) Bulk specific gravity for each aggregate constituent.
 - 3) Measured maximum specific gravity of mix at optimum asphalt content determined in accordance with ASTM D2041.
 - 4) Percent of asphalt lost due to absorption by aggregate.
 - 5) Percentage of asphalt cement, to nearest 0.1 percent, to be added to mixture.
 - 6) Optimum mixing temperature.
 - 7) Optimum compaction temperature.
 - 8) Temperature-viscosity curve of asphalt cement to be used.
2. Test Report for Asphalt Cement:
 - a. Submit minimum 10 days prior to start of production.
 - b. Show appropriate test method(s) for each material and the test results.
3. Statement of qualification for independent testing laboratory.
4. Test Results:
 - a. Mix design.
 - b. Asphalt concrete core.
 - c. Gradation and asphalt content of uncompacted mix.

1.2 QUALITY ASSURANCE

A. Qualifications:

1. Independent Testing Laboratory: In accordance with ASTM E329.
2. Asphalt concrete mix formula shall be prepared by approved certified independent laboratory under the supervision of a certified asphalt technician.

1.3 ENVIRONMENTAL REQUIREMENTS

- A. Temperature: Do not apply asphalt materials or place asphalt mixes when ground temperature is lower than 10 degrees C (50 degrees F) or air temperature is lower than 4 degrees C (40 degrees F). Measure ground and air temperature in shaded areas away from heat sources or wet surfaces.
- B. Moisture: Do not apply asphalt materials or place asphalt mixes when application surface is wet.

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PART 2 - PRODUCTS

2.1 MATERIALS

- A. Asphalt Material: Conform to the following specification:
 - 1. Asphalt Material shall be a hot mix asphalt concrete, consisting of a mixture of mineral aggregate and paving asphalt conforming to Section 92 of the Caltrans Standard Specifications, PG 64-10.
- B. Seal Coat: Conform to the following specification:
 - 1. Seal coat material shall be conforming to Section 37 of the Caltrans Standard Specifications.

PART 3 - EXECUTION

3.1 GENERAL

- A. Traffic Control:
 - 1. In accordance with all applicable specification sections and laws.
 - 2. Minimize inconvenience to traffic, but keep vehicles off freshly treated or paved surfaces to avoid pickup and tracking of asphalt.
- B. Driveways: Repave driveways from which pavement was removed. Leave driveways in as good or better condition than before start of construction.

3.2 LINE AND GRADE

- A. Provide and maintain intermediate control of line and grade, independent of underlying base, to meet finish surface grades and minimum thickness.
- B. Shoulders: Construct to line, grade, and cross-section shown.

3.3 PREPARATION

- A. Prepare subgrade as specified.
- B. Thoroughly coat edges of contact surfaces with emulsified asphalt or asphalt cement prior to laying new pavement. Prevent staining of adjacent surfaces.

3.4 PAVEMENT APPLICATION

- A. General: Place asphalt concrete mixture on approved, prepared base in conformance with this section.
- B. Pavement Mix:
 - 1. Prior to Paving:
 - a. Sweep primed surface free of dirt, dust, or other foreign matter.
 - b. Patch holes in primed surface with asphalt concrete pavement mix.
 - 2. Place asphalt concrete pavement mix in one single lift.

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3. Total Compacted Thickness: 3 inches.
 4. Apply such that meet lines are straight and edges are vertical.
 5. Collect and dispose of segregated aggregate from raking process. Do not scatter material over finished surface.
 6. After placement of pavement, seal meet line by painting a minimum of 150 millimeters (6 inches) on each side of joint with cut-back or emulsified asphalt. Cover immediately with sand.
- C. Compaction: Roll until roller marks are eliminated and density of 92 percent of measured maximum density determined in accordance with ASTM D2041.
- D. Tolerances:
1. General: Conduct measurements for conformity with crown and grade immediately after initial compression. Correct variations immediately by removal or addition of materials and by continuous rolling.
 2. Completed Surface or Wearing Layer Smoothness:
 - a. Uniform texture, smooth, and uniform to crown and grade.
 - b. Maximum Deviation: 1/8 inch from lower edge of a 3.6-meter (12-foot) straightedge, measured continuously parallel and at right angle to centerline.
 - c. If surface of completed pavement deviates by more than twice specified tolerances, remove and replace wearing surface.
 3. Transverse Slope Maximum Deviation: 1/4 inch.
- E. Seal Coat:
1. General: Apply seal coat of paving grade or emulsified asphalt to finished surface at longitudinal and transverse joints, joints at abutting pavements, areas where asphalt concrete was placed by hand, patched surfaces, and other areas as directed by ENGINEER.
 2. Preparation:
 - a. Surfaces that are to be sealed shall be maintained free of holes, dry, and clean of dust and loose material.
 - b. Seal in dry weather and when temperature is above 2 degrees C (35 degrees F).
 3. Application:
 - a. Fill cracks over 1.5 millimeters (1/16 inch) in width with asphalt-sand slurry or approved crack sealer prior to sealing.
 - b. When sealing patched surfaces and joints with existing pavements, extend minimum 150 millimeters (6 inches) beyond edges of patches.

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SECTION 02810
IRRIGATION SYSTEM

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Provide an irrigation system for the planter locations shown on the drawings.
- B. Work includes all labor, material, equipment, appliances, fixtures and tests necessary for a new operating landscape irrigation system as indicated on the Drawings and as specified herein.
- C. Work included in this Section:
 - 1. Preparation
 - 2. Installation
 - 3. Temporary repairs
 - 4. Field quality control
 - 5. Irrigation system operation demonstration
 - 6. Cleanup
 - 7. Site observation before acceptance

1.2 SUBMITTALS

- A. Materials and Equipment: Submit the data on the following materials and equipment in accordance with Section 01330
 - 1. Pipe and fittings
 - 2. Pipe solvent and primer
 - 3. Wire
 - 4. Wire connectors
 - 5. Valves
 - 6. Valve boxes
 - 7. Drip emitters
 - 8. Irrigation controllers

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Use only new materials of brands and types noted on the Drawings, specified herein, or equals as approved by the Engineer
- B. Pipe and Fittings
 - 1. All exposed irrigation pipe shall be Steel Pipe:
 - a. Galvanized standard weight schedule 40 steel water pipe complying with ASTM A53 with threaded, galvanized standard weight malleable iron fittings and/or couplings.

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2. All buried irrigation pipe shall be PVC Pipe:
 - a. Pipe: Schedule 40 Polyvinyl Chloride (PVC). Type I, Grade I or Class 12454-B conforming to ASTM D1784 and ASTM D1785.
 - b. Fittings: Schedule to match pipe above, ASTM D2466 and ASTM D2467 for socket weld type and Schedule 80 ASTM D2464 for threaded type.
 - c. Solvent socket weld except where connection to threaded valves and equipment may require future disassembly.
 - d. Solvent Cement: As recommended by the pipe and fitting manufacturer conforming to ASTM D2564.
- C. Valves and Valve Boxes
1. Shutoff valves: PVC ball valves:
 - a. Service: Water.
 - b. Features:
 - 1) Rated 150 psi at 73 degrees F
 - 2) ASTM D1784, Type I, Grade 1 polyvinyl chloride body, ball, and stem, end entry
 - 3) Double union design, solvent-weld socket ends
 - 4) EPDM or Teflon seat
 - 5) EPDM O-rings and stem seals
 - c. Manufacturers and Products:
 - 1) Nibco; Chemtrol Tru-Bloc.
 - 2) ASAHI/America; Duo-Bloc.
 - 3) Or Equal.
 2. Automatic control valves:
 - a. Electrically remote-control valves shall be Rain Bird PESB-D Series, or equal, size as noted on the Drawings. Valve shall include a pressure-regulating module.
 - b. Each valve for drip irrigation system shall also include a Rain Bird PRB-QKCHK-100 filter set immediately downstream of the control valve
 - c. Each electric remote control valve shall be provided with a PVC ball valve for manual flow adjustment
 3. Valve Boxes
 - a. 12" x 17" x 12" deep rectangular box for electrical remote control valves as manufactured by Carson Products, Inc., Model 1419-12, with bolt-down cover, or approved equal.
- D. Sprinkler Heads and Drip Emitters
1. Drip Emitters:
 - a. Rain Bird pressure-compensating modules, point-source emission devices, threaded inlet model PC-24, orange, 24 gph, or equal.
 - b. Set emitters on riser nipples
- E. Automatic irrigation controller
1. The automatic controller shall be Irri-trol MC-4 4-station controller, or equal.
 2. Transformer input: 120 VAC, 60 Hz
 3. Transformer output: 24 VAC
 4. Enclosure:
 - a. Provide a vandal-resistant controller enclosure made of cold-rolled steel. Enclosure shall be Model No. SB-18CR, manufactured by V.I.T. Products, or equal.

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- b. Enclosure shall be painted with powder-coated finish, forest green color. Finish shall be applied by the enclosure manufacturer before delivery to the project site. Submit color sample for approval before ordering.

F. Control Wiring

1. Connections between the automatic controller and the electric control valves shall be made with direct burial copper wire, AWG-UF 600 volt.
2. Control wire shall be a different color wire for each control valve. Common wire shall be white. Wire color shall be continuous over its entire length.
3. Install wires in accordance with the valve manufacturer's specifications and wire charts.
4. Wire size shall not be less than #14 gauge for control wires and no less than #12 gauge for common wire.
5. Wire Splices shall be made with either Scotch-Lok #3576 "Connector Sealing Packs", Rain Bird "Snap Tite" wire connectors, or approved equal. Use one splice per connector sealing pack.
6. Field wire splices between the automatic controller and the electrical control valves shall not be allowed without prior approval of Engineer.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Trenching

1. Trenching shall be conducted in a manner that minimizes impacts on any retained vegetation.
2. Excavate trenches straight and support pipe continuously on bottom of trench. Lay pipe to an even grade. Trenching excavation shall follow the layout as indicated on the Drawings.
3. Cover: Provide the following minimum soil cover:
 - a. 18" for pressure supply lines
 - b. 12" for non-pressure lines
 - c. 18" for control wire
 - d. 24" for sleeve pipe and conduit

B. Backfilling

1. Backfill material and compaction requirements shall conform to the requirements of Section 02300 and the pipe trench standard detail.

C. Irrigation Assemblies

1. Routine of irrigation lines as indicated on the Drawings is diagrammatic only. Install lines and various assemblies in such a manner as to conform to the Drawings.
2. At no time shall multiple assemblies be installed in plastic lines. Provide each assembly with its own outlet.
3. 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.
4. On PVC to metal pipe connections, work the metal connections first. Teflon tape or approved equal shall be used on all threaded PVC to PVC and threaded PVC to metal

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joints. Apply a light wrench pressure only. Where threaded PVC connections are required, use threaded PVC adapters into which the pipe may be solvent welded.

D. Control Wire Installation

1. Wiring shall occupy the same trench and shall be installed along the same route as pressure supply or lateral lines, wherever possible.
2. Wiring shall be set at a minimum 6" distance from pipes.
3. Where more than one wire is placed in a trench, the wires shall be taped together at intervals of 10 feet.
4. An expansion curl shall be provided within 3 feet of each wire connection. Expansion curl shall be of sufficient length at each splice connection at each electric control valve 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 the trench without stress or stretching control wire conductors.
5. When control wiring is trenched separately from main-line trenches, continuous warning tape shall be installed with the wiring.

E. Drip Irrigation

1. Install drip irrigation systems to adequately water the plant materials at locations shown on the Drawings and as prescribed herein.
2. The major portions of the irrigation system shall be installed before the installation of any plants. Irrigation of all plants shall begin the same day as plant installation and shall meet the requirements of this section.
3. All irrigation installation operations must be conducted in coordination with plant location field marking and planting hole excavation. Plant locations must be field marked and approved, and planting holes must be excavated before installation of individual drip emitters.
4. PVC piping and fittings shall connect drip nozzles to lateral line pipe. Provide the required couplings and fittings for emitter to pipe connections. All PVC lateral line piping shall be set below grade. At no time shall flexible tubing be used.
5. After its pipe installation is complete, each drip system shall first be flushed for 30 minutes minimum, to ensure that debris, rocks and dirt are removed. Ensure that all sites are being irrigated and that flow is continuous. The drip systems shall be capped while the system is still operating to ensure that no debris, rocks, or dirt enter the pipes. The drip systems shall then have the emitters installed.
6. Drip emitters shall be set on grade at plant locations. Before installation, stake and mark the locations of the drip risers for approval by the Engineer. For all container plants, drip emitters shall be set within the planting basin. Provide 2 drip emitters per plant, offset 180-degrees.
7. Emitters shall be connected to the PVC piping at the individual planting locations. Emitters shall be installed while the system is operating to ensure that no debris enters the lines. The emitters shall be placed adjacent to the root crown after plant installation. After all the emitters have been installed on each run, that line shall be rechecked under pressure for leaks around the emitter or emitter coupler. Any leaks shall be repaired to ensure a fully-operational system.

F. Controller

1. Controller location shall be as shown on the Drawings.
2. The controller shall be installed according to the manufacturer's specifications inside the vandal-proof controller enclosure.

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3. Connect all control wires from the valves
4. All wires required above ground shall be placed in metal conduits painted flat black.

3.2 TESTING

- A. Test pressure piping under hydrostatic pressure of 150 psi for a period of 2 hours. Testing of pressure pipe shall occur before installation of any electric control valves. Allowable leakage is specified in Section 15990.

3.3 IRRIGATION SYSTEM OPERATION DEMONSTRATION

- A. The entire irrigation system shall be under complete and automatic operation for a period of 7 days before beginning of planting.
- B. Operation will be witnessed by Engineer.

+ + END OF SECTION + +

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SECTION 02900

LANDSCAPE PLANTING

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Furnish all materials, labor, transportation, services, and equipment necessary to install landscape planting as shown on the Drawings and as specified herein. Any and all permits, fees, bonds, and observations necessary to perform and complete portion of the work shall be included.
- B. Work included in this Section:
 - 1. Verification of Existing Conditions
 - 2. Surface Drainage of Planting Areas
 - 3. Preparation
 - 4. Plant Installation
 - 5. Watering
 - 6. Cleanup
 - 7. Site Observation Before Acceptance
 - 8. Site Observation Schedule

1.2 REQUIREMENTS OF REGULATORY AGENCIES

- A. All Federal, State, and local laws and regulations governing this work are hereby incorporated into and made part of this Section. When this Section calls for certain materials, workmanship or a level of construction that exceeds the level of Federal, State, or local requirements, the provisions of this Section shall take precedence.

1.3 REFERENCE STANDARDS

- A. All plant material shall be true to botanical and common name as indicated in:
 - 1. McClintock, E. M., and A. T. Leiser. 1979. *An Annotated Checklist of Woody Ornamental Plants of California, Oregon, and Washington*. University of California, Division of Agricultural Sciences. Berkeley, CA.
 - 2. American Nursery & Landscape Association. 2004. *American Standard for Nursery Stock*. ANSI Z60.1-2004. Washington, DC.
 - 3. L. H. Bailey Hortorium of Cornell University. 1976. *Hortus Third: A Concise Dictionary of Plants Cultivated in the United State and Canada*. Macmillan. New York, NY.
 - 4. Hickman, J.C. (ed.). 1993. *The Jepson Manual: Higher Plants of California*. University of California Press. Berkeley, CA.
 - 5. U.S. Natural Resources Conservation Service. 2011. Plants Database. Available: <<http://plants.usda.gov>>. Last updated May 16, 2011.
- B. All plant material shall conform to the California State Department of Agriculture's regulations for nursery observations, rules and ratings.
 - 1. Quality Control

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- C. Manufacturer's directions and drawings shall be followed in all cases where the manufacturers of articles used in this Specification furnish directions covering points not shown in the Drawings and Specifications.
- D. Upon execution of the order, the Engineer has the option of either inspecting the plant material at the nursery, requesting representative color photos or inspecting the material as it is being delivered to the site for conformity to the Drawings and Specifications.
 - 1. Such approvals shall not impair the right of additional observations during further progress of the Work.
- E. Any tagging of plant material by the Engineer does not constitute his/her approval of the plant materials' health and vigor. The health and vigor of the plant material is the sole responsibility of the Contractor.
- F. The Engineer reserves the right to refuse observation, if in his judgment; a sufficient quantity of plant material is not available for observation at that time.

1.4 QUALIFICATIONS

- A. The nursery that supplied planting materials shall be a reputable nursery.

1.5 SUBMITTALS

- A. Submit in accordance with Section 01330:
 - 1. List of all proposed materials and equipment to be used indicated by description, manufacturer and model number, if applicable. Include catalog cuts where applicable.
 - 2. A copy of the plant procurement order from the nursery including the name, address, and phone number of said nursery.
 - 3. Plant quantity list.
 - a. Plant quantities shown on the Drawings are for estimation only. Provide the actual planting quantities.
 - b. List all plants indicated by botanical name, common name, quantity, size, nursery and location and any specific remarks, (e.g., "unable to locate," "photo submitted," etc.).
 - 4. Written documentation that the plant material listed on the Drawings is available. Any substitutions required due to unavailability must be requested in writing before confirmation of ordering.
 - 5. A schedule identifying plant procurement, storage, and anticipated delivery dates for review and approval.
 - 6. Compliance with State of California and federal quarantine restrictions.

1.6 PROJECT CONDITIONS

- A. Perform planting operations only when weather and soil conditions are suitable in accordance with locally accepted practice.

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Delivery
 - 1. Deliver all planting materials with legible and durable identification labels.

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2. Deliver fertilizer to the site in original, unopened containers bearing the manufacturer's name, guaranteed chemical analysis, and its conformance to California State Law.
 3. Notify the Engineer within 7 days of the delivery of plant materials to the site. Indicate the quantity and type of plant materials in each delivery.
- B. Storage
1. Store planting materials in the shade and protect from the weather.
 2. Maintain and protect plants not planted within 4 hours of delivery.
- C. Protection
1. Protect plants during delivery to the site and after, in order to prevent damage to the root balls or desiccation of leaves.
- D. Handling
1. Take extreme care in the loading and unloading of plants. Do not lift or move container plants by their stems or trunks.
 2. Any plant materials that are damaged due to mishandling shall be removed and replaced with new material at no additional cost.

1.8 REJECTION OF PLANT MATERIAL

- A. All plant material not conforming to the requirements herein shall be considered defective.
1. The Engineer shall mark such plants, whether in place or not, as rejected and the materials shall be immediately removed from the site and replaced with new material at no additional cost.
 2. Replacement plant material shall be of the same size, species and condition as that indicated on the Drawings.

1.9 PROTECTION OF THE SITE

- A. Protect previously installed work and materials which may be affected by work of this Section. Provide safeguards and exercise caution against injury or defacement of existing site improvements.
- B. Repair damage and return the areas to the previous condition at no additional cost.

1.10 COORDINATION

- A. Coordinate operations with other contractors on or adjacent to the project site.
- B. Exercise extreme care in excavating and working near existing utilities. Repair any damages to these utilities at no additional cost. Check existing utility drawings for existing utility locations.
- C. Coordinate installation of all planting materials to avoid interference with utilities, other construction elements, and any existing vegetation.

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1.11 GUARANTEE

- A. The manufacturer's warranty shall not relieve the Contractor of its own liability under the guarantee. Such warranties shall only supplement the guarantee.
- B. All plant material installed under this Contract shall be guaranteed against poor, inadequate and inferior quality and installation for a period of 1 year from the date of Final Acceptance.
 - 1. Any plant material not meeting the satisfaction of the Engineer as per the performance standards in Section 02970, Landscape Maintenance, shall immediately be removed and replaced at no cost to the Owner.
 - 2. Replaced plant material shall also be guaranteed for a period of 1 year upon installation.
- C. Replace without cost to the Owner and as soon as weather permits, all dead plants and all plants not found in a vigorous, thriving condition, as determined by the Engineer during and at the end of the plant warranty period.
 - 1. Replacement of plants shall closely match adjacent specimens of the same species and shall be subject to all requirements of this section.
- D. Repair damage to adjacent plant material at no cost to the Owner. All repairs shall be made with materials, varieties and sizes "in kind" with adjacent existing materials.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Procure all plant materials and incidentals required for this project.
- B. All plant material delivered to the site shall have a normal habit of growth and be well formed and shaped, healthy, vigorous, and free of any insects, diseases, sunscalds, windburn, abrasions of the bark, or other objectionable disfigurements.
- C. The size of the plant material shall correspond with that normally expected for species and variety of commercially available nursery stock or as specified on the Drawings.
- D. Plant material shall be grown under climatic conditions similar to those in the locality of the project unless approved otherwise by the Engineer.
- E. Plant material larger than that specified on the Drawings may be used pending approval from the Engineer. However, there will be no change in the Contract amount if the larger plant material is approved and used.

2.2 MATERIALS

- A. Planting soil and backfill for all planting pits shall be existing topsoil.
- B. Trees and Shrubs

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1. Tree and shrub trunks shall be sturdy and well hardened with vigorous and fibrous root systems which are not root-bound.
 2. In the event of a disagreement as to the condition of the root system, the root conditions of the plants will be determined by the removal of soil around the roots of not less than 10 plants or more than 2 percent of the total number of plants of each species.
 3. When container-grown plants are supplied from several sources, the roots of not less than 10 plants of each species from each source will be observed.
 - a. In case the plants sampled are found to be defective, the Engineer has the right to reject the entire lot represented by the defective sample.
 - b. Any plant material rendered unsuitable for use because of this observation will be considered as samples and will be provided at no additional cost.
- C. Container-Grown Stock
1. Container-grown stock shall be in a vigorous and healthy condition and not root bound or with the root system hardened off.
 - a. Container-grown stock shall be grown under climatic conditions similar to that found in the locality of the site.
- D. Ground Cover Stock
1. Ground cover stock shall be well-established in removable containers or come from formed homogenous soil sections.
 2. Ground cover stock shall be grown under climatic conditions similar to that found in the locality of the site.
- E. Fertilizers
1. Planting Tablets (20-10-5), shall be 21-gram, 24-month release, non-burning tablets containing the following percentages of nutrients by weight:

20 percent	Nitrogen
10 percent	Phosphoric Acid
5 percent	Potash
10 percent	Humus
2 percent	Humic Acids
 2. Acceptable product – “Gro-Power Planting Tablets,” as manufactured by Gro-Power (800/473-1307), or approved equal.

PART 3 - EXECUTION

3.1 VERIFICATION OF EXISTING CONDITIONS

- A. Before performing the work in this Section, examine previously installed work from other trades and verify that such work is complete and as required to the point where this installation may begin properly.
- B. Remove all rocks, stones, sticks and debris larger than 1-inch in diameter from the surface of the planting areas.

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- C. Obtain approval of fine grading by the Engineer before starting planting operations.

3.2 SURFACE DRAINAGE OF PLANTING AREAS

- A. Ensure proper drainage of all planting areas. Any discrepancy in the Drawings or Specifications, obstructions on the site, or prior work done by another contractor, which could preclude the establishment of proper drainage, shall be brought to the immediate attention of the Engineer for correction or relief of said responsibility.

3.3 PREPARATION

- A. Planting Layout
 - 1. Verify with the Owner's site superintendent and local governing agencies the location and depth of all underground utilities.
 - 2. If any underground construction or utility lines are encountered in the excavation of planting holes, alternative planting locations may be selected by the Engineer.
 - 3. Locations for all shrubs and trees shall be marked on the ground either by flagged grade stakes indicating plant type and size or the actual plants themselves for the Engineer's review and approval before planting. Trees and shrubs will be located according to the layout shown on the Drawings.
 - 4. Groundcover plant locations shall be in straight rows, evenly, triangular spaced, and at the on-center spacing indicated on the Drawings.
- B. General Planting Guidelines
 - 1. Plant only as many plants as can be planted and watered on that same day within a given planting area.
 - 2. Protect the planting area from excessive vehicle compaction.
 - 3. Face plant material with fullest growth into the prevailing wind and/or the primary direction of view.
- C. Container Removal
 - 1. Plant container shall be opened and removed in such a manner that the soil surrounding the rootball shall not be broken.
 - 2. Do not injure the root ball while removing the container. After removing plant, superficially cut edge roots with a knife on 3 sides.

3.4 PLANT INSTALLATION

- A. Excavate planting pit 12 inches below the bottom of the rootball and to a diameter of twice the diameter of the rootball. Planting pits shall have vertical sides and roughened surfaces.
- B. Before planting, place the required amount of planting tablets per plant size on top of each root ball while the plants are still in their containers so that the Engineer can easily verify their existence and quantity.
- C. After obtaining approval by the Engineer on plant tablet quantity and after water has completely drained from the planting pit, add plant tables to the planting pits in the following quantities:
 - 1-gallon 1 tablet

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5-gallon	3 tablets
15-gallon	5 tablets
24-inch box	5 tablets

Place the specified amount of plant tablets between the bottom of the rootball but not higher than 1/3 of the way up the rootball. Space the plant tablets equally around the perimeter of the rootball approximately 2 inches from the rootball.

- D. Center plant material in the planting pit.
- E. Apply backfill mix to the planting pit up to ½ the height of the rootball. Add water to the top of the remaining planting pit and let soak in before completing remainder of backfilling. Finish backfilling with planting soil of the planting pit by tamping the soil firmly around the rootball and watering thoroughly.
- F. Each rooted ground cover plant shall be planted with its proportional amount of soil.
- G. Water Retention Basins
 - 1. After final backfilling, construct a water retention basin around the base of each tree and shrub planting (only) to a 30-inch diameter with backfill mix sufficient to hold 3-inches of water. Water retention basins are not required for groundcover plantings.
- H. Wood Mulch Topdressing
 - 1. Spread a 2-inch deep layer of wood mulch in all tree, shrub, and ground cover planting pits, not including seeding areas.
- I. Plant Settling
 - 1. Any plant material that has settled deeper than the surrounding grade shall be raised to the correct level.

3.5 WATERING

- A. All planting and seeding areas shall be watered immediately after installation. After the first watering, water shall be applied to all plants and seeded areas as conditions may require keeping the vegetation in a healthy and vigorous growing condition until the completion of the Contract.

3.6 CLEANUP

- A. Remove all trash caused from the work on a weekly basis throughout the duration of the Project.
- B. Upon completion of work under this Section, remove all rubbish, waste and debris to an off-site location or as directed by the Engineer.
- C. Repair all scars, ruts or other marks in the ground caused by the work.
- D. Remove all equipment and implements of service and leave the entire work area in a neat and clean condition as accepted by the Engineer. All sidewalks and other paving areas shall receive a broom-clean treatment.

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3.7 SITE OBSERVATION BEFORE ACCEPTANCE

- A. Corrective actions shall be in strict conformance with the Drawings and these Specifications and according to the Engineer and shall be completed at the Contractor's expense.
- B. The Engineer will perform progress observations of the work and construction operations on completion of construction stages. The Engineer, the Contractor, and others designated by the Owner shall be agreed upon the construction stages for this Specification before starting work and be present on mutually agreed-on dates for the observations for each stage.
- C. If, after an observation, the Engineer is satisfied with the construction to date and its conformance to the Drawings and Specifications, the Engineer will grant written notice of provisional acceptance for that construction stage.
- D. If, after an observation, the Engineer is dissatisfied with the construction to date and its conformance to the Drawings and the Specifications, the Engineer will prepare a written punch list of necessary corrective action on defective work for the construction stage. All corrections must be completed and will be reobserved by the Engineer within 10 working days from the date of the initial observation.
- E. Project observations shall not occur until all punch list items from previous observations shall not occur until all punch list items from previous observations are corrected. Failure to correct problems in the time specified by the Engineer may result in a delay of payment for the said tasks until the items in question are remedied per the engineer's direction.
- F. The Contractor shall be charged for any additional construction observations and punch lists required from the Engineer for unscheduled and necessary reobservation of the work due to unsatisfactorily or incompletely addressing previous punch lists.

3.8 SITE OBSERVATION SCHEDULE

- A. Provide the Engineer with 48 hours of advance notification, except as otherwise noted, for required stage acceptance observations including, but not limited to, the following:
 - 1. Plant materials at nursery(s) before delivery to project site.
 - 2. Plant materials after delivery to project site and before planting.
 - 3. Plant locations layout before planting pit excavation.
 - 4. Planting operations, one complete installation of each plant size before installation of remaining plants.
 - 5. Progress container planting operations.
 - 6. Completed container planting operations.
 - 7. Progress seeding operations.
 - 8. Completed seedling operations.
 - 9. Substantial Completion Observation: Final installation observation before the start of the Landscape Maintenance Period (provide 10 working days of advance written notice).

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SECTION 02970
LANDSCAPE MAINTENANCE

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. This section only applies to landscaping and not hydroseeding.
- B. After landscape planting and irrigation work have been completed, reviewed and accepted by the Owner and the Engineer, furnish materials, labor, transportation, services and equipment necessary to provide landscape maintenance as indicated on Drawings and as specified herein.
- C. Work included in this Section:
 - 1. Observation of Work Request
 - 2. General Landscape Maintenance
 - 3. Tree and Shrub Care
 - 4. Ground Cover Plant Care
 - 5. Maintaining Water Retention Basins
 - 6. Watering
 - 7. Irrigation System
 - 8. Weed Control
 - 9. Replacement Planting
 - 10. Reseeded Areas
 - 11. Cleanup
 - 12. Site Observation Before Acceptance
 - 13. Site Observation Schedule
 - 14. Final Acceptance

1.2 REFERENCES

- A. International Society of Arboriculture, pruning mature trees.

1.3 DEFINITIONS

- A. Healthy Plants: Healthy plants shall be those that are of good form, free of disease and insect infestation, are robust, and exhibit vigorous growth (foliage and wood). They must not be heat or water stressed.
- B. Landscape Maintenance Period: Landscape Maintenance Period will be 90 days minimum from acceptance of the completed landscape construction by the Owner and the Engineer.
 - 1. At the discretion of the Engineer, proceed into the Landscape Maintenance Period if planting and irrigation are deemed "substantially complete" by the Engineer.
 - 2. Continuously maintain areas included in this Contract during the Landscape Maintenance Period until Final Acceptance has been granted.

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3. Improper landscape maintenance or possible poor condition of planting at termination of the scheduled may cause the Landscape Maintenance Period to be continued at no cost to the Owner.
4. Any day that Contractor fails to adequately perform landscape maintenance, as determined necessary by the Engineer, will not be credited as one of landscape maintenance working days.
5. The Contractor shall be responsible for establishing and maintaining all plants, including transplants, in a healthy condition throughout the Landscape Maintenance Period. The Contractor shall check the condition of each plant for symptoms of disease, size, color, wilting, defoliation, new growth, browsing by wildlife, insect damage, girdling, structural deformities, dieback, sunburn and vandalism and shall notify the Engineer of the corrective actions required.

1.4 PERFORMANCE STANDARDS

- A. The target survival rate for all container plants shall be 100% survival. The target survival rate for seeded areas shall be 60% cover with native vegetation.
- B. If the percent survival is less than these standards, replacement plants shall be planted, in conformance to the Drawings and Specifications, with the minimum number of plants required to achieve the survivorship standards.
- C. Seeded areas larger than 400 square feet with less than 60% cover with native vegetation shall be reseeded.
- D. If the performance standards are not met at the time of Final Acceptance, the project will not be accepted until the identified remedial actions are implemented as directed by the Engineer. These may include additional weed control and/or additional planting, using adaptive management to identify those plants best suited to the site. All remedial actions shall be conducted in strict coordination with, and upon the approval of the Engineer.

1.5 QUALIFICATIONS

- A. The applicator of all weed control materials shall be licensed by the State of California as a Pest Control Operator and a Pest Control Advisor in addition to any subcontractor licenses that are required.

1.6 SUBMITTALS

- A. At least 30 days before starting landscape maintenance, submit the following to the Engineer:
 1. A schedule of activities planned during the Landscape Maintenance Period. This schedule must be accepted by the Engineer before start of landscape maintenance. During the Landscape Maintenance Period, document scheduled changes and obtain acceptance by the Engineer.
 2. A written schedule for watering, including rate and length of application for each event over the duration of the Landscape Maintenance Period.
 3. The Pest Control Advisor shall submit a list of the weed control materials and quantities per acre intended for use in controlling the weed types prevalent and expected on the site. Weed control information shall include:

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- a. Data to demonstrate the compatibility of the weed control materials and methods with the intended planting and seed varieties.
 - b. A written list of the proposed herbicide application equipment to be used in performance of the weeding work, including descriptive data and calibration tests. Include the herbicide trade name, chemical composition, formulation, concentration, application rate of active ingredients and methods of application for all materials furnished, as well as the name and State license number of the State certified applicator.
 - c. Records of manufacturer's literature, labels, and laboratory analytical data for verification of herbicide to be used, including the chemical makeup and application rate.
 - d. Certificates of compliance certifying that herbicide materials meet the requirements specified shall be submitted before the delivery of materials. Herbicide material shall include EPA registration number and registered uses.
 - e. A Herbicide Treatment Plan (HTP) proposing a sequence of herbicide treatments and a written delivery schedule and written Pest Control Advisor (PCA) recommendation. The herbicide trade name, chemical composition, formulation, concentration, application rate of active ingredients and methods of application for all materials furnished, and the name and state license number of the state certified applicator shall be included. Records of manufacturer's literature, labels, and laboratory analytical data for verification of herbicide to be used including the chemical makeup and application rate shall be submitted. Once approved by the Engineer, the Contractor shall receive written authorization to proceed with the treatment.
4. A list of materials that are to be used during landscape maintenance that are not specified in Section 02900 – Landscape Planting in written form to the Engineer for review and approval before purchasing or delivering to the site.
- B. Replacement Materials
1. For all replacement container plants, and upon the direction of the Engineer, submit a copy of the plant procurement order, including the plant species (by botanical and common name), sizes, and quantities ordered, from a reputable nursery as specified in Section 02900 – Landscape Planting. If the nursery is different than that used to supply the materials for the initial planting, submit the name, address, and phone number of the nursery.
 2. For any reseeding materials, submit verification of seed mix by way of mix labels from the seed mix bags and related items to be used for installing plant materials shall be included in the submittal.
 3. Submit a schedule and plan identifying replacement materials procurement and storage, and anticipated delivery dates for review and approval.
- C. Landscape Maintenance Logs
1. Landscape maintenance activities, including, but not limited to watering, pruning, and weed control shall be logged on a weekly basis and submitted for review during the progress observations.

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PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide materials for landscape maintenance work in accordance with requirements of Section 02900, Landscape Planting, except as described herein.

2.2 MATERIALS

- A. Fertilizer
 - 1. Shall be consistent with the recommendations from the soils analysis.
 - 2. Shall be Gro-Power Hi-Nitrogen 14-4-9, or approved equal, commercial fertilizer at the rate of 7 ½ pounds per 1,000 square feet.
- B. Replacement Plants
 - 1. Supply all replacement container plant materials as required during Landscape Maintenance Period. Replacement plants shall be container and seed of same species and size according to Section 02900, Planting, unless otherwise directed by the Engineer. Sources proposed for acquisition of replacement plant material must be approved by Engineer before acquisition. In no event shall plants of larger sizes than those originally planted be required.
- C. Herbicide
 - 1. Select herbicides with low toxicity to wildlife and those that are appropriate for the desired effect (i.e., broadleaf herbicide to avoid harm to grasses).
- D. All materials need to be suitable to use per Santa Clara Valley Water District's standards.

PART 3 - EXECUTION

3.1 OBSERVATION OF WORK REQUEST

- A. Request an observation of work by the Engineer to begin the Landscape Maintenance Period after planting and related work has been completed in accordance with Contract Documents. A prime requirement is that ground cover plant (including seeded areas and turf areas), shrub, and tree areas be planted and show a consistent and healthy appearance. If such criteria are met to satisfaction of the Engineer, a field report may be issued to the Owner recommending a date for beginning of the Landscape Maintenance Period.
- B. Any work conducted before the approved landscape maintenance date will not be credited as one of landscape maintenance working days.

3.2 GENERAL LANDSCAPE MAINTENANCE

- A. Furnish sufficient labor and adequate equipment to perform work during the Landscape Maintenance Period.
- B. The general landscape maintenance operations shall include, but is not limited to:

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1. Maintaining planting sites and irrigation systems as described specifically herein.
2. Provide debris removal in all landscaping areas.
3. Maintain adequate protection of landscaping areas. Repair damaged area.
4. Sweep clean paved areas at weekly intervals or more frequently, if deemed necessary.
5. Replacing all dead and severely stressed plants and other materials, as required and in accordance with the performance standards.
6. Maintaining all planting areas weed free and removing all noxious weeds from entire project site. Cultivation at intervals of not more than 10 days.
7. Operating the irrigation system on a regular basis throughout the irrigation season and maintaining the irrigation system in a fully operational condition for the duration of the Landscape Maintenance Period, and up to the Final Acceptance of the project.
8. Keeping up-to-date record, or as "As-Built" Drawings during the Landscape Maintenance Period.
9. Providing irrigation controller charts.

3.3 TREE AND SHRUB CARE

A. Watering: Refer to 3.6, Watering, this Specification section.

B. Pruning:

1. Pruning Objectives:

- a. At no time shall plant material be pruned, trimmed or topped before delivery. Any alteration to a plant material's shape shall only be conducted on-site and in the presence of the Engineer.
- b. All require pruning of plant material shall be conducted under the observation of the Engineer. Prune plant material only when necessary and under standard horticultural practices to preserve its natural character.
- c. Select and develop permanent scaffold branches that are smaller in diameter than trunk or branch to which they are attached which have vertical spacing of from 18-inches to 48-inches and radial orientation so as not to overlay one another.
- d. To eliminate diseased or damaged growth.
- e. To eliminate narrow V-shaped branch forks that lack strength.
- f. To reduce toppling and wind damage by thinning out crowns.
- g. To maintain growth within space limitations.
- h. To maintain a natural appearance and to balance crown with root mass.
- i. Do not clip shrubs into balled or boxed forms unless approved initially by the Engineer.
- j. Make pruning cuts on lateral branches or buds flush with trunk.
- k. Do not "stub" branches.

C. Tree Staking

1. Restake, tighten and repair damaged tree ties.
2. Reset to proper grades or upright (vertical position, trees that are not in their proper growing position.
3. Inspect stakes to prevent girdling of trunks or branches and to prevent rubbing that may cause bark wounds.

D. Weed Control: Refer to 3.8 Weed Control, this Specification section.

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- E. Insect and Disease Control:
 - 1. Maintain insect and disease control during the Landscape Maintenance Period.
- F. Fertilization:
 - 1. Fertilize planting areas at the start of the Landscape Maintenance Period.
 - 2. Repeat fertilizer application at 30-day intervals until end of the Landscape Maintenance Period.

3.4 GROUND COVER PLANT CARE

- A. Weed Control: Refer to 3.8, Weed Control, this Specification section.
- B. Watering: Refer to 3.5, Watering, this Specification section.
- C. Fertilizing:
 - 1. Fertilize as specified under 3.3, Tree and Shrub care, this Specification section.
- D. Edge ground cover to keep in bounds and trim trop growth as necessary to achieve an overall even appearance.

3.5 MAINTAINING WATER RETENTION BASINS

- A. Unless otherwise directed by the Engineer, maintain water retention basins around each plant. As directed by the Engineer, modify the basin to ensure it is capable of containing the required amount of water at each watering event at one time. The lip (or earthen berm) of the basin shall be preserved to a height as shown on the Drawings. Maintenance actions may include importing soil, reforming, and re-compacting the lip (or earthen berm) of the basin. Should water be retained within a basin for more than 4-hours, breach the berm of said basin in order to provide drainage at a given plant, especially during the rainy season and at other times as necessary. Take corrective actions to ensure positive drainage at a given plant; the berm shall then be restored to reform the water retention basin as prescribed herein.

3.6 WATERING

- A. The plants shall receive water by way of the installed irrigation system as shown on the Drawings and according to Section 02810, Irrigation System. When hand watering, use a water wand to break water force.
- B. The Contractor shall observe said system to ensure that it is functioning and providing adequate water to the plants. Water pressure shall be regulated to a level that applies sufficient water without causing damage to plants or erosion to the planting basin. At no time shall any water be applied in a way that will cause erosion, damage to plants, or excessive runoff. Should the watering application rates need adjustment, immediately contact the Engineer for direction. Assume full responsibility for corrective actions resulting from inappropriate water applications and failure to contact the Engineer for direction. Watering shall consist of the application of water in a manner that is sufficient to wet the soil and saturate the root zone and as frequent as necessary to maintain healthy growth, without damaging the plants, the surrounding grade, or the existing watering basins.

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- C. Replenish wood mulch to reduce evaporation and frequency of watering. Throughout warm weather conditions, the plants may require additional watering events. The beginning and ending dates and a schedule for watering shall be determined collaboratively by the Contractor and the Engineer. If most of the plants appear to be stressed and in danger of perishing, consult the Engineer to determine the frequency and duration of additional or decreased watering. If modifications are made to the watering schedule, provide the Engineer with 2 copies of the adjusted watering schedule within 2 weeks of receiving the Engineer's verbal acceptance plus subsequent written approval of the modifications. Regulate irrigation watering times to minimize erosion and gullyng.

3.7 IRRIGATION SYSTEM

- A. Provides maintenance of irrigation system consisting of cleaning and adjusting sprinkler and nozzles, and drip emitters, repairing damaged equipment, servicing valves, programming controllers and other activities required during the Landscape Maintenance Period.
- B. Irrigation Controller Charts
 1. "As-Built" Drawings shall be approved by the Engineer before Irrigation Controller Charts are prepared.
 2. Provide one Irrigation Controller Chart for each irrigation controller supplied.
 3. Each Irrigation Controller Chart shall show the area controlled by that automatic irrigation controller and shall be the maximum size that fits through the irrigation controller door will allow.
 4. The Irrigation Controller Chart is to be a reduced "As-Built" Drawings of the irrigation system. In the event that the Irrigation Controller Chart is not legible when the chart is reduced, the text on the "As-Built" Drawing may be enlarged to a size that will be readable when reduced.
 5. The Irrigation Controller Chart shall be a monochromatic "Xerox" copy on #20 bond with each valve station represented by a different color.S
 6. When completed, hermetically seal the Irrigation Controller Chart between two pieces of 10 mil. plastic laminate.
 7. Irrigation Controller Charts shall be completed and approved by the Engineer before the Final Acceptance.
- C. Refer to Section 02810 – Irrigation System for additional requirements.

3.8 WEED CONTROL

- A. Weed control shall consist of maintaining the individual planting sites, areas between individual planting sites, and all areas within planting boundaries (as shown on the Drawings) free of weeds for the duration of the Landscape Maintenance Period.
- B. At individual planting site, weeds shall be removed within a 36-inch diameter of each plant. Weed removal at the trunks of individual plants shall be conducted by hand pulling. At no time shall weed removal disrupt the root systems of the installed plants.
- C. Observe the project site weekly during the Landscape Maintenance Period to evaluate potential weed problems. Any invasive weed species shall be targeted for removal and

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long-term control through manual or chemical methods. Manual removal by hand-pulling shall be the preferred weed eradication method.

1. Mechanical methods (such as mowing) or spot herbicide applications may be considered upon receipt of an HTP and approval from the Engineer before application. If approved, herbicide applications shall be conducted according to the approved HTP and under the direction of the Engineer. At no time shall weed control include burning.
2. Avoid frequent soil cultivation that destroys shallow surface roots.
3. Replenish lost wood or straw mulch to reduce weed growth.

3.9 REPLACEMENT PLANTING

- A. Material replacement shall be in strict conformance to the Drawings, these Specifications, and the Engineer's direction, and shall be completed at no additional expense.
- B. Plant material that has no easily observable viable aboveground living matter, or is of consistently poor vigor and form as determined by the Engineer, shall be considered dead and must be replaced according to the Drawings and the Specifications. Dead plants shall be removed before installation of replacement plants. All dead plants shall be removed offsite according to State and local regulations at no additional expense.
- C. Replace plant losses due to inundation, mortality, or poor health and vigor at a rate of 1 replacement plant for each plant lost in accordance with the performance standards described herein. The replacement plants must be similar in size to the current size of the existing plants. If transplants require replanting, the size of the replacements must be approved by the Engineer before ordering or purchase.
- D. All materials determined to be salvaged shall be handled and removed with care. All replacement plant containers and racks shall be salvaged and recycled offsite or returned to the suppliers at no additional cost.

3.10 CLEANUP

- A. Upon completion landscape maintenance, remove rubbish, waste and debris.
- B. Repair scars, ruts or other marks in landscaped areas.
- C. Remove equipment, implements of service and leave landscaping areas in a neat and clean condition as accepted by the Engineer. Sweep clean paved areas.

3.11 SITE OBSERVATION BEFORE ACCEPTANCE

- A. Corrective actions shall be in strict conformance with the Drawings and these Specifications and according to the Engineer, and shall be completed at the Contractor's expense.
- B. The Engineer will perform progress observations of the maintenance work on a weekly basis. The Engineer, the Contractor, and others designated by the Owner shall be present on for the weekly observations.

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- C. If, after observation, the Engineer is satisfied with the construction to date and its conformance to the Drawings and the Specifications, the Engineer will grant written notice of acceptance.
- D. If, after an observation, the Engineer is dissatisfied with the maintenance work to date and its conformance to the Drawings and the Specifications, the Engineer will prepare a written punch list of necessary corrective action on defective work. All corrections must be completed by the Contractor and reobserved by the Engineer at the following weekly inspection.
- E. Failure to correct problems in the time specified by the Engineer may result in a delay of payment for the said tasks until the items in question are remedied per the Engineer's direction.
- F. The Contractor shall be charged for any additional observations and punch lists required from the Engineer for unscheduled and necessary reobservation of the Contractor's work due to unsatisfactorily or incompletely addressing previous punch lists.

3.12 SITE OBSERVATION SCHEDULE

- A. Progress observations of the maintenance work shall be one per week. The Engineer and the Contractor shall agree upon a regular day and time for the weekly observations.

3.13 FINAL ACCEPTANCE

- A. At completion of the Landscape Maintenance Period, schedule a Final Acceptance observation with the Engineer. Provide 10 working days of advance written notice for the requested date.
- B. The Owner, Engineer, Contractor, and others deemed necessary by the Engineer may be present at the Final Acceptance observation.
- C. Before requesting Final Acceptance observation, replacement planting shall be completed.
- D. If during the Final Acceptance observation the Engineer is of opinion that landscape maintenance has been substantially completed in accordance with this Specification, written notice of recommendation to allow Contractor to be released from Project will be submitted to the Owner for approval. This report will note any incomplete punch list items from Final Acceptance observation and a date on which these items must be completed. Remaining punch list items shall be completed within 5 working days after the final Acceptance observation was performed by the Engineer.
- E. If during the Final Acceptance observation the Engineer is of opinion that landscape maintenance has not been substantially completed in accordance with this Specification, the Engineer will prepare a written punch list of necessary corrective action on defective work. All corrections must be completed by the Contractor and reobserved by the Engineer within 10 working days from the date of the initial Final Acceptance observation. Written notice of recommendation to allow Contractor to be released from

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Project will not be submitted to the Owner for approval until all corrective actions have been addressed to the satisfaction of the Engineer.

- F. Corrective actions shall be in strict conformance with the Drawings and these Specifications and according to the Engineers, and shall be completed at the Contractor's expense.

+ + END OF SECTION + +

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SECTION 03000

FOUNDATIONS

PART 1 - GENERAL

1.1 DESIGN REQUIREMENTS

- A. Provide the building foundation system in accordance with provisions of 2016 edition of the California Building Code (CBC). Design foundations to suit subsurface conditions, capable of transmitting all building loads to the ground.
- B. Specific Site Location Design Parameters
 - 1. Basic Wind Speed: 115 mph, Exposure C.
 - 2. Seismic:
 - a. S_s (maximum short-term spectral response acceleration) = 0.538
 - b. S_1 (maximum 1-second spectral response acceleration) = 0.260
 - c. S_{DS} (design short-term spectral response acceleration) = 0.491
 - d. S_{D1} (design 1-second spectral response acceleration) = 0.326
 - e. I_e (Seismic Importance Factor) = 1.5
 - f. Risk Category = IV
 - g. Seismic Use Group = III
 - 3. Maximum Rain Intensity: 3-inches/hour

1.2 GEOTECHNICAL INFORMATION

- A. Subsurface soil information, including a geotechnical report are included as Appendix A.

1.3 SUBMITTALS

- A. Design Submittals
 - 1. Drawings and calculations for foundation plan
- B. Material Submittals
 - 1. All materials proposed for use in foundation design

PART 2 - PRODUCTS

2.1 STANDARD FOUNDATIONS

- A. As determined by the Designer of Record to be applicable, provide a Standard foundation. "Standard Foundations" are shallow or deep foundations as specifically addressed in International Building Code (IBC) Chapter 18. Do not use masonry unit footings, steel grillage footings, timber footings or wood foundations.

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2.2 GROUND FLOOR SLABS

- A. As determined by the Designer of Record, provide soil supported concrete slab on ground. Where slab on ground is below the existing adjacent exterior grade, provide water/damp-proofing and a perimeter drainage system to remove ground water from the area immediately adjacent to the buildings.

PART 3 - EXECUTION

- A. Install foundations in accordance with Geotechnical engineering recommendations.

++ END OF SECTION ++

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SECTION 03100
CONCRETE FORMWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Falsework and formwork, as required to construct cast-in-place concrete, including placing of all items such as sleeves, anchor bolts, inserts and all other items to be embedded in concrete for which placement is not specifically provided under other Sections.
- B. REFERENCES
 - 1. American Concrete Institute (ACI)
 - a. ACI 301, Specifications for Structural Concrete for Buildings.
 - b. ACI 347, Guide for Concrete Formwork.

1.2 SYSTEM DESCRIPTION

- A. Coordination:
 - 1. Review installation procedures under other Sections and coordinate the installation of items that must be installed with the formwork.
 - 2. Coordinate formwork specifications herein with the requirements for finished surfaces specified in Section 03300, Cast-In-Place Concrete.

1.3 SUBMITTALS

- A. Submit for information purposes the following: Copies of manufacturer's data and installation instructions for all proprietary materials, including form coatings, manufactured form systems, ties and accessories.
- B. Shop Drawings: Forming, shoring and bracing drawings for footings, walls and roofs.
- C. Calculations: Calculations verifying the selection of form ties, horizontal and vertical stiff-backs or braces for wall panels, forming and form openings, falsework or roof forms, or any other part of forming, shoring or bracing which may be considered critical by the ENGINEER. The drawings, with supporting calculations, must be signed and sealed by a Civil or Structural Engineer registered in the State of California.

1.4 QUALITY ASSURANCE

- A. Allowable Tolerances: Construct formwork to provide completed concrete surfaces complying with tolerances specified in ACI 347, Chapter 3.3, except as otherwise specified.
- B. Furnish and install all items for permanent or temporary facilities in accordance with manufacturer's instructions.

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PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Forms for Exposed Finish Concrete: Unless otherwise shown or specified, construct formwork for exposed concrete surfaces with plywood overlaid with MDO or HDO specifically designed for concrete forms, metal, metal-framed plywood-faced or other acceptable panel materials, to provide continuous, straight, smooth as-cast surfaces. Furnish in largest practical sizes to minimize number of joints. Provide form material with sufficient thickness to remain watertight and withstand pressure of newly placed concrete without bow or deflection.
 - 1. At circular structures wall forms shall conform to the circular shape of the structure. Straight panels not exceeding 2 feet in horizontal width and installed with angular deflection not greater than 3-1/2 degrees per joint may be substituted for circular forms.
- B. Forms for Unexposed Finish Concrete: Form concrete surfaces that will be unexposed in the finished structure with plywood, lumber, metal, or other acceptable material. Provide lumber that is dressed on at least 2 edges and 1 side.
- C. Form Ties:
 - 1. Form ties on exposed surfaces shall be located in a uniform pattern or as indicated on the Drawings. Form ties shall be constructed so that the tie remains embedded in the wall, except for a removable portion at each end. Form ties shall have conical or spherical type inserts, inserts shall be fixed so that they remain in contact with forming material, and shall be constructed so that no metal is within 1 inch of the concrete surface when the forms, inserts, and tie ends are removed. Wire ties will not be permitted. Ties shall withstand all pressures and limit deflection of forms to acceptable limits.
 - 2. Flat bar ties for panel forms shall have plastic or rubber inserts having a minimum depth of 1 inch and sufficient dimensions to permit proper patching of the tie hole.
 - 3. Ties for water-holding structures or dry structures with access such as basements, pipe galleries, etc., that are below finish grade, shall have either an integral steel water stop 0.103 inch thick and 0.625 inch in diameter that is tightly and continuously welded to the tie, or a neoprene water stop 3/16-inch thick and 15/16 inch in diameter whose center hole is 1/2 the diameter of the snap tie, or a molded plastic water stop of comparable size. Flat snap ties complying with above requirements and other sections of this Specification may be used. The water stop shall be considerably larger in area than the tie cross sectional area, and shall be oriented perpendicular to the tie and symmetrical about the center of the tie. The ties shall be constructed to provide a positive means of preventing rotation or disturbance of the center portion of the tie during removal of the ends.
- D. Alternative Form Ties – Through-Bolts:
 - 1. Alternate form ties consisting of tapered through-bolts at least 1 inch in diameter at smallest end, or through-bolts that utilize a removable tapered sleeve of the same minimum size may be used at the CONTRACTOR's option. Clean and roughen, fill, and seal form tie hole as shown on the Drawings; or where not shown on the Drawings, the CONTRACTOR shall provide a shop drawing submittal of his proposed method of sealing the through-bolt hole by sandblasting or mechanically cleaning and

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roughening the entire interior surface of the hole, epoxy coating the roughened surface and driving a vinyl plug and then dry packing the entire hole on each side of the plug with nonshrink grout, meeting these Specifications. Dry packing shall be done while the epoxy is tacky or remove the epoxy by mechanical means and reapply new epoxy. The CONTRACTOR shall be responsible for watertightness and any repair needed. Any leaks or dampness on the exterior of through-bolt patches during or after water testing shall require repair or replacement of the patch.

2. The elastic plug to be inserted into the form tie hole as shown on the Drawings shall be a Dayton Sure Plug, or approved equal, sized to allow insertion using the insertion tool to elongate the plug, place it at the correct location, and allow the plug to return to its original length and diameter upon removal to form a watertight seal. The plugs shall be as manufactured and supplied by Dayton Superior, Dayton OH, phone: 888/977-9500.

- E. Forms Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain, nor adversely affect concrete surfaces, and will not impair subsequent treatment of concrete surfaces requiring bond or adhesion, nor impede the wetting of surfaces to be cured with water or curing compounds.

1. For concrete structures which will be in contact with potable water, the manufacturer shall certify that the form coating used is NSF 61 approved.

2.2 DESIGN OF FORMWORK

- A. The CONTRACTOR shall design all formwork prior to fabrication. The design shall account for all the tolerances, form ties, finishes, architectural features, rebar supports, construction joint locations, and other features and other nonstructural formwork requirements specified. Forms shall contain pouring and observation windows to allow placement of concrete through windows or shall be staged to allow visual observation at all times of the fresh concrete to ensure correct placement and vibration. Provide a formwork and placement design that will limit free fall of concrete in forms 8-inch or less in width to 5 feet; and for forms wider than 8 inches, limit this fall to 8 feet, except as hereinafter specified. Review methods with ENGINEER prior to start of work. Use placement devices, such as chutes, pouring spouts, pumps, as required.
- B. Wall forms shall be designed such that wall sections can be poured full height without creating horizontal cold joints and without causing snapping of form ties which shall be of sufficient strength and number to prevent spreading of the forms during the placement of concrete and which shall permit ready removal of the forms without spalling or damaging the concrete.
- C. Reuse of forms will be permitted only if a "like new" condition, unless otherwise approved in writing, is maintained. The ENGINEER shall be notified 1 full working day prior to concrete placement so that the forms can be inspected. The CONTRACTOR shall correct any defective work, found in the ENGINEER's inspection, prior to delivery of concrete to the project. Formwork surfaces that were in good condition and accepted for use, but were damaged during removal and handling shall not be reused on additional pours. The CONTRACTOR is expected to take care in the handling of forms and to obtain approval of form surfaces prior to each reuse.

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- D. Roof forms and falsework supports for structural slabs shall be sufficiently rigid and strong to support the wet concrete and the men and equipment necessary for its placement without appreciable deflections. A minimum of 50 PSF for live load shall be allowed in the design.
- E. All forms, falsework, shoring, and other structural formwork required shall be structurally designed by the CONTRACTOR and the design shall comply with all applicable safety regulations, current OSHA regulations, and other codes. Where federal or state agencies require a licensed engineer to prepare and/or seal all formwork, falsework or shoring designs, the CONTRACTOR shall hire this engineer and pay all costs. The designs shall be made available to any governing agency upon request. Comply with applicable portions of ACI 347, ACI 318 current edition, and these Specifications. All design, supervision, and construction for safety of property and personnel shall be the CONTRACTOR's full responsibility.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine the substrate and the conditions under which Work is to be performed with installer and notify ENGINEER, in writing, of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.

3.2 FORM CONSTRUCTION

- A. Construct forms complying with ACI 347; to the exact sizes, shapes, lines and dimensions shown; as required to obtain accurate alignment, location and grades; to tolerances specified; and to obtain level and plumb work in finish structures. Provide for openings, offsets, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required. Use selected materials to obtain required finishes. Finish shall be as determined by approved mock-up or sample panel, if specified.
- B. Fabricate forms for easy removal without damaging concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where the slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and assure ease of removal.
- C. Provide temporary form windows where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Brace temporary closures and set tightly to forms to prevent loss of concrete mortar. Locate form windows on forms in locations as inconspicuous as possible, consistent with requirements of the Work. Form intersecting planes of openings to provide true, clean-cut corners, with edge grain of plywood not exposed as form for concrete.
- D. Falsework:

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1. Erect falsework and support, brace and maintain it to safely support vertical, lateral and asymmetrical loads applied until such loads can be supported by in-place concrete structures. Construct falsework so that adjustments can be made for take-up and settlement.
 2. Provide wedges, jacks or camber strips to facilitate vertical adjustments. Carefully inspect falsework and formwork during and after concrete placement operations to determine abnormal deflection or signs of failure; make necessary adjustments to produce finished Work of required dimensions.
- E. Forms for Exposed To View Concrete:
1. Do not use metal cover plates for patching holes or defects in forms.
 2. Provide sharp, clean corners at intersecting planes, without visible edges or offsets. Back joints with extra studs or girts to maintain true, square intersections.
 3. Use extra studs, walers and bracing to prevent bowing of forms between studs and to avoid bowed appearance in concrete. Do not use narrow strips of form material that will produce bow.
 4. Assemble forms so they may be readily removed without damage to exposed concrete surfaces.
 5. Form molding shapes, recesses, rustication joints and projections with smooth-finish materials, and install in forms with sealed joints to prevent displacement.
- F. Corner Treatment:
1. Form exposed corners of beams, walls, foundations, bases and columns to produce smooth, solid, unbroken lines, except as otherwise shown. Except as specified below for reentrant or internal corners, exposed corners shall be chamfered.
 2. Form chamfers with 3/4"x 3/4" strips, unless otherwise shown, accurately formed and surfaced to produce uniformly straight lines and tight edge joints. Use rigid PVC chamfers for all architecturally formed concrete. Extend terminal edges to require limit and miter chamfer strips at changes in direction.
 3. Reentrant or internal corners and unexposed corners need not be formed chamfered.
- G. Openings and Built-In Work:
1. Provide openings in concrete formwork shown or required by other Sections or other contracts.
 2. Accurately place and securely support items to be built into forms.
- H. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is to be placed. Retighten forms immediately after concrete placement as required to eliminate mortar leaks.

3.3 FORM COATINGS

- A. Coat form contact surfaces with a non-staining form-coating compound before reinforcement is placed. Do not allow excess form coating material to accumulate in the forms or to come into contact with surfaces that will be bonded to fresh concrete. Apply in compliance with manufacturer's instructions.
- B. Coat steel forms with a non-staining, rust-preventative form oil or otherwise protect against rusting. Rust-stained steel formwork is not acceptable.

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3.4 INSTALLATION OF EMBEDDED ITEMS

- A. Set and build into the formwork, anchorage devices and other embedded items, shown, specified or required by other Sections and other contracts. Use necessary setting drawings, diagrams, instructions and directions.
- B. Edge Forms and Screeds Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in the finished slab surface. Provide and secure units to support screeds.

3.5 FIELD QUALITY CONTROL

- A. Before concrete placement, check the formwork, including tolerances, lines, ties, tie cones, and form coatings. Make corrections and adjustments to ensure proper size and location of concrete members and stability of forming systems.
- B. During concrete placement check formwork and related supports to ensure that forms are not displaced and that completed Work is within specified tolerances.
- C. If forms are unsatisfactory in any way, either before or during placing of concrete, postpone or stop placement of concrete until the defects have been corrected, and reviewed by ENGINEER.

3.6 REMOVAL OF FORMS

- A. Conform to the requirements of ACI 301, Chapter 2 and ACI 347, Chapter 3.7 except as specified below.
 - 1. Removal of Forms and Supports: Continue curing in accordance with Section 03300, Cast-In-Place Concrete, Paragraph 3.7. Forms are to remain in-place for the time specified below following the end of concrete placement. The durations shown represent a cumulative number of days, or hours, not necessarily consecutive, during which the temperature of the air surrounding the concrete is above 50°F.

<u>Temperature:</u>	<u>Above 50°F</u>	<u>Below 50°F or when retarders are used</u>
Walls	12 hours	48 hours
Columns	12 hours	48 hours
Sides of Slabs	6 hours	12 hours
Structural Floor or Roof Slabs	Do not remove forms until site-cured test cylinders develop 100% of 28-days strength.	

- 2. When wall or column forms also support formwork for slab or beam soffits, the removal times of the latter should govern.
- 3. When high-early strength concrete is specified, a schedule for removal of forms will be developed in the field from the age/ strength relationships established for the materials and proportions used by tests in accordance with ACI 301, Section 2.3.4.
- 4. When construction loads are approximately equal to the structural live load, the forms for structural slabs, joists, and beams shall remain in place until the concrete has reached the specified compressive strength.

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- B. Leave form-facing material in place a minimum of 4 days after concrete placement, unless otherwise approved by ENGINEER.

3.7 PERMANENT SHORES

- A. Provide permanent shores as defined in ACI 347 Chapter 3.7. Reshores will not be permitted.

3.8 RE-USE OF FORMS

- A. Clean and repair surfaces of forms to be re-used in the Work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable. Apply new form coating compound material to concrete contact surfaces as specified for new formwork.
- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close all joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces. Form surfaces shall be subject to ENGINEER'S approval.

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SECTION 03200
CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Provide calculations and design for concrete reinforcement to provide a complete reinforced concrete system in all locations where concrete is used.
- B. Section includes: Fabrication and placement of reinforcement including bars, ties and supports, and welded wire fabric for concrete, encasements and fireproofing.

1.2 SUBMITTALS

- A. Shop Drawings:
 - 1. Manufacturer's specifications and installation instructions for all materials and reinforcement accessories.
 - 2. Drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315, Parts A and B. For walls, show elevations to a minimum scale of 1/4-inch to 1 foot. For slabs, show top and bottom reinforcing on separate plan views. Show bar schedules, stirrup spacing, diagrams of bent bars, arrangements and assemblies, as required for the fabrication and placement of concrete reinforcement, unless otherwise noted. Keep splices to a minimum. Avoid splices in regions of maximum tension stresses whenever possible.
- B. Certificates: Submit one (1) copy of steel producer's certificates of mill analysis, tensile and bend tests for reinforcing steel.

1.3 QUALITY ASSURANCE

- A. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified:
 - 1. American Concrete Institute (ACI):
 - a. ACI 315, Manual of Engineering and Placing Drawings for Reinforced Concrete Structures.
 - b. ACI 318, Building Code Requirements for Reinforced Concrete.
 - 2. Concrete Reinforcing Steel Institute:
 - a. Manual of Standard Practice, includes ASTM standards referred to herein.
- B. Allowable Placing Tolerances: Comply with ACI 318, Chapter 7 - Details of Reinforcement.

1.4 DELIVERY, HANDLING AND STORAGE

- A. Deliver concrete reinforcement materials to the site bundled, tagged and marked. Use metal tags indicating bar size, lengths, and other information corresponding to markings shown on placement diagrams.

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- B. Store concrete reinforcement material at the site to prevent damage and accumulation of dirt or excessive rust. Store on heavy wood blocking so that no part of it will come in contact with the ground.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Reinforcing Bars: ASTM A615, Grade 60 for all non-welded bars. ASTM A706, Grade 60 for welded bars.
- B. Smooth Steel Dowels: ASTM A36.
 - 1. Epoxy coated conforming to ASTM A775 or ASTM A934.
- C. Mechanical Couplers: Reinforcement bars may be spliced with a mechanical connection. Provide a full mechanical connection which shall develop in tension or compression, as required, at least 125% of specified yield strength (f_y) of the bar in accordance with ACI 318 Section 12.14.3.2. The locations of the connections are subject to the approval of the ENGINEER.
 - 1. Dayton Superior Bar Lock S/CA Series.
 - 2. Or approved equal
- D. Threaded Splicing Systems: Dowel Bar Splicer System shall comply with ICC Report #4028. The completed splice shall exceed 160% of the specified yield strength (f_y) of the bar.
 - 1. Dayton Superior DB/DI parallel threaded couplers.
 - 2. Or approved equal
- E. Steel Wire: ASTM A82.
- F. Welded Wire Fabric: ASTM A185. Furnish in flat sheets, not rolls.
- G. Column Spirals: Hot-rolled rods for spirals, ASTM A615.
- H. Supports for Reinforcement: Bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcement in place.
 - 1. Use wire bar type supports complying with CRSI recommendations, except as specified below. Do not use wood, brick, or other unacceptable materials.
 - 2. For slabs on grade, use 5000 psi concrete blocks.
 - 3. At all formed surfaces, provide supports complying with CRSI "Manual of Standard Practice" as follows: Plastic protected or stainless steel legs.
 - 4. For all PVC lined concrete surfaces, provide supports complying with CRSI "Manual of Standard Practice" as follows: Either plastic or metal plastic protected legs.

2.2 FABRICATION

- A. General: Fabricate reinforcing bars to conform to required shapes and dimensions, with fabrication tolerances complying with CRSI, "Manual of Standard Practice". In case of

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fabricating errors, do not re-bend or straighten reinforcement in a manner that will injure or weaken the material.

- B. Unacceptable Materials: Reinforcement with any of the following defects will not be permitted in the Work:
 - 1. Bar lengths, bends, and other dimensions exceeding specified fabrication tolerances.
 - 2. Bends or kinks not shown on approved Shop Drawings.
 - 3. Bars with reduced cross-section due to excessive rusting or other cause.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine substrate and conditions under which concrete reinforcement is to be placed with installer, and notify ENGINEER, in writing, of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.

3.2 INSTALLATION

- A. Comply with the applicable recommendations of specified codes and standards, and CRSI, Manual of Standard Practice, for details and methods of reinforcement placement and supports.
- B. Clean reinforcement to remove loose rust and mill scale, oil, earth, ice, and other materials that reduce or destroy bond with concrete.
- C. Position, support, and secure reinforcement against displacement during formwork construction or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers, as required.
 - 1. Place reinforcement to obtain the minimum concrete cover as shown. Arrange, space, and securely tie bars and bar supports together with 16-gage wire to hold reinforcement accurately in position during concrete placement operations. Slab and wall bars shall be tied at every intersection around the periphery of the slab or wall and not less than every 48 inches in the field at walls and 60 inches in the field at slabs.
 - 2. Bar supports shall be placed no further than 4 feet apart in each direction. Supports must be completely concealed in the concrete and shall not discolor or otherwise mar the surface of the concrete.
 - 3. Set wire ties so that twisted ends are directed away from exposed concrete surfaces.
 - 4. Do not secure reinforcing steel to forms with wire, nails or other ferrous metal. Do not permit metal supports subject to corrosion to touch or be within the required clearance to formed or exposed concrete surfaces.
- D. Install welded wire fabric in as long lengths as practical. Lap adjoining pieces at least one full mesh and lace splices with wire. Do not make end laps midway between supporting beams or directly over beams of continuous structures. Offset end laps in adjacent widths to prevent continuous laps.

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- E. Provide sufficient numbers of supports of strength required to carry reinforcement. Do not place reinforcing bars more than 2-inches beyond the last leg of any continuous bar support. Do not use supports as bases for runways for concrete conveying equipment or similar construction loads.
- F. Splices: Provide reinforcement lap splices by placing bars in contact, and tying tightly with wire. Comply with requirements shown for minimum lap of spliced bars.
- G. Mechanical Couplers in Lieu of Lap Splicing:
 - 1. Provide mechanical butt splices in accordance with the recommendation of the manufacturer of the mechanical splicing device. Butt splices shall develop 125 percent of the specified minimum yield tensile strength of the spliced bars or of the smaller bar in transition splices. Flame dry bars before butt splicing. Provide adequate jigs and clamps or other devices to support, align, and hold the longitudinal centerline of the bars to be butt spliced in a straight line.
- H. Reinforcement Around Openings: Place an equivalent area of steel around the pipe or opening and extend on each side sufficiently to develop bond in each bar. See the Details on Drawings for bar extension length each side of opening. Where welded wire fabric is used, provide extra reinforcing using fabric or deformed bars.
- I. Field Bending: Field bending of reinforcing steel bars is not permitted when rebending will later be required to straighten bars. Rebending of bars at the same place where strain hardening has taken place due to the original bend will damage the bar. Consult with the ENGINEER prior to any pour if the CONTRACTOR foresees a need to work out a solution to prevent field bending.

3.3 INSPECTION OF REINFORCEMENT

- A. Do not place concrete until the reinforcing steel is inspected and permission for placing concrete is granted by ENGINEER. All concrete placed in violation of this provision will be rejected.

+ + END OF SECTION + +

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SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Place, finish, cure, strip, and repair concrete.
- B. Provide cast-in-place concrete as required to complete the construction of the Crew Facility. This includes, but is not limited to: concrete sidewalks, curbs and gutters, foundations, and building slabs.

1.2 REFERENCES

- A. American Concrete Institute (ACI)
 - 1. ACI 211.1, Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
 - 2. ACI 214, Recommended Practice for Evaluation of Strength Test Results of Concrete.
 - 3. ACI 301, Specifications for Structural Concrete for Buildings, (includes ASTM Standards referred to herein).
 - 4. ACI 304, Guide for Measuring, Mixing, Transporting and Placing Concrete.
 - 5. ACI 305, Hot Weather Concreting.
 - 6. ACI 306, Cold Weather Concreting.
 - 7. ACI 309, Guide for Consolidation of Concrete.
 - 8. ACI 311, Guide for Concrete Inspection.
 - 9. ACI 318, Building Code Requirements for Reinforced Concrete.
 - 10. ACI 347, Guide to Formwork for Concrete
 - 11. ACI 350, Environmental Engineering Concrete Structures.

1.3 SYSTEM DESCRIPTION

- A. Class A Concrete shall be steel reinforced and includes:
 - 1. Foundations.
 - 2. Walls.
 - 3. Slabs.
 - 4. Beams.
 - 5. Girders.
 - 6. Columns.
 - 7. Equipment bases.
 - 8. Pipe supports.
- B. Class B Concrete shall be placed without forms or with simple forms, with little or no reinforcing, and includes:
 - 1. Concrete fill.
 - 2. Curbs and gutters.
 - 3. Sidewalks.
 - 4. Thrust blocks.

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1.4 SUBMITTALS

- A. Samples: Submit samples of materials as specified and as otherwise may be requested by ENGINEER, including names, sources and descriptions.
- B. Product Data: Submit for approval the following:
 - 1. Manufacturer's specifications with application and installation instructions for proprietary materials and items, including admixtures and bonding agents.
 - 2. List of concrete materials and concrete mix designs proposed for use. Include the results of all tests performed to qualify the materials and to establish the mix designs.
- C. Laboratory Test Reports: Submit copies of laboratory test reports for materials and mix design tests
- D. Delivery Tickets: Furnish to ENGINEER copies of all weighmaster certificate delivery tickets for each load of concrete delivered to the site. Provide items of information as specified in ASTM C94, Section 16. Delivery tickets shall be signed by a Certified Weighmaster.

1.5 QUALITY ASSURANCE

- A. Tests for Concrete Materials: Submit written reports to ENGINEER, for each material sampled and tested, prior to the start of Work. Provide the Project identification name and number, date of report, name of CONTRACTOR, name of concrete testing service, source of concrete aggregates, material manufacturer and brand name for manufactured materials, values specified in the referenced specification for each material, and test results. Indicate whether or not material is acceptable for intended use.
- B. If the concrete mix designs specified herein have not been used previously by the ready-mix supplier, mix proportions and concrete strength curves for regular cylinder tests shall be established by an approved ready-mix supplier or an independent testing laboratory based on the relationship of 7, 14 and 28 day strengths versus slump values of 2, 4 and 6 inches, all conforming to these Specifications. A laboratory, independent of the ready-mix supplier, shall be required to prepare and test all concrete cylinders. The costs for preparation of mix designs, not previously used by the ready-mix supplier, and testing of concrete and materials shall be borne by CONTRACTOR.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

- A. Cement:
 - 1. Portland cement, ASTM C150, Type II; or blended hydraulic cement, ASTM C595, Type 1P (MS).
 - 2. Do not use cement which has deteriorated because of improper storage or handling.

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- B. Aggregates: ASTM C33 and as herein specified.
 - 1. Do not use aggregates containing soluble salts, substances such as iron sulfides, pyrite, marcasite, ochre, or other materials that can cause stains on exposed concrete surfaces.
 - 2. Fine Aggregate: Provide clean, sharp, natural sand free from loam, clay, lumps or other deleterious substances.
 - 3. Coarse Aggregate: Provide clean, uncoated, processed aggregate containing no clay, mud, loam, or foreign matter, as follows:
 - a. Crushed stone, processed from natural rock or stone.
 - b. Coarse Aggregate Size: Size to be ASTM C33, Nos. 57 or 67, except that No. 467 may be used for footings, foundation mats and walls 16" or greater in thickness.
- C. Water: Clean, free from injurious amounts of oils, acids, alkalis, organic materials or other substances that may be deleterious to concrete or steel.

2.2 CONCRETE ADMIXTURES

- A. Provide admixtures produced by established reputable manufacturers, and use in compliance with the manufacturer's printed instruction. Do not use admixtures that have not been incorporated and tested in the accepted mixes, unless otherwise authorized in writing by ENGINEER.
- B. Air-Entraining Admixtures: ASTM C260.
 - 1. Product and Manufacturer: Provide one of the following:
 - a. SIK AER, as manufactured by Sika Corporation.
 - b. MasterAir AE 200, as manufactured by BASF.
 - c. Daravair, as manufactured by W.R. Grace & Conn.
 - d. Or approved equal.
- C. High-Range Water-Reducing Admixture ("Superplasticizer"): ASTM C494, Type F/G.
 - 1. Superplasticizer shall be used in all Class A Concrete. Do not use high range water-reducing admixture containing more chloride ions than are contained in municipal drinking water. Add only at the job site to concrete in compliance with the manufacturer's printed instruction.
 - 2. Product and Manufacturer: Provide one of the following:
 - a. Sikament 320, as manufactured by Sika Corporation.
 - b. MasterGlenium, as manufactured by BASF.
 - c. Daracem-100, as manufactured by W.R. Grace & Conn.
 - d. Or approved equal.
- D. Water-Reducing Admixture: ASTM C 494, Type A.
 - 1. A water-reducing, aqueous solution of a modification of the salt of polyhydroxylated organic acids. Do not use admixture containing any lignin, nitrates or chlorides added during manufacture.
 - 2. Product and Manufacturer: Provide one of the following:
 - a. Eucon WR-75, as manufactured by The Euclid Chemical Company.
 - b. MasterPozzoloth, as manufactured by BASF.
 - c. WRDA series, as manufactured by W.R. Grace & Conn.
 - d. Or approved equal.

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- E. Pozzolanic Admixtures:
1. Pozzolanic admixtures shall not be used in structures with concrete in contact with potable water, but may be used in other concrete.
 2. Provide Mineral admixtures, when used, meeting the requirements of ASTM C618 Class F.
 3. A substitution by weight, of the portland cement by pozzolan, so that the total tricalcium aluminate content of the resulting cement plus pozzolan is not greater than 8%, will be considered. However, the pozzolan shall not exceed 20% by weight of the cement plus pozzolan.
- F. Set-Control Admixtures: ASTM C494, as follows:
1. Type B, Retarding.
 2. Type C, Accelerating.
 3. Type D, Water-reducing and Retarding.
 4. Type E, Water-reducing and Accelerating.
 5. Type F, Water-reducing, high range admixtures.
 6. Type G, Water-reducing, high range, and retarding admixtures.
- G. Color Pigments:
1. Color pigments for colored concrete must be of iron oxides complying with ASTM C979.
- H. Calcium Chloride: Do not use calcium chloride in concrete, unless otherwise authorized in writing by ENGINEER. Do not use admixtures containing calcium chloride where concrete is placed against galvanized steel.

2.3 PROPORTIONING AND DESIGN OF MIXES

- A. Prepare design mixes of concrete. Mixes subject to the following limitations:
1. Class A Concrete
 - a. Specified 28-day Compressive Strength: 4,000 psi minimum.
 - b. Air content: 5% \pm 1%. For concrete placed at least 2 feet below the adjacent grade, an air-entraining admixture is not required unless otherwise specified.
 - c. Slump, before addition of superplasticizer: 3½" \pm ½"
 - d. Slump, after addition of superplasticizer: 8" maximum

Coarse Aggregate Size	Cementitious Content-Pounds Per Cubic Yard	Water-Cement Ratio by Weight
¾"	625 min, 800 max	0.375
1"	600 min, 800 max	0.385
1 ½"	590 min, 800 max	0.400

- e. Use superplasticizer in all Class A Concrete. Use water reducers in combination with superplasticizers as required for mixing.
2. Class B Concrete
 - a. Specified 28-day Compressive Strength: 2,500 psi.
 - b. Maximum Water-Cement Ratio by Weight: 0.49.
 - c. Slump: 3" Minimum, 5" Maximum.

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- B. Use an independent testing facility acceptable to ENGINEER for preparing and reporting proposed mix designs.
- C. Admixtures:
 - 1. Use air-entraining admixture in all concrete, except interior slabs subject to abrasion, unless otherwise shown or specified. Add air-entraining admixture at the manufacturer's prescribed rate to result in concrete at the point of placement having air content within the prescribed limits.
 - 2. Use amounts of admixtures as recommended by the manufacturer for climatic conditions prevailing at the time of placing. Adjust quantities and types of admixtures as required to maintain quality control.
- D. Colored Concrete:
 - 1. The dosage of colored pigments for colored concrete must not exceed 10 percent by weight of cementitious materials in the concrete mix design.
 - 2. When test panels are specified, cementitious materials and aggregates from the same sources used in the authorized test panel must be used for the colored concrete in the completed work.

2.4 EPOXY BONDING AGENT

- A. For use in all dry-packed holes, concrete repair and for unplanned cold-joints.
- B. Provide an epoxy-resin bonding agent, two component, polysulfide type.
- C. Product and Manufacturer: Provide one of the following:
 - 1. Sikadur 32, Hi-Mod LPL, as manufactured by Sika Corporation.
 - 2. Eucopoxy LPL, as manufactured by the Euclid Chemical Company.
 - 3. Or approved equal.

2.5 CONCRETE CURING MATERIALS

- A. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 10 ounces per square yard and complying with AASHTO M182, Class 3.
- B. Moisture-Retaining Cover: One of the following, complying with ASTM C171.
 - 1. Waterproof paper.
 - 2. Polyethylene film.
 - 3. White burlap-polyethylene sheet.
- C. Curing Compound: ASTM C309 Type 1-D (water retention requirements):
 - 1. Product and Manufacturer: Provide one of the following:
 - a. Super Aqua Cure VOX, as manufactured by The Euclid Chemical Company.
 - b. Sealtight 1100, as manufactured by W.R. Meadows, Incorporated.
 - c. Or approved equal.
- D. Concrete Densifier and Chemical Hardener (Surface Applied)
 - 1. Product and Manufacturer: Provide one of the following:
 - a. LS, as manufactured by Consolideck.
 - b. Liqui-Hard, as manufactured by W. R. Meadows.

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- c. Duro-Nox LS, as manufactured by Nox-Crete.
- d. Or approved equal.

2.6 EMBEDDED ITEMS

- A. Provide and install items such as plates, angles, inserts, bolts and similar items not specified elsewhere under this Section. Carbon steel embedded items shall be hot dip galvanized after fabrication.
- B. Abrasive Stair Nosings
 - 1. Provide single-component stair nosing
 - 2. 3-inch width
 - 3. Aluminum Extrusion, with provisions for anchoring into concrete
 - 4. Extruded with multiple channels, dovetail shaped, filled with aluminum oxide grit set in epoxy resin
 - 5. Designed for installation before concrete sets, at the front edge of the stair
 - 6. Provide continuous stair nosings, width of stairway less 3 inches on each side. No splices in stair nosings.
 - 7. Manufacturers/Models:
 - a. Balco; Model R-315P
 - b. Babcock Davis; Model BSTTB
 - c. Or Equal

PART 3 - EXECUTION

3.1 CONCRETE MIXING

- A. Provide concrete produced by the ready-mixed process.
- B. Comply with the requirements of ASTM C 94, and as herein specified. Proposed changes in mixing procedures, other than herein specified, must be accepted by ENGINEER before implementation.
 - 1. Plant equipment and facilities: Conform to National Ready- Mix Concrete Association "Plant and Delivery Equipment Specification."
 - 2. Mix concrete in revolving type truck mixers that are in good condition and which produce thoroughly mixed concrete of the specified consistency and strength.
 - 3. Do not exceed the proper capacity of the mixer.
 - 4. Mix concrete for a minimum of two minutes after arrival at the job site, or as recommended by the mixer manufacturer.
 - 5. Mix concrete during transit only as recommended by the mixer manufacturer.
 - 6. Mix at proper speed until concrete is discharged.
 - 7. Maintain adequate facilities at the job site for continuous delivery of concrete at the required rates.
 - 8. Provide access to the mixing plant for ENGINEER at all times.

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3.2 TRANSPORTING CONCRETE

- A. Transport and place concrete not more than 90 minutes after water has been added to the dry ingredients or before 250 revolutions of the drum or blades, whichever occurs first.
- B. If an admixture is used to retard the set time and the concrete temperature does not exceed 85 degrees F, the travel and placing time may be extended to 120 minutes or 300 revolutions of the drum or blades, whichever occurs first.
- C. Take care to avoid spilling and separation of the mixture during transportation.
- D. Do not place concrete in which the ingredients have been separated.
- E. Do not retemper partially set concrete.
- F. Use suitable and approved equipment for transporting concrete from mixer to forms.

3.3 CONCRETE PLACEMENT

- A. General: Place concrete continuously so that no concrete will be placed on concrete, which has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, provide construction joints as specified in Section 03251, Concrete Joints. Deposit concrete as nearly as practical in its final location to avoid segregation due to rehandling or flowing. Do not subject concrete to any procedure that will cause segregation.
 - 1. Screed concrete that is to receive other construction to the proper level to avoid excessive skimming or grouting.
 - 2. Do not use concrete which becomes non-plastic and unworkable, or does not meet the required quality control limits, or which has been contaminated by foreign materials. Do not use retempered concrete. Remove rejected concrete from the job site and dispose of it in an acceptable location.
 - 3. Do not place concrete until all forms, bracing, reinforcement, and embedded items are in final and secure position.
 - 4. Do not place in cold weather, unless adequate precautions are taken against frost action.
 - 5. Do not place footings, piers or pile caps on frozen soil.
 - 6. Unless otherwise approved, place concrete only when ENGINEER is present.
 - 7. Allow a minimum of 3 days of curing before placing new concrete against a slab or wall already in place.
- B. Concrete Conveying:
 - 1. Handle concrete from the point of delivery and transfer to the concrete conveying equipment and to the locations of final deposit as rapidly as practical by methods that will prevent segregation and loss of concrete mix materials.
 - 2. Provide mechanical equipment for conveying concrete to ensure a continuous flow of concrete at the delivery end. Provide runways for wheeled concrete conveying equipment from the concrete delivery point to the locations of final deposit. Keep interior surfaces of conveying equipment, including chutes, free of hardened concrete, debris, water, ice and other deleterious materials.

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3. Pumping concrete is permitted, however do not use aluminum pipe for conveying.
- C. Placing Concrete into Forms:
1. Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place concrete at such a rate that concrete that is being integrated with fresh concrete is still plastic.
 2. Do not permit concrete to free fall within the form from a distance exceeding 8'-0", except as noted in Section 03100. Use "elephant trunks" or "wall pipes" to prevent free fall and excessive splashing on forms and reinforcement.
 3. Remove temporary spreaders in forms when concrete placing has reached the elevation of such spreaders.
 4. Consolidate concrete placed in forms by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with the applicable recommended practices of ACI 309. Vibration of forms and reinforcing will not be permitted.
 5. Vibrators shall have a frequency of at least 8,000 vpm, with amplitude required to consolidate the concrete in the section being placed. At least one stand-by vibrator in operable condition shall be at the placement site prior to initiating placement of the concrete.
 6. Do not use vibrators to transport concrete inside of forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate the layer of concrete and at least 6" into the preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit the duration of vibration to the time necessary to consolidate the concrete and complete embedment of reinforcement and other embedded items without causing segregation of the mix.
 7. The forms shall contain sufficient windows or be limited in height to allow visual observation of the concrete and the vibrator operators shall be required to see the concrete being consolidated to ensure good quality workmanship or the CONTRACTOR shall have a person who is actually observing the vibration of the concrete at all times and advising the vibrator operators of any changes needed to assure complete consolidation.
 8. Do not place concrete in beam and slab forms until the concrete previously placed in columns and walls is no longer plastic.
 9. Force concrete under pipes, sleeves, openings and inserts from one side until visible from the other side to prevent voids.
- D. Placing Concrete Slabs and Footings:
1. Deposit and consolidate concrete in a continuous operation, within the limits of construction joints, until the placing of a panel or section is completed.
 2. Consolidate concrete during placing operations using mechanical vibrating equipment, so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 3. Consolidate concrete placed in beams and girders of supported slabs, and against bulkheads of slabs on ground, as specified for formed concrete structures.
 4. Bring surfaces to the correct level. Smooth the surface, leaving it free of humps or hollows. Do not sprinkle water on the plastic surface. Do not disturb the surfaces prior to beginning finishing operations.

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E. Bonding for Next Concrete Pour: Per Section 03251, Concrete Joints.

F. Quality of Concrete Work:

1. Make all concrete solid, compact and smooth, and free of laitance, cracks and cold joints.
2. All concrete for liquid retaining structures, and all concrete in contact with earth, water, or exposed directly to the elements shall be watertight.
3. Cut out and properly replace to the extent ordered by ENGINEER, or repair to the satisfaction of ENGINEER, surfaces which contain cracks or voids, are unduly rough, or are in any way defective. Thin patches or plastering will not be acceptable.
4. Repair all leaks through concrete, and cracks, holes or other defective concrete in areas of potential leakage and make watertight.
5. Repair, remove, and replace defective concrete as ordered by ENGINEER at no additional cost to OWNER.

G. Cold Weather Placing:

1. Protect all concrete Work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures, in compliance with the requirements of ACI 306 and as herein specified.
2. When the air temperature has fallen to or may be expected to fall below 40°F, provide adequate means to maintain the temperature, in the area where concrete is being placed, at between 50°F and 70°F for at least seven days after placing. Provide temporary housings or coverings including tarpaulins or plastic film. Maintain the heat and protection, if necessary, to ensure that the ambient temperature does not fall more than 30°F in the 24 hours following the seven-day period. Avoid rapid dry-out of concrete due to overheating, and avoid thermal shock due to sudden cooling or heating.
3. When air temperature has fallen to or is expected to fall below 40°F, uniformly heat all water and aggregates before mixing as required to obtain a concrete mixture temperature of not less than 55°F and not more than 85°F at point of placement.
4. Do not use frozen materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials. Ascertain that forms, reinforcing steel, and adjacent concrete surfaces are entirely free of frost and ice before placing concrete.
5. When temperatures are expected to be below 32°F the night before the concrete is placed, then all reinforcing steel, forms and the ground shall be preheated, for a minimum of 12 hours, under a minimum temperature of 50°F.
6. Do not use salt and other materials containing antifreeze agents or chemical accelerators, or set-control admixtures, unless approved by ENGINEER, in mix designs.
7. Weather predictions made by the nearest NOAA station, and corrected for the local elevation and environmental conditions, may be used to determine whether cold weather protection shall be required. Thermometers will be used by ENGINEER and these readings shall determine whether cold weather protection shall be required and whether cold weather protection is adequate.

H. Hot Weather Placing:

1. When hot weather conditions exist as any combination of high air temperature, low relative humidity and wind velocity that would seriously impair the quality and

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17-083

January 2021
Operations Crew
Facility
Concept Technical
Specifications

strength of concrete, place concrete as recommended by ACI 305 and as herein specified.

2. Cool ingredients before mixing to maintain concrete temperature at time of placement below 85°F. No concrete shall be placed if its temperature exceeds 90°F. Mixing water may be chilled, or chopped ice may be used, or liquid nitrogen may be added. Ice, when introduced into the mixer shall be in such form that it will be completely melted and dispersed throughout the mix at the completion of the mixing time. The addition of ice shall not increase the specified water to cement ratio.
 3. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that the steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
 4. Thoroughly wet forms before placing concrete. Forms shall be free of standing water when concrete is placed.
 5. Do not use set-control admixtures, unless approved by ENGINEER in mix designs.
 6. Fog spray shall be used during finishing operations whenever necessary to avoid surface plastic shrinkage cracking. Fog spray shall also be used after finishing and before the specified curing is commenced to avoid surface plastic shrinkage cracking.
 7. Obtain ENGINEER'S approval of other methods and materials proposed for use.
- I. Removal of Forms:
1. The CONTRACTOR shall be responsible for all damage resulting from improper and premature removal of forms. Satisfy all applicable OSHA requirements with regard to safety of personnel and property.
 2. Forms and shoring for elevated structural slabs or beams shall remain in place in accordance with ACI 318, Chapter 6, and until the concrete has reached a compressive strength equal to the specified 28-day compressive strength as determined by test cylinders unless noted otherwise in Section 03100 - Concrete Formwork. Removal of all supports prior to obtaining adequate field cured cylinder results and reshoring shall not be permitted.
- J. Backfill Against Walls:
1. Do not place backfill against walls until the concrete has obtained a compressive strength equal to the specified 28-day compressive strength. Where backfill is to be placed on both sides of the wall, the backfill shall be placed simultaneously on both sides to prevent differential pressures.
 2. Since the walls of some structures are laterally restrained or supported by suspended slabs and/or slabs on grade and are not designed as cantilever retaining walls, the CONTRACTOR shall submit a schedule of wall shoring, bracing, and backfilling that is coordinated with the concrete curing, test cylinder reports and the design assumptions and obtain a review from the ENGINEER prior to proceeding.
- K. Patching:
1. Patching of concrete shall provide an acceptable and structurally sound surface finish uniform in appearance or the CONTRACTOR shall upgrade the finish by other means at no additional cost.
 2. Tie Holes: All tie holes, except where sealant is indicated, shall be filled with dry pack nonshrink grout. White cement shall be added as needed so the color of grout after curing matches the color of adjacent concrete. Tie holes shall be thoroughly sandblasted or roughened. Flush the patch area with water and allow to dry. Coat the surface of the existing concrete with an approved bonding agent prior to filling

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with nonshrink grout. Complete the repair in the time duration specified by the bonding agent manufacturer. The grout shall be rammed into place in thin layers and leveled to the plane of the surrounding concrete. Cure in accordance with the manufacturer's recommendations.

3. Defective Areas: Remove all defective concrete such as honeycombed areas and rock pockets out to sound concrete. Small shallow holes caused by air entrapment at the surface of the forms shall not be considered defects unless the amount is so great as to be considered not the standard of the industry and due primarily of poor workmanship. If chipping is required, the edges shall be perpendicular to the surface. Feather edges shall not be permitted. The defective area shall be filled with a nonshrink, nonmetallic, grout. Use an approved bonding agent on horizontal patches prior to placing nonmetallic, non shrink grout. Since some bonding agents may not be compatible for some vertical surface patching techniques, demonstrate all methods for repair of vertical surfaces using the actual materials, methods, and curing procedures required by the manufactures of the materials on the project site. The CONTRACTOR shall consult with representatives of the bonding agent manufacturer and the nonshrink grout manufacturer, and these representatives shall be onsite and assist in the demonstration.
4. Blockouts at Pipes or Other Penetrations: Conform to details shown or submit proposed blockouts for review. Use nonshrink, nonmetallic grout.

3.4 FINISH OF FORMED SURFACES

A. Rough Form Finish:

1. Standard rough form finish is with concrete surface having the texture imparted by the form material, with tie holes and defective areas repaired and patched with mortar of 1 part cement to 1½ parts sand & all fins and other projections exceeding 1/4" in height rubbed down or chipped off.
2. Use rough form finish for the following:
 - a. Exterior vertical surfaces up to 1' below grade.
 - b. Interior exposed vertical surfaces of liquid containers up to 1' below liquid level.
 - c. Interior and exterior exposed beams and undersides of slabs.
 - d. Other areas shown.

B. Smooth Form Finish:

1. Produce smooth form finish (Class A, as defined by ACI-347) by selecting form materials that will impart a smooth, hard, uniform texture. Arrange panels in an orderly and symmetrical manner with a minimum of seams. Repair and patch defective areas as above with all fins or other projections completely removed and smoothed.
2. Use smooth form finish for surfaces that are to be covered with a coating material. The material may be applied directly to the concrete or may be a covering bonded to the concrete such as waterproofing, damp proofing, painting or other similar system.

C. Smooth Rubbed Finish:

1. Provide smooth, rubbed finish to concrete surfaces which have received smooth form finish as follows:
 - a. Rubbing of concrete surfaces not later than the day after form removal.

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- b. Moistening of concrete surfaces and rubbing with carborundum brick or other abrasive until a uniform color and texture is produced. Do not apply cement grout other than that created by the rubbing process.
 - 2. Except where surfaces have been previously covered as specified above, use smooth rubbed finish for the following:
 - a. Interior exposed walls and other vertical surfaces.
 - b. Exterior exposed walls and other vertical surfaces down to 1' below grade.
 - c. Interior and exterior horizontal surfaces, except exterior exposed slabs and steps.
 - d. Interior exposed vertical surfaces of liquid containers down to 1' below liquid level.
 - e. Other areas shown.
- D. Sack Rubbed Finish:
 - 1. Before applying the sack-rubbed finish, fill all tie rod holes and large cavities and remove or correct all fins and irregularities as specified in the Smooth Rubbed Finish.
 - 2. Produce a sack rubbed finish by rubbing the concrete surface with a clean rubber float or wad of burlap and mortar. Use mortar made of premixed sacking mortar or one part portland cement and 1.5 parts, by volume, clean sand passing a No. 16 sieve, mixed with sufficient water to provide a consistency equal to that of a thick cream. Use the same type and brand cement as used in the concrete or colored premixed sacking mortar. The mortar finish color shall match the surrounding concrete. If necessary, blend white cement into the mortar to match the surrounding concrete surface.
 - 3. Thoroughly wet the surface of the concrete and then perform sack rubbing while the surface is damp but not wet. Thoroughly rub the mortar over the area with a rubber float or wad of burlap, filling all pits. While the mortar is still plastic in the pits, rub the surface with the rubber float or burlap using a dry mix of the above proportions, removing all excess plastic material and placing enough dry material in the pits to stiffen and solidify the mortar, then finish the mortar fillings flush with the surface. At the end of the rubbing, no mortar or material shall remain on the surface other than that within the pits.
 - 4. Ensure the completed surface is free of surface voids and blemishes, and is uniform in appearance and texture, except for the difference in texture between the filled voids and the remainder of the surface.
 - 5. A thorough wash-down with stiff bristle brushes shall follow the final bagging or stoning operation. No extraneous materials shall remain on the surface of the wall. The wall shall be sprayed with a fine fog spray periodically to maintain a continually damp condition for at least 3 days after the application.
 - 6. Use a sack rubbed finish for the following areas or as indicated in the Drawings:
 - a. Interior exposed walls and other vertical surfaces.
 - b. Exterior exposed walls and other vertical surfaces down to 1' below grade.
 - c. Interior and exterior horizontal surfaces, except exterior exposed slabs and steps.
 - d. Or other areas shown.
- E. Related Unformed Surfaces:
 - 1. At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike off smooth and finish with a texture matching the adjacent formed surfaces. Continue the final surface treatment of formed surfaces uniformly across the adjacent unformed surfaces, unless otherwise shown.

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3.5 MONOLITHIC SLAB FINISHES

A. Float Finish:

1. After placing concrete slabs, do not work the surface further until ready for floating. Begin floating when the surface water has disappeared or when the concrete has stiffened sufficiently. Check and level the surface plane to a tolerance not exceeding 1/4" in 10' when tested with a 10' straightedge. Cut down high spots and fill all low spots. Uniformly slope surface to drains as shown. Immediately after leveling, refloat the surface to a uniform, smooth, granular texture.
2. Use float finish for the following:
 - a. Interior horizontal surfaces of liquid containers, except those to receive grout topping.
 - b. Exterior below grade horizontal surfaces.
 - c. Surfaces to receive additional finishes, except as shown or specified.

B. Trowel Finish:

1. After floating, begin the first trowel finish operation using a power-driven trowel. Begin final troweling when the surface produces a ringing sound as the trowel is moved over the surface.
2. Consolidate the concrete surface by the final hand troweling operation. Finish shall be free of trowel marks, uniform in texture and appearance, and with a surface plane tolerance not exceeding 1/8" in 10' when tested with a 10' straight edge. Grind smooth surface defects that would telegraph through applied floor covering system.
3. Use trowel finish for the following:
 - a. Interior exposed slabs, unless otherwise shown or specified.
 - b. Slabs to receive resilient floor finishes.

C. Non-Slip Broom Finish:

1. Immediately after float finishing, slightly roughen the concrete surface by brooming in the direction perpendicular to the main traffic route. Use fiber-bristle broom, unless otherwise directed. Coordinate the required final finish with ENGINEER before application.
2. Use Non-Slip Broom Finish for the following:
 - a. Exterior exposed horizontal surfaces subject to light foot traffic.
 - b. Interior and exterior concrete steps and ramps.
 - c. Horizontal surfaces which will receive a grout topping or a concrete equipment base slab.

3.6 CONCRETE CURING AND PROTECTION

A. General:

1. Protect freshly placed concrete from premature drying and excessive cold or hot temperature, and maintain without drying at a relatively constant temperature for the period of time necessary for hydration of the cement and proper hardening of the concrete.
2. Start initial curing after placing and finishing concrete as soon as free moisture and bleed water sheen has disappeared from the concrete surface. Keep concrete continuously moist during initial curing.
3. Begin final curing procedures immediately following initial curing and before the concrete has dried. The total curing duration shall not be less than ten (10) days.

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For concrete sections over 30" thick, continue curing for an additional seven (7) days, minimum. Avoid rapid drying at the end of the final curing period.

B. Use one of the following methods as approved by ENGINEER:

1. Walls:

- a. Method 1: Leave concrete forms in place and keep entire surfaces of forms and exposed concrete surfaces wet for the entire curing duration. If forms are loosened and the contact between the concrete surface and forms is broken then the entire wall shall be wet cured.
- b. Method 2: Continuously sprinkle or fog with water 100 percent of the exposed surfaces for the curing duration immediately after removal of forms.
- c. Method 3: When approved by ENGINEER and as noted below, apply curing compound immediately after removal of forms.

2. Slab and Curbs:

- a. Method 1: Protect surface by water ponding for the entire curing duration.
- b. Method 2: Cover concrete surfaces and exposed edges with the specified absorptive cover, thoroughly saturating the cover with water, and keeping the absorptive cover continuously wet with sprinklers or porous hoses during the curing duration. Lap adjacent absorptive cover sections 3-inches minimum.
- c. Method 3: Cover the concrete surfaces and exposed edges with the specified moisture-retaining cover during the curing duration. Seal edges and seams with waterproof tape, adhesive or sand berm. Water must be introduced between the moisture-retaining cover and the concrete surface whenever moist drops cannot be detected on the concrete side of the cover or the concrete surface is noticeably dry.
- d. Method 4: Cover all exposed surfaces with 1-inch minimum layer of wet sand, earth, or sawdust and keep continuously wet for the curing duration.
- e. Method 5: Continuously sprinkle or fog exposed surfaces for the curing duration.
- f. Method 6: When approved by ENGINEER and as noted below, apply liquid curing compound immediately after final finishing when surface will no longer be damaged by traffic necessary to apply curing compound.

C. Liquid curing compound:

1. Apply the specified curing compound to concrete surfaces when permitted by ENGINEER. Slabs to receive terrazzo floors, concrete/grout topping or ceramic tile, concrete of water bearing structures, and concrete that will receive coatings shall not be cured with liquid curing compound. The compounds shall be applied by power spray equipment in accordance with the manufacturer's directions. Recoat areas, which are subjected to heavy rainfall within 3 hours after initial application. Maintain the continuity of the coating and repair damage to the coat during the entire curing period. Remove curing compound from exposed surfaces at the end of the curing duration. For concrete surfaces, which will be in contact with potable water, the manufacturer shall certify that the curing compound used is NSF 61 approved.

D. Temperature of Concrete During Curing:

1. When the nighttime low temperature may drop to 40°F or below, maintain the concrete temperature between 50°F and 70°F continuously throughout the curing period, by heating, covering, insulation or housing as required.

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2. When the daytime high temperature may rise to 90°F or above, maintain the concrete temperature at a minimum and reduce temperature variations by providing moist curing continuously for the concrete curing period.
 3. During either of the conditions specified above, the minimum curing time shall be 10 days (240 hours), after which coverings, housings, and insulation shall remain on the work for an additional 3 days, to allow gradual temperature equalization with the atmosphere.
- E. Protection from Mechanical Injury: During the curing period, protect concrete from damaging mechanical disturbances including load stresses, heavy shock, excessive vibration, and from damage caused by rain or flowing water. Protect all finished concrete surfaces from damage by subsequent construction operations.

3.7 FIELD QUALITY CONTROL

- A. The CONTRACTOR will employ a testing laboratory to perform field quality control testing. ENGINEER will direct the number of tests and cylinders required. Furnish all necessary assistance required by ENGINEER.
- B. Quality Control Testing During Construction:
1. Perform sampling and testing for field quality control during the placement of concrete, as follows:
 - a. Sampling Fresh Concrete: ASTM C172.
 - b. Slump: ASTM C143; one test for each concrete load at point of discharge; and one for each set of compressive strength test specimens.
 - c. Air Content: ASTM C231; one for the first concrete load, and one for every two concrete loads thereafter, or when required by an indication of change. Adjust mix if test results are unsatisfactory and resubmit for ENGINEER'S approval.
 - d. Compressive Strength Tests: ASTM C39; one set of 4 standard compression cylinders for each 100 cubic yards or fraction thereof, of each mix design placed in any one day; 1 specimen tested at 7 days, and 2 specimens tested at 28 days, 1 held. Cast, store and cure specimens as specified in ASTM C31.
 - 1) Adjust mix if test results are unsatisfactory and resubmit for ENGINEER'S approval.
 - 2) Concrete that does not meet the strength requirements is subject to rejection and removal from the Work, or to other such corrective measures as directed by ENGINEER, at the expense of CONTRACTOR.
 - e. Concrete Temperature: Test each time a slump test is made.
 2. Where questionable field conditions may exist during placing concrete or immediately thereafter, strength tests of specimens cured under field conditions will be required by ENGINEER to check the adequacy of curing and protecting of the concrete placed. Specimens shall be molded at the same time and from the same samples as the laboratory cured specimens.
 - a. Provide improved means and procedures for protecting concrete when the 28-day compressive strength of field- cured cylinders is less than 85% of companion laboratory-cured cylinders.
 - b. When laboratory-cured cylinder strengths are appreciably higher than the minimum required compressive strength, field-cured cylinder strengths need not exceed the minimum required compressive strength by more than 500 psi even though the 85 percent criterion is not met.

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3. The testing laboratory shall submit certified copies of test results directly to ENGINEER and CONTRACTOR after tests are made.
- C. Evaluation of Quality Control Tests:
1. Do not use concrete delivered to the final point of placement that has slump or temperature outside the specified values, nor that which is older than specified in section 3.2.
 2. Compressive strength tests for laboratory-cured cylinders will be considered satisfactory if the averages of all sets of three consecutive compressive strength tests results equal or exceed the 28 day design compressive strength of the type or class of concrete; and, no individual strength test falls below the required compressive strength by more than 500 psi.
 3. If the compressive strength tests fail to meet the minimum requirements specified, the concrete represented by such tests will be considered deficient in strength and subject to replacement, reconstruction or to other action approved by ENGINEER.
- D. Testing Concrete Structure for Strength:
1. When there is evidence that the strength of the in-place concrete does not meet specification requirements, provide the services of a concrete testing service to take cores drilled from hardened concrete for compressive strength determination at no additional expense to OWNER. Provide tests complying with ASTM C42 and the following:
 - a. Take at least three (3) representative cores from each member or suspect area at locations directed by ENGINEER.
 - b. Strength of concrete for each series of cores will be considered satisfactory if their average compressive strength is at least 85% and no single core is less than 75% of the 28 day required compressive strength.
 - c. Report test results, in writing, to ENGINEER on the same day that tests are made. Include in test reports the Project identification name and number, date, name of CONTRACTOR, name of concrete testing service, location of test core in the structure, type or class of concrete represented by core sample, nominal maximum size aggregate, design compressive strength, compression breaking strength and type of break (corrected for length-diameter ratio), direction of applied load to core with respect to horizontal plane of the concrete as placed, and the moisture condition of the core at time of testing.
 2. Fill core holes solid with non-shrink, high strength grout, and finish to match adjacent concrete surfaces.
- E. Water Leakage Tests for All Water-Holding Structures:
1. All water-holding structures shall be subjected to leakage tests after the concrete has been cured and obtained its design strength, and before backfill, brick facing, or other work which will cover the concrete surfaces of the walls is begun. Water leakage tests shall be conducted by the CONTRACTOR as follows:
 - a. All water-holding structures shall be filled with water to the maximum liquid level shown on the Drawings prior to leak testing at a rate less than 4 ft/hr. After these structures have been kept full for 3-days, it will be assumed for the purpose of the test that the absorption of moisture by the concrete in the basin is complete. All valves and gates to the structure shall then be closed and the change in water surface measured over a 48-hour period. The vertical distance to the water surface shall be measured to within 1/16-inch from a fixed point on the

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containment structure above the water surface. Measurements shall be recorded at 24-hour intervals.

- b. During the test period, all exposed portions of the structure shall be examined for dampness or leaks and all visible leaks or damp spots shall be marked; such leaks or damp spots shall be later patched or corrected in a manner acceptable to the ENGINEER prior to additional leakage testing. If the drop in water surface in the 48-hour period exceeds 0.05% of the normal volume of liquid contained in the water-holding structure, after accounting for evaporation, precipitation and temperature in open basins, or if damp spots or any seepage is present on the walls or other areas exposed to view where moisture can be picked up on a dry hand, the leakage shall be considered excessive and the leakage test will be considered to have failed. A floating, restrained, partially filled, calibrated, open container for evaporation and precipitation measurement should be positioned in open containment structures, and the water level in the container recorded. Determination of evaporation by a shallow pan-type measuring device is discouraged as the heating of the bottom of a shallow pan can cause accelerated evaporation of water when compared with that taking place from a deep containment structure.
 - 1) Wet areas on top of wall footings shall not be considered cause of a qualitative failure of the leakage test unless the water can be observed to be flowing.
- c. If the leakage is excessive, and if damp spots and observed seepage is present on exposed surfaces, the water-holding structure shall be drained, all leaks and damp spots previously marked shall be patched, and the necessary repairs made, and the basin shall be retested. The CONTRACTOR's method of repair shall be subject to the requirements of these specifications and submitted for review and approval by the ENGINEER.
- d. The water-holding structure shall then be refilled and again tested for leakage and this testing and repair process shall be repeated as many times as necessary until the leakage test passes. This process shall be continued until the drop in water surface in specified test period with the basin full is less than the quantity specified above and all damp spots and seepage disappears when the structures are full of water. All repairs of faulty workmanship and materials, and additional tests, shall be made by the CONTRACTOR in an acceptable manner, at no additional cost to the OWNER. Both the correction for excessive leakage and the removal of the damp or wet spots on exposed surfaces shall be required to pass the leakage test.
- e. The purpose of this test is to determine the integrity of the finished concrete and to show that the exposed wall surfaces are visually acceptable. Therefore, all other equipment, e.g., stop gates, sluice gates, etc. or temporary bulkheads, should be made watertight prior to the test.
- f. As an alternative to having watertight bulkheads, gates or valves, the CONTRACTOR shall accurately measure the leakage through gates, valves, and bulkheads with methods acceptable to the ENGINEER.
- g. An assumed leakage through gates and valves based on the manufacturer's recommendations is not acceptable.

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3.8 MISCELLANEOUS CONCRETE ITEMS

- A. Filling-In: Fill-in holes and openings left in concrete structures for the passage of work by other contractors, unless otherwise shown or directed, after the work of other contractors is in place. Mix, place and cure concrete as herein specified, to blend with in-place construction. Provide all other miscellaneous concrete filling shown or required to complete the Work.
- B. Curbs:
 - 1. Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
 - 2. Exterior curbs shall have rubbed finish for vertical surfaces and a broomed finish for top surfaces.
- C. Equipment Bases:
 - 1. Unless specifically shown otherwise, provide concrete bases for all pumps and other equipment. Construct bases to the dimensions shown, or as required to meet manufacturers' requirements and drawing elevations. Where no specific elevations are shown, bases shall be 6-inches thick and extend 3-inches outside the metal equipment base or supports. Bases to have smooth trowel finish, unless a special finish such as terrazzo, ceramic tile or heavy duty concrete topping is required. In those cases, provide appropriate concrete finish.
 - 2. Include all concrete equipment base work not specifically included under other Sections.
 - 3. In general, place bases up to 1-inch below the metal base. Properly shim equipment to grade and fill 1-inch void with non-shrink grout as specified in Section 03600, Grout.
- D. Installation of embedded items
 - 1. Install all embedded items prior to concrete placement, or, if necessary, as soon after concrete placement as possible, before concrete is set.
 - 2. Use temporary support and bracing to keep embedded items in place while concrete cures.
 - 3. Protect all embedded items from damage during concrete installation.

3.9 CONCRETE REPAIRS

- A. Repair of Formed surfaces:
 - 1. Repair exposed-to-view formed concrete surfaces that contain defects which adversely affect the appearance of the finish. Surface defects that require repair include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, and holes left by the rods and bolts; fins and other projections on the surface; and stains and other discolorations that cannot be removed by cleaning.
 - 2. Repair concealed formed concrete surfaces that may contain defects that adversely affect the durability of the concrete. Surface defects that require repair include cracks in excess of 0.01-inch wide, cracks of any width and other surface deficiencies which penetrate to the reinforcement or completely through non-reinforced sections, honeycomb, rock pockets, holes left by tie rods and bolts, and spalls except minor breakage at corner.

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3. Repair structural cracks and cracks in water-holding structures.
- B. Method of Repair of Formed Surfaces:
1. Repair and patch defective areas with cement mortar immediately after removal of forms and as directed by ENGINEER.
 2. Cut out honeycomb, rock pockets, voids over 1/2" diameter, and holes left by tie rods and bolts, down to solid concrete but, in no case, to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Before placing the cement mortar, thoroughly clean, dampen with water, and brush-coat the area to be patched with the specified bonding agent.
 - a. For exposed-to-view surfaces, blend white portland cement and standard portland cement so that, when dry, the patching mortar color will match the color of the surrounding concrete. CONTRACTOR shall impart texture to repaired surfaces to match texture of existing adjacent surfaces. Provide test areas at inconspicuous locations to verify mixture, texture and color match before proceeding with the patching. Compact mortar in place and strike off slightly higher than the surrounding surface.
 3. Cracks which require repair shall be pressure grouted, epoxy injected, using one of the following in accordance with Section 03740. Apply in accordance with the manufacturer's directions and recommendations.
 - a. Sikadur 35, Hi-Mod L.V. and Sikadur 31, Hi-Mod Gel, as manufactured by Sika Corporation Company.
 - b. Euco Epoxy #452 Epoxy System, as manufactured by The Euclid Chemical Company.
 - c. Or approved equal.
 4. Fill holes extending through concrete by means of a plunger- type gun or other suitable device from the least exposed face, using a flush stop held at the exposed face to ensure completely filling.
 5. Sandblast exposed-to-view surfaces that require removal of stains, grout accumulations, sealing compounds, and other substances marring the surfaces. Use sand finer than No. 30 and air pressure from 15 to 25 psi.
- C. Repair of Unformed Surfaces:
1. Test unformed surfaces, such as monolithic slabs, for smoothness and to verify surface plane to the tolerances specified for each surface and finish. Correct low and high areas as herein specified.
 2. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness, using a template having the required slope. Correct high and low areas as herein specified.
 3. Repair finish of unformed surfaces that contain defects which adversely affect the durability of the concrete. Surface defects, as such, include crazing, cracks in excess of 0.01-inch wide or which penetrate to the reinforcement or completely through non-reinforced sections regardless of width, spalling, popouts, honeycomb, rock pockets, and other objectionable conditions.
 4. Repair structural cracks and cracks in water-holding structures.
- D. Methods of Repair of Unformed Surfaces:
1. Correct high areas in unformed surfaces by grinding, after the concrete has cured sufficiently so that repairs can be made without damage to adjacent areas.

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2. Correct low areas in unformed surfaces during, or immediately after completion of surface finishing operations by cutting out the low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Use one of the following. Apply in accordance with the manufacturer's directions and recommendations.
 - a. Euco Poly-Patch, as manufactured by The Euclid Chemical Company.
 - b. Sikatop 122, as manufactured by Sika Corporation.
 - c. Or approved equal.
 3. Repair defective areas, except random cracks and single holes not exceeding 2" diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts, and expose reinforcing steel with at least 3/4" clearance all around. Dampen all concrete surfaces in contact with patching concrete and brush with the specified bonding agent. Place patching concrete before grout takes its initial set. Mix patching concrete of the same materials and proportions to provide concrete of the same type or class as the original adjacent concrete. Place, compact and finish as required to blend with adjacent finished concrete. Cure in the same manner as adjacent concrete.
 4. Repair isolated random cracks, as approved by ENGINEER, and single holes not over 2" diameter, by the dry-pack method. Groove the top of cracks, and cut out holes to sound concrete and clean of dust, dirt and loose particles. Dampen all cleaned concrete surfaces and brush with the specified bonding agent. Place dry-pack before the cement grout takes its initial set. Mix dry-pack, consisting of 1 part portland cement to 2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched areas continuously moist for not less than 72 hours.
 5. Cracks which extend through the full member section, or any cracks determined by ENGINEER to require pressure grouting repair, shall be pressure grouted, epoxy injected, using one of the following in accordance with Section 03740. Apply in accordance with the manufacturer's directions and recommendations.
 - a. Sikadur 35, Hi-Mod L.V. and Sikadur 31, Hi-Mod Gel, as manufactured by Sika Corporation.
 - b. Euco Epoxy #452 Epoxy System, as manufactured by The Euclid Chemical Company.
 - c. Or approved equal.
 6. Assure that surface is acceptable for flooring material to be installed in accordance with manufacturer's recommendations.
- E. Other Methods of Repair:
1. Repair methods not specified above may be used if approved by ENGINEER.

+ + END OF SECTION + +

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SECTION 03400
PRECAST CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Provide precast structures as required to complete the project construction.
- B. Section includes all plant-precast products, including, but not limited to, wet wells, catch basins, manholes, vaults, and wheel stops.

1.2 SYSTEM DESCRIPTION

- A. Precast products shall be designed for the indicated service, the loadings specified in the Contract Documents, and all transportation, handling, and erection loads, in accordance with requirements and recommendations of the references.
 - 1. Precast products not subjected to traffic loads shall be designed to meet and exceed the requirements of ACI 318-14.
 - 2. Precast products subjected to traffic loads shall be designed to meet and exceed the requirements of the current AASHTO LRFD Bridge Design Specifications.
 - 3. Liquid containing precast products shall be designed for the additional requirements of ACI 350-06.
- B. If precast products are proposed as substitutes for cast-in-place designed structures, such precast products shall meet the above requirements and any other requirements for which the cast-in-place structures were designed by the ENGINEER. Such products shall be designed by an engineer licensed to practice in the State where the project is performed.
- C. Items located in or adjacent to traffic areas shall be designed to resist AASHTO HL93 loading, unless otherwise indicated.
- D. Lifting inserts shall have a minimum safety factor of 4.

1.3 QUALIFICATIONS

- A. Manufacturer:
 - 1. Manufacturer shall have at least 5 years experience in the design and manufacture of precast concrete products substantially similar to those required for this project.
- B. Installer:
 - 1. Precast Items shall be installed by the Manufacturer or by an installer regularly engaged for at least 5 years in erection of precast products similar to those required on this project.

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1.4 SUBMITTALS

- A. Shop Drawings:
 - 1. Submit to the Engineer for review, shop drawings of the proposed details, and design calculations; all calculations and shop drawings shall be stamped and signed by a Civil or Structural Engineer registered in the State of California.
 - 2. Material specifications.
 - 3. All dead, live and other applicable loads used in the design.
 - 4. Applicable standards (from "References") met by the item(s).
 - 5. Setting plans locating and designating all items furnished by the manufacturer, with all major openings shown and located.
 - 6. Details to indicate quantities, location and type of reinforcing and prestressing steel.
 - 7. Sections and details showing connections, edge conditions, support conditions, and connections of the items.
 - 8. Description of all embeds, including stripping, lifting and erection inserts, with piece mark and location, including those cast into products or sent loose to the job site.
 - 9. Description and drawings of all frames and covers.
 - 10. Dimensions and special finishes.
- B. Mix Designs: Submit all precast mix designs for approval. Mix designs shall be prepared by an independent testing facility or qualified employee of the Precast Manufacturer.
- C. Design Modifications:
 - 1. Submit design modifications necessary to meet performance requirements and field conditions.
 - 2. Variations in details or materials shall not adversely affect the appearance, durability or strength of products.
 - 3. Maintain general design concept without altering size of members, profiles and alignment unless otherwise approved by the Architect/Engineer.

1.5 QUALITY ASSURANCE

- A. In-Plant Quality Control
 - 1. The Manufacturer shall have an established PCI quality control program in effect prior to bidding. If requested, a copy of this program shall be submitted to the ENGINEER.
 - 2. Testing of materials and inspection of production techniques shall be the responsibility of the Manufacturer's Quality Control Department.
 - 3. Keep quality control records available for two years after final acceptance.
 - 4. Keep certificates of compliance available for five (5) years after final acceptance.
- B. All other testing and inspection, if any, to be provided by OWNER.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Handle and transport products in a position consistent with their shape and design in order to avoid excessive stresses or damage.
- B. Lift or support products only at the points shown on the Shop Drawings.

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- C. Installer shall be responsible for the repair of damage to items except that caused by others.
- D. After items are installed in their final positions, the CONTRACTOR shall be responsible for their protection. The CONTRACTOR shall be responsible for the repair of any damage to the items caused by someone other than the Manufacturer/Installer.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

- A. Portland Cement ASTM C150 Type I, II or III cement.
- B. Aggregates:
 - 1. Fine and coarse aggregate for mix shall conform to ASTM C33 or C330.
 - 2. Aggregates shall be clean, hard, strong, durable, inert, and free of staining and deleterious materials.
- C. Water Potable, free from deleterious material.
- D. Admixtures:
 - 1. Conforming to ASTM C260 and/or ASTM C494.
 - 2. Calcium chloride or admixtures containing chlorides shall not be used.
- E. Concrete Strength: Concrete strength shall be determined by design with a minimum 28 day design strength of 4,000 psi.

2.2 STEEL MATERIALS

- A. Products:
 - 1. Structural Shapes, Bars & Plates (1.6mm and thicker): ASTM A36
 - 2. Pipe: ASTM A53 Grades A or B
 - 3. Tube Steel: ASTM A500 Grades A or B
 - 4. Reinforcing Steel: ASTM A615 Grades 300 & 420 or ASTM A706
 - 5. Prestressing Strand: ASTM A416 Grade 270, low relaxation
 - 6. Deformed Steel Bar Mats: ASTM A184
 - 7. Deformed Bar Anchors: ASTM A496
 - 8. Deformed Welded Wire Fabric: ASTM A497
 - 9. Plain Welded Wire Fabric: ASTM A185
 - 10. Welded Headed Studs: AWS D1.1 Type B
 - 11. Standard Machine Bolts: ASTM A307 Grade A or SAE J429 Grade 2
 - 12. Standard Studs/Threaded Round Stock: ASTM A307 Grade C, ASTM A572 Grade 345
 - 13. Nuts for Standard Machine Bolts and Threaded Studs: ASTM A563 Grade A Hex Nuts
 - 14. High Strength Bolts: ASTM A325 Type 1, ASTM A449 Type 1, or SAE J429 Grade 5
 - 15. Nuts for High-Strength Bolts and Threaded Studs: ASTM A563 Grade DH Heavy Hex Nuts
 - 16. Coil Rods and Bolts: ASTM A108 - SAE 1016 to 1026, $F_u/F_y = 480/380$ MPa minimum
 - 17. Coil Nuts for Coil Rods and Bolts: Nuts passing a proof load stress of 80 ksi, based on the tensile stress area of the matching coil rods and bolts.

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18. Carbon Steel Castings: ASTM A27 Grade 415-205

B. Protective Coatings:

1. All connection hardware permanently exposed to weather after completion shall be protected. All connection hardware not exposed to weather after completion may be uncoated, except as otherwise explicitly required by the contract drawings. Fasteners can have either an electroplated zinc or cadmium coating.
2. Alkyd Rust Inhibitive Primers (shop primers such as red iron oxide) :
 - a. Tnemec Series FD88 Azaron Primer
 - b. Ameron 5105
 - c. Weld-Thru Primer, Red, 2-0101 & Gray, 2-0102
3. Zinc Coatings:
 - a. Hot-Dip Galvanizing: ASTM A123, or ASTM A153
 - b. Electroplated Zinc for Steel Products and Steel Hardware: ASTM B633
 - c. Zinc Rich Paints: DOD-P-21035
4. Cadmium Coatings:
 - a. Electrodeposited Coatings of Cadmium: ASTM B766

2.3 MISCELLANEOUS PRODUCTS

A. Grout:

1. Cement Grout: Portland cement, sand and water sufficient for placement and hydration.
2. Non-Shrink Grout: Premixed, packaged non-ferrous aggregate shrink resistant.
3. Epoxy Resin Grout: Two-component mineral-filled resin: ASTM C881.

B. Joint Sealing Compound: The joint sealing compound shall be a permanently flexible plastic material complying in every detail to Federal Specification SS S-00210 (GSA-FSS) dated July 26, 1965. "Quickseal", or approved equal.

C. Frames and Covers: Catch basins, manholes, and vaults shall be provided with fabricated aluminum or steel frames and covers as specified or shown on the drawings and shall be built up so that the cover is flush with the surrounding surface unless otherwise specified.

2.4 FABRICATION

A. Unless otherwise noted, precast concrete structure dimensions called out on the Drawings are interior dimensions.

B. Manufacturing procedures shall be in general compliance with PCI MNL-116.

C. Manufacturer shall provide for those openings 10 in. or larger, round or square as shown on the drawings. Other openings shall be located and field drilled or cut by the trade requiring them after the units have been erected. Openings and/or cutting of prestressing strand shall be approved by ENGINEER and manufacturer before drilling or cutting.

D. Forms:

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1. Forms for precast products shall be rigid and constructed of materials that will result in finished products conforming to the profiles, dimensions and tolerances indicated by this Section, the Contract Documents and the reviewed Shop Drawings.
 2. Construct forms to withstand vibration method selected.
 3. Release agents shall be applied and used according to manufacturer's instructions.
- E. Plastic Liner:
1. Where called for on the Drawings, provide cast-in-place plastic liner system.
 2. Install liner system per manufacturer's instructions.
 3. Follow all requirements of Specification Section 06640, Plastic Liner for Concrete Pipe and Structures.
- F. Concreting:
1. Batching of Concrete shall be in accordance with approved Mix Design(s).
 2. Convey concrete by methods which will prevent separation, segregation or loss of material.
 3. Consolidate all concrete in the form to minimize honeycombing or entrapped air.
- G. Curing: Procedures sufficient to insure specified concrete strength of all products must be employed. Stripping of a panel shall not occur until concrete strength is sufficient to prevent cracking or damage of the panel.
- H. Manufacturing Tolerances:
1. Cross Sectional Dimensions:
 - a. Less than 24 inches: $\pm 1/4"$
 - b. 24 to 36 inches: $\pm 3/8"$
 - c. Over 36 inches: $\pm 1/2"$
 2. Length:
 - a. Less than 25 ft: $\pm 1/2"$
 - b. 25 to 50 ft: $\pm 3/4"$
 - c. Over 50 ft: $\pm 1"$
 3. Variation from square or designed skew (difference in length of two diagonal measurements): Max. $\pm 3/4"$
- I. Identification: Mark each precast item to correspond to identification mark on Shop Drawings for product location, and with casting date.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Access: Clear unloading areas and access roadways to point of component placement shall be provided and maintained by the CONTRACTOR. The CONTRACTOR shall provide all required traffic controls, barricades, warning lights and/or signs to insure a safe installation.
- B. Sitework: The CONTRACTOR shall excavate and prepare the subgrade, including 2 inches of clean sand, graded level and to the proper elevation.

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- C. Installer Responsibility: Prior to installation of the precast products, notify the CONTRACTOR of any discrepancies discovered which affect the work under this contract.

3.2 INSTALLATION

- A. General: Precast products shall be lifted with suitable lifting devices at points provided by the Manufacturer to prevent excessive stresses or damage to the products. Brace and secure items before unhooking.
- B. Sitework:
1. Openings or "knockouts" shall be located as shown on the drawings and shall be sized sufficiently to permit passage of the largest dimension of pipe and/or coupling flange. Upon completion of installation, all voids or openings in the vault walls around pipes shall be filled with 4,000-psi concrete or mortar, using an approved epoxy for bonding concrete surfaces.
 2. All joints between precast sections shall be made watertight using preformed mastic material. The sealing compound shall be installed according to the manufacturer's recommendations to provide a watertight joint which remains impermeable throughout the design life of the structure. All joints shall be filled with dry-pack non-shrink grout. If plastic liner system is used, after the joint has been made and is cured, install plastic liner weld strip at all joints and seams.
 3. Frames and covers shall be built up so that the cover is flush with the surrounding surface unless otherwise specified. The CONTRACTOR is responsible for placing the cover at the proper elevation where paving is to be installed and shall make all necessary adjustments so that the cover meets these requirements.
 4. After the structure and all appurtenances are in place and approved, and after any required disinfection or testing, backfill shall be placed to the original ground line or to the limits designated on the plans.

3.3 FIELD QUALITY CONTROL

- A. Hydrostatic Testing:
1. All Manholes, Wetwells, Junction Boxes, or other water bearing structures shall be hydrostatically tested prior to acceptance.
 2. Test Procedure:
 - a. Plug all inlets and outlets with temporary plugs
 - b. Fill water bearing structure with clean, potable water
 - c. Let stand for 24 hours, if desired, to allow for "soaking-in"
 - d. Fill to rim elevation
 - e. Let stand for a minimum of 2 hours
 - f. Check distance from rim to water surface
 - g. Calculate water loss. Leakage in each manhole may not exceed 0.1-gallon per hour per foot of water depth during the test.
 3. Repair all structures which do not meet the above test requirements with a method approved by the ENGINEER and re-test until passing.

3.4 PATCHES AND REPAIRS:

- A. Patching of products, when required, shall be performed to industry standards for structural concrete. Repairs shall be sound, permanent and flush with adjacent surface.

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3.5 WARRANTY:

- A. All labor and materials under the Precast Manufacturers contract shall be warranted by the Precast Manufacturer for a period of one (1) year after substantial completion.

+ + END OF SECTION + +

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SECTION 03600

GROUT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes epoxy, non-metallic, non-shrink, and ordinary Portland cement-sand grouts.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM C33, Standard Specification for Concrete Aggregates.
 - 2. ASTM C150, Standard Specification for Portland Cement.
 - 3. ASTM C595, Standard Specification for Blended Hydraulic Cements.
 - 4. ASTM C1107, Standard Specification for Packaged Dry, Hydraulic-Cement Grout.

1.3 SYSTEM DESCRIPTION

- A. Furnish ordinary cement-sand grout for the following:
 - 1. Foundation grout.
 - 2. Construction joint grout.
 - 3. As shown in the Drawings.
- B. Furnish non-shrink, non-metallic grout for the following:
 - 1. Equipment bases, 25 hp or less.
 - 2. Base plates.
 - 3. Guardrail and railings.
 - 4. Through-bolt and form tie openings.
 - 5. As shown in the Drawings.
- C. Furnish epoxy grout for the following:
 - 1. Equipment bases, 26 hp or more and/or sole plates with vibration, thermal movement, etc.
 - 2. Blockouts for gate guides.
 - 3. Retrofit waterstop installation.
 - 4. As shown in the Drawings.

1.4 SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's specifications and installation instructions for all proprietary materials.
 - 2. Proposed method for keeping existing concrete surfaces wet prior to placing grout.
 - 3. Forming method for fluid grout placements.
 - 4. Curing method for grout.
- B. Laboratory Test Reports and Certificates:

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1. For proprietary materials, submit copies of reports on quality control tests.
2. Submit certification that materials meet specification requirements for nonproprietary materials.
3. For ordinary cement-sand grout, copies of grout mix design and laboratory strength test reports.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Delivery of Materials: Deliver grout materials from manufacturers in unopened containers and bearing intact manufacturer's labels.
- B. Storage of Materials: Store grout materials in a dry shelter and protected from moisture.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. High-Strength Epoxy Grout.
 1. Use 100% solids, prepackaged, solvent-free, moisture insensitive, high-strength epoxy grout.
 2. Product and Manufacturer: Provide one of the following:
 - a. E³-HP, as manufactured by The Euclid Chemical Company.
 - b. Sikadur 42 Grout Pak, as manufactured by Sika Corporation.
 - c. Five Star HP Epoxy Grout by Five Star Products, Incorporated.
 - d. Or approved equal.
- B. Non-shrink, Non-metallic Grout:
 1. Prepackaged non-staining cementitious grout which shall meet the minimum requirements of ASTM C1107 and requiring only the addition of water at the jobsite.
 2. Product and Manufacturer: Provide one of the following:
 - a. NS, as manufactured by The Euclid Chemical Company.
 - b. Five Star Grout, as manufactured by Five Star Products, Incorporated.
 - c. Sika Grout 212, as manufactured by Sika Corporation.
 - d. Or approved equal.
- C. Ordinary Cement-Sand Grout: Prepare design mix for ordinary cement grout.
 1. Cement: Portland cement, ASTM C150, Type II; or blended hydraulic cement, ASTM C595, Type 1P.
 2. Aggregates: ASTM C33 and as herein specified.
 - a. Do not use aggregates containing soluble salts or other substances such as iron sulfides, pyrite, marcasite, ochre, or other materials that can cause stains on exposed concrete surfaces.
 - b. Fine Aggregate: Clean, sharp, natural sand, free from loam, clay, lumps or other deleterious substances.
 - 1) Dune sand, bank run sand and manufactured sand are not acceptable.
 - c. Coarse Aggregate: Coarse aggregate not permitted.
 3. Admixtures: Provide admixtures produced by established reputable manufacturers and use in compliance with the manufacturer's printed instruction. Do not use admixtures that have not been incorporated and tested in the accepted mixes, unless

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otherwise authorized in writing by ENGINEER. Refer to Section 03300 - Cast-In-Place Concrete, for additional admixture requirements.

4. Proportioning and Design of Mixes: Mixes are subject to the following limitations:
 - a. Specified 28-day Compressive Strength: 4,000 psi.
 - b. Minimum amount of water necessary for the mixture to flow under its own weight.
 - c. Fine Aggregate meeting ASTM C33.
 - d. Air Content Percentage: $\pm 1.5\%$.
 - e. Minimum Cement Content in Pounds per Cubic Yard: 658.
 - f. Slump at point of placement: $5" \pm 1"$.
5. Proportion mix by either laboratory trial batch or field experience methods, using materials to be employed on the Project for grout required. Comply with ACI 211.1 and provide a complete report, from an independent testing laboratory, to ENGINEER, at least 30 days prior to start of Work. Do not begin grout production until ENGINEER has approved mix.
6. Laboratory Trial Batches: When laboratory trial batches are used to select grout proportions, prepare test specimens and conduct strength tests as specified in ACI 301, Chapter 3 - Proportioning.
7. Field Experience Method: When field experience methods are used to select grout proportions, establish proportions as specified in ACI 301, Chapter 4.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine the substrate and conditions under which grout is to be placed with installer and notify ENGINEER, in writing, of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.

3.2 INSTALLATION

- A. General:
 1. Mix, place and cure grout as shown and in accordance with manufacturer's instructions. If manufacturer's instructions conflict with the Specifications, do not proceed until ENGINEER provides clarification.
 2. Manufacturers of proprietary products shall make available upon 72 hours notification the services of a qualified, full time employee to aid in assuring proper use of the product under job conditions. The cost of this service, if any, shall be borne by CONTRACTOR.
 3. When placing grout conform to temperature and weather limitations in Section 03300 - Cast-In-Place Concrete.
- B. Through-bolt and form-tie holes: Fill space with dry pack dense grout hammered in with steel tool and hammer. Coordinate dry pack dense grout application with bonding agent in Section 03251 - Concrete Joints.
- C. Columns, Beams and Equipment Bases: Prepare concrete surface by sandblasting, chipping, or by mechanical means to remove any soft material prior to setting base plates and machinery. After shimming columns, beams and equipment indicated to be

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grouted on the plans to proper grade, securely tighten anchor bolts. Properly form around the base plates allowing sufficient room around the edges for placing the grout. Adequate depth between the bottom of the base plate and the top of concrete base must be provided to assure that the void is completely filled with grout.

- D. Guardrails and Railings: After posts and rails have been properly inserted into holes or sleeves, fill the annular space between posts and cast-in-place sleeves and/or below base plates with non-shrink grout. Bevel grout at juncture with post so that moisture flows away from posts.
- E. Construction Joints: Ordinary cement-sand grout may be used in place of mortar over the contact surface of the old concrete at the interface of horizontal construction joints as outlined in Section 03251 - Concrete Joints, and Section 03300 - Cast-In-Place Concrete, of these Specifications.
- F. Curing: Cure all grout in accordance with manufacturer's written instructions. Wet cure ordinary cement-sand grout and non-shrink non-metallic grout for a minimum of three (3) days unless directed otherwise by the ENGINEER.

+ + END OF SECTION + +

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SECTION 04200
CONCRETE MASONRY UNITS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: All masonry work shown on the Drawings. It also includes providing openings in masonry, to accommodate the Work under other Sections, and building into the masonry all items such as sleeves, anchor bolts, inserts and all other embedded items for which placement is not specifically provided under other Sections.

1.2 REFERENCES

- A. American Concrete Institute (ACI)
1. ACI 315, "Manual of Standard Practice for Detailing Reinforced Concrete Structures."
- B. American Society for Testing and Materials (ASTM)
1. ASTM A36, Carbon Structural Steel, Standard Specification for.
 2. ASTM A82, Steel Wire, Plain, for Concrete Reinforcement, Standard Specification for.
 3. ASTM A153, Zinc Coating (Hot Dip) on Iron and Steel Hardware, Standard Specification for.
 4. ASTM A167, Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip, Standard Specification for.
 5. ASTM A240, Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels, Standard Specification for.
 6. ASTM A366, Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality, Standard Specification for.
 7. ASTM A569, Steel, Carbon (0.15 Maximum Percent), Hot-Rolled Sheet and Strip, Commercial Quality, Standard Specification for.
 8. ASTM A580, Stainless Steel Wire, Standard Specification for.
 9. ASTM A615, Deformed and Plain Billet-Steel Bars for Concrete Reinforcement, Standard Specification for.
 10. ASTM A663, Steel Bars, Carbon, Merchant Quality, Mechanical Properties, Standard Specification for.
 11. ASTM C5, Quicklime for Structural Purposes.
 12. ASTM C67, Standard Methods of Sampling and Testing Brick.
 13. ASTM C90, Load-bearing Concrete Masonry Units, Standard Specification for.
 14. ASTM C91, Masonry Cement.
 15. ASTM C136, Sieve or Screen Analysis of Fine and Coarse Aggregates.
 16. ASTM C140, Sampling and Testing Concrete Masonry Units, Standard Test Methods of.
 17. ASTM C144, Aggregate for Masonry Mortar.
 18. ASTM C150, Portland Cement.
 19. ASTM C180, Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
 20. ASTM C207, Hydrated Lime for Masonry Purposes.
 21. ASTM C270, Mortar for Unit Masonry.

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22. ASTM C331, Lightweight Aggregates for Concrete Masonry Units, Standard Specification for.
23. ASTM C404, Aggregates for Masonry Grouts.

24. ASTM C426, Linear Drying Shrinkage of Concrete Masonry Units, Standard Test Method for.
25. ASTM C476, Grout for Masonry.
26. ASTM C744, Prefaced Concrete and Calcium Silicate Masonry Units, Standard Specification for.
27. ASTM C1019, Standard Test Method of Sampling and Testing Grout.
28. ASTM D2240, Rubber Property - Durometer Hardness, Standard Test Method for.
29. ASTM E84, Surface Burning Characteristics of Building Materials, Standard Test Method for.
30. ASTM E119, Fire Tests of Building Construction and Materials, Standard Test Methods for.

- C. Brick Institute of America
 1. "Technical Notes on Brick and Tile Construction."
 2. Technical Bulletin 1A, "Construction and Protection Recommendations for Cold Weather Masonry Construction."
- D. National Concrete Masonry Association,
 1. "Guide Specifications"
 2. "Technical Bulletins."
- E. Underwriters Laboratories (UL)
 1. Design Numbers U901 through U914.

1.3 SYSTEM DESCRIPTION

- A. Coordination:
 1. Review installation procedures under other Sections and coordinate the installation of items that must be installed with the masonry Work.
 2. Masonry Work advanced without built-in flashings and other items shall be removed and rebuilt, at no additional cost to OWNER, even if discovered after masonry has been completed.
 3. Coordinate the work of other Sections to avoid delay of the masonry Work.

1.4 SUBMITTALS

- A. Shop Drawings:
 1. Complete layout of all masonry walls showing modular planning and all special shapes to be used. Show all details for each condition encountered in the Work. Provide plans and elevations drawn at 1/4-inch scale and details drawn at 1½-inch scale. Show all items required to be built into masonry.
 2. Masonry control joint locations and details.

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3. Fabrication, bending, and placement of reinforcing bars. Show bar schedules, diagrams of bent bars, stirrup spacing, lateral ties and other arrangements and assemblies as required for fabrication and placement of reinforcing for masonry Work.
 4. Explanation of where each masonry accessory will be used in the Work, quantities purchased and intended spacings.
- B. Samples:
1. One unit of each type of concrete masonry unit specified.
 2. One unit or one modular length of each accessory item specified.
 3. Each type of colored mortar, showing the range of color that can be expected in the Work.
- C. Product Data:
1. Complete selection of manufacturer's standard and custom colors.
 2. Mix designs for grout and mortar.
 3. Manufacturer's specifications and instructions for each manufactured product. Include data substantiating that materials comply with specified requirements.

1.5 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies:
1. Comply with the applicable requirements of International Building Code, including the requirements for Special Inspection.
 2. Wherever a fire-resistance classification is shown or scheduled for masonry Work (4-hour, 3-hour, and similar designations), comply with applicable requirements for materials and installation established by UL and other governing authorities.
- B. Source Quality Control:
1. Obtain all concrete masonry units from one manufacturer, cured by one process and of uniform texture and color or in an established uniform blend thereof. Cure units by autoclave treatment at minimum temperature of 350°F, and a minimum pressure of 125 psi.
 2. Do not change source or brands of materials during the course of the Work.
 3. No change shall be made in the proportions for mortar or grout, unless resubmitted and re-approved by the ENGINEER.
- C. Construction Tolerances:
1. Variation from Plumb: For lines and surfaces of columns, walls, and expansion joints, do not exceed 1/4-inch in 10-feet, or 3/8-inch in one story height or 20-feet maximum, nor 1/2-inch in 40-feet or more.
 2. Variation from Level: For lines of exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines, do not exceed 1/4-inch in any bay or 20-feet maximum, nor 1/2-inch in 40-feet or more.
 3. Variation of Linear Building Line: For position shown and related portion of columns, walls and partitions, do not exceed 3/8-inch in any bay or 20-feet maximum, nor 1/2-inch in 40' or more.
 4. Variation in Cross-Sectional Dimensions: For columns and thickness of walls, do not exceed +1/2-inch-1/4-inch from dimensions shown.

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- D. Job Mock-up: Prior to installation of masonry Work, but after ENGINEER'S approval of samples, erect job mock-up using materials, pattern bond and joint tooling shown or specified for final Work.
1. Provide special features, including finished opening 16-inchx 16-inch and finished end.
 2. Build mock-up at the site, in location approved by ENGINEER, of full required wall thickness and approximately 4'x 4', unless otherwise shown.
 3. Indicate the proposed range of color, texture and workmanship to be expected in the completed Work.
 4. Obtain ENGINEER'S acceptance of the mock-up before start of Work.
 5. Retain and protect mock-up during construction as a standard for judging completed masonry. Do not alter, move or destroy mock-up until given written permission by ENGINEER.
 6. Build as many job mock-up panels as required to obtain ENGINEER'S acceptance of the Work.
 7. Masonry construction that does not meet the standards approved on the sample panel shall be removed and rebuilt as required by ENGINEER.
- E. Preconstruction Conference: Prior to the installation of masonry Work, CONTRACTOR shall schedule a Preconstruction Conference at the project site.
1. Review foreseeable methods and procedures related to the masonry Work including, but not necessarily limited to, the following:
 - a. Project requirements, including Contract Documents.
 - b. Method of sequence of masonry construction.
 - c. Special masonry details.
 - d. Required submittals, both completed and yet to be completed.
 - e. Standards of workmanship.
 - f. Quality control requirements.
 - g. Job organization and availability of materials, tradesmen, equipment and facilities needed to make progress and avoid delays.
 - h. Modular planning requirements.
 - i. Weather and forecasted weather conditions and procedures for coping with unfavorable conditions.
 - j. Required inspection, testing and certifying procedures.
 - k. Regulations concerning building code compliance.
 2. Attendance is mandatory for the following:
 - a. CONTRACTOR'S job superintendent.
 - b. Masonry subcontractor's job superintendent.
 - c. Masonry subcontractor's foreman.
 - d. Authorized representative of concrete unit masonry supplier.
 - e. ENGINEER'S authorized representative.
 3. Reconvene the meeting at the earliest opportunity if additional information must be developed in order to conclude the subjects under consideration and to resolve any outstanding issues.
 4. CONTRACTOR shall record the discussions of the conference and the decisions and agreements (or disagreements) and furnish a copy of the record to each party attending.

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1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery of Materials:

1. Deliver concrete masonry units in original, unopened and undamaged packages and pallets, plainly marked with identification of materials and name of approved manufacturer. Delivery shall be by the manufacturer or manufacturer's agent.
2. Deliver reinforcing to the site, bundled, tagged and marked. Use metal tags indicating size, lengths and other markings shown on approved Shop Drawings.
3. Manufactured materials, such as cement and lime, shall be delivered and stored in their original containers plainly marked with identification of materials and manufacturer.

B. Storage of Materials:

1. Store materials off the ground, protected from dirt, construction traffic and contamination. Cover using tarpaulins or polyethylene sheets to prevent damage such as wetting, staining, and chipping.
2. Do not stack concrete masonry units higher than recommended by manufacturer.

C. Handling Materials:

1. Handle materials in a manner that minimizes chips, cracks, voids, discolorations or other defects that might be visible or cause staining in finished Work.

1.7 JOB CONDITIONS

A. Site Facilities: Supplemental heat sources, as may be required, should CONTRACTOR wish to continue masonry Work in cold weather if not available at the project site. The provision of all supplemental heat energy sources and equipment is the responsibility of CONTRACTOR.

B. Environmental Requirements:

1. Do not place any masonry Work when air temperature is below 28°F, on rising temperatures or below 36°F, on falling temperatures, without temporary heated enclosures or without heating materials or other precautions necessary to prevent freezing.
2. No frozen materials shall be used, nor shall frozen masonry Work be built upon.
3. Remove and replace all masonry Work damaged by frost or freezing.

C. Protection:

1. Protect all masonry against freezing for at least 48 hours after being placed.
 - a. Mean Daily Air Temperature 40°F to 32°F: Protect masonry from rain for 48 hours after installation.
 - b. Mean Daily Temperature 32°F to 20°F: Completely cover masonry with insulating blankets for 48 hours.
 - c. Mean Daily Air Temperature 20°F and Below: Maintain masonry above 32°F for 48 hours by enclosure and supplementary heat.
2. Protect partially completed masonry against rapid heat loss and from water entering it when Work is not in progress, by covering top of walls with strong, waterproof, nonstaining membrane. Extend membrane at least 2' down both sides of walls and secure in place using wall cover clamps spaced at intervals of 4' and at each end and joint of covering.

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3. Do not apply distributed floor or roof loading for at least 3 days after completing masonry columns or walls.
 4. Do not apply concentrated loads for at least 7 days after completing masonry columns or walls.
- D. Cold Weather Masonry Work:
1. All mortar for use in masonry Work, when the mean daily temperature is below 40°F, shall be portland cement- lime-sand mortars using high early strength portland cement.
 2. Air Temperature 40°F to 32°F: Heat sand or mixing water to 70°F-160°F.
 3. Air Temperature 32°F to 20°F: Heat sand and mixing water to 70°F-160°F. Provide heat on both sides of wall under construction to heat constructed masonry to 40°F. Employ wind breakers when wind is in excess of 15 mph.
 4. Air Temperature below 20°F: Heat sand and mixing water to 70°F-120°F. Provide enclosure and auxiliary heat to maintain air temperature above 32°F. Heat constructed masonry to 40°F. Temperature of masonry units when laid shall not be less than 20°F.
- E. Hot Weather Masonry Work:
1. Preparation – Prior to conducting masonry work:
 - a. When the ambient air temperature exceeds 100°F, or exceeds 90°F with a wind velocity greater than 8 mph:
 - 1) Maintain sand piles in a damp, loose condition.
 - 2) Provide necessary conditions and equipment to produce mortar having a temperature below 120°F.
 - b. When the ambient air temperature exceeds 115°F, or exceeds 105°F with a wind velocity greater than 8 mph implement the requirements above and shade materials and mixing equipment from direct sunlight.
 2. Construction – While masonry work is in progress:
 - a. When the ambient air temperature exceeds 100°F, or exceeds 90°F with a wind velocity greater than 8 mph:
 - 1) Maintain temperature of mortar and grout below 120°F.
 - 2) Flush mixer, mortar transport container, and mortar boards with cool water before they come into contact with mortar ingredients or mortar.
 - 3) Maintain mortar consistency by retempering with cool water.
 - 4) Use mortar within 2 hours of initial mixing.
 - b. When the ambient temperature exceeds 115°F, or exceeds 105°F with a wind velocity greater than 8 mph implement the requirements listed above and use cool mixing water for mortar and grout. Ice is permitted in the mixing water prior to use. Ice is not permitted in the mixing water when added to the other mortar or grout materials.
 3. Protection – When the mean daily temperature exceeds 100°F, or exceeds 90°F with a wind velocity greater than 8 mph, fog spray newly constructed masonry until damp, at least three times a day until the masonry is three days old.

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PART 2 - PRODUCTS

2.1 GENERAL CONCRETE UNIT MASONRY

- A. General: Unless specifically modified by other requirements specified, provide concrete masonry units in compliance with the following classifications, weights, grades, colors, textures, scores, thermal resistance values and other features specified.
- B. Hollow Load-bearing Concrete Masonry Units: Provide the following:
 - 1. ASTM C90 medium weight.
 - 2. Minimum Compressive Strength: 1,900 pounds per square inch average of three units; 1,700 pounds per square inch minimum for an individual unit. The manufacturer shall certify that the masonry units meet all requirements of ASTM C90 including the moisture content and linear shrinkage requirements for intermediate conditions.
- C. Color and Texture: Provide the following:
 - 1. Manufacturer's complete selection of all standard and all custom colors. Submit preliminary color selection for review by ENGINEER.
 - 2. Color, surface texture and aggregate uniform within the normal range established by sample submission and as approved by ENGINEER.
- D. Special Shapes: Provide the following where required:
 - 1. Lintels, bond beams, reinforcing units, and flush-end reinforcing units, interior and exterior corner shapes, solid jambs, sash block, coves, premolded control joint blocks, headers, and other special conditions.
 - 2. Split-face, scored, and other facings, and special sizes, as shown on the Drawings.
- E. Waterproofing Admixture: Manufacture all types of concrete unit masonry, used in construction of exterior walls with an integral waterproofing admixture as follows:
 - 1. Material: Cross-linking acrylic polymer.
 - 2. Proportion: In strict accordance with manufacturer's instructions.
 - 3. Product and Manufacturer: Provide one of the following:
 - a. DRY-BLOCK Admixture by W. R. Grace & Company Construction Products Division.
 - b. Moxie Shield 1800 by Moxie International.
 - c. Or equal.

2.2 MORTAR

- A. General: Anti-freeze admixture or agents, including calcium chloride are not permitted.
- B. Mortar for All Unit Masonry: Type S. Comply with ASTM C270, Table 2, except limit materials to those specified herein.
 - 1. Portland cement-Lime: Provide the following proportions by volume:
 - a. Portland Cement: 1 part.
 - b. Hydrated Lime or Lime Putty: 1/4 to 1/2.
 - c. Aggregate (sand in damp, loose condition): 2¼ to 3 times the sum of cementitious materials.
 - d. Pigment: as required to match approved sample.

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2. Properties:
 - a. Average Compressive Strength, ASTM C270: 1,800 pounds per square inch.
 - b. Minimum Water Retention, ASTM C270: 75%.
 - c. Maximum Air Content, ASTM C270: 12% for Portland cement - lime mortars.

2.3 MASONRY GROUT

- A. Proportion coarse grout mixes subject to the following limitations:
 1. Specified 28-day Compressive Strength: 2,000 psi
 2. Minimum Cementitious Content: 550 lb/cu yd
 - a. Fly ash per ASTM C618 may be used replace cement but shall not exceed 20% by weight of cement plus fly ash.
 3. Maximum Water-Cement Ratio by Weight: 0.52
 4. Slump at point of placement: 8" to 11"
- B. Proportion mixes by either laboratory trial batch or field experience methods, using materials to be employed on the Project for grout required. Comply with ACI 211.1.

2.4 MATERIALS

- A. Portland Cement:
 1. ASTM C150: Use Type II.
 2. Nonstaining and of natural color or as required to be compatible with the approved pigment.
- B. Hydrated Lime: ASTM C207, Type S, or lime putty ASTM C5.
- C. Aggregates: ASTM C33 and as herein specified.
 1. Do not use aggregates containing soluble salts or other substances such as iron sulfides, pyrite, marcasite, ochre, or other materials that can cause stains on exposed surfaces.
 2. Fine Aggregate: Clean, sharp, natural sand, free from loam, clay, lumps or other deleterious substances. For mortar, ASTM C144, except for mortar for joints less than 1/4-inch use aggregate graded with 100% passing the No. 16 sieve.
 3. Colored/ White Mortar Aggregates: Provide ground marble, granite or other sound stone, as required to match the approved sample.
 4. Coarse Aggregate: Clean, uncoated, processed aggregate containing no clay, mud, loam, or foreign matter, as follows:
 - a. Crushed stone, processed from natural rock or stone.
 - b. Washed gravel, natural or crushed. Use of slag and pit or bank run gravel is not permitted.
 - c. Coarse Aggregate Size: ASTM C33, No. 8 or 89.
- D. Admixtures:
 1. Provide admixtures produced by established reputable manufacturers and use in compliance with the manufacturer's printed instruction. Do not use admixtures that have not been incorporated and tested in the accepted mixes. Refer to Section 03300, Cast-In-Place Concrete, for additional admixture requirements.

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2. Waterproofing Admixture for Exterior Concrete Unit Masonry: Provide a cross-linking acrylic polymer integral waterproofing system, proportioned and mixed in strict accordance with manufacturer's instructions. Provide one of the following:
 - a. DRY-BLOCK Mortar Admix by W.R. Grace & Company Construction Products Division.
 - b. Moxie Shield 1800 by Moxie International.
 - c. Or equal.
- E. Colored Mortar Pigments:
 1. Commercial iron oxide, manganese dioxide, ultramarine blue, chromium oxide, or carbon black, compounded for use in mortar mixes.
 2. Do not exceed pigment to cement ratios, by weight, of 1 to 35 for carbon black and 1 to 7 for other pigments.
 3. Product and Manufacturer: Provide one of the following:
 - a. Truetone Mortar Colors by Frank D. Davis Co., subsidiary of Rockwood Industries, Inc.
 - b. Sonobrite by Sonneborn Building Products Division Rexnord Chemical Products, Inc.
 - c. Or equal.
- F. Water: Clean and free from injurious amounts of oils, acids, alkalis, or organic matter.

2.5 REINFORCING

- A. Reinforcing Bars: ASTM A615, Grade 60 for all bars. Shop-fabricate reinforcing bars that are shown or required to be bent or hooked. Comply with ACI 315 for the fabrication of reinforcing steel for masonry Work.
- B. Wire products: Ties, and rebar positioners shall be fabricated from cold-drawn steel wire complying with ASTM A82 and hot-dipped galvanized after fabrication with 1.5 ounces per square foot of zinc coating complying with ASTM A153.
- C. Rebar Positioners: Nine gage reinforcing bar positioners which accommodate both horizontal and vertical reinforcing steel. Provide one of the following:
 1. #RB Series Rebar Positioners by Hohmann & Barnard, Inc.
 2. Or equal.

2.6 MISCELLANEOUS ACCESSORIES

- A. Compressible Filler: Provide watertight joint filler where masonry abuts structural framework members, and as shown. Provide the following:
 1. Polyurethane foam strip saturated with polybutylene waterproofing material which when installed at A compression ratio of 2:1 is impermeable to water.
 2. Resilient to -40°F with 100% movement recovery.
 3. Elongation of 140% with a tensile strength of not less than 53 psi.
 4. Product and Manufacturer: Provide one of the following:
 - a. Polyseal by Sandell Construction Solutions.
 - b. Or equal.

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- B. Premolded Control Joint Strips: Provide complete selection of solid extruded rubber strips with a Shore A durometer hardness of 80 to 90 complying with ASTM D2240, designed to fit standard sash block and maintain lateral stability in masonry wall. Provide one of the following:
 - 1. #RS Series - Rubber Control Joints by Hohmann & Barnard, Incorporated.
 - 2. Or equal.
- C. Sealants: Refer to Section 07900, Joint Sealants.

PART 3 - EXECUTION

3.1 INSPECTION

- A. CONTRACTOR and his installer shall examine areas and conditions under which masonry Work is to be installed, and notify ENGINEER, in writing, of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.
- B. Special Masonry Inspection:
 - 1. The OWNER will employ a testing laboratory to perform Special Masonry Inspections in accordance with Chapter 17 of the current Building Code.
 - 2. Masonry inspection services will be provided during the following construction activities:
 - a. During laying of units:
 - 1) During the first day of the masonry construction, inspect proportions of site prepared mortar, construction of mortar joints, location of all reinforcing and connectors, size and location of structural elements, type, size and location of anchors, protection of masonry during cold weather.
 - 2) Inspection to be continuous the first full day of masonry construction which requires special inspection.
 - a) Thereafter, a minimum of 3 hours every third day of construction until the concrete masonry work is complete.
 - 3) Inspection while laying masonry units may be made concurrently with other inspection duties provided all inspection duties are adequately performed.
 - 4) When deficiencies are found, additional inspection shall be provided as required until deficiencies have been corrected.
 - 5) If masonry crews change, an additional full day of inspection is required during the first day the new crew is on-site.
 - b. Placement of reinforcing steel:
 - 1) Verification of all reinforcing including size, grade, lap lengths, and type.
 - 2) Inspection may be periodic as required to verify all reinforcing at Risk Category II and III structures. Inspection of all reinforcing shall be continuous at Risk Category IV structures.
 - 3) Inspector to be present during the concrete pour in which any dowels connecting concrete to masonry are cast to verify proper location of dowels.
 - c. Prior to each grouting operation, verify that grout space is clean, reinforcing and connectors are properly placed, proportions of site-prepared grout are correct and mortar joints have been properly constructed.

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- 1) Inspection may be periodic as required to verify proper grout space at Risk Category II and III structures.
- 2) Inspection shall be continuous prior to and during grout placement at Risk Category IV structures.
- d. Verify compliance with International Building Code and Specifications continuously during all grouting operations.
- e. Provide special inspection in accordance with ACI 530 Table 3.1.2 for Risk Category II and III structures and ACI 530 Table 3.1.3 for Risk Category IV structures including observation of masonry work for conformance to the Contract Documents:
 - 1) Provide inspection reports to the ENGINEER, Building Official and OWNER.
 - a) Notify Contractor of discrepancies for correction.
 - b) Notify ENGINEER, Building Official and OWNER, in writing, when discrepancies have been satisfactorily corrected.
 - 2) Submit final signed report stating that Work requiring special inspection was, to the best of the inspector's knowledge, in conformance to the Contract Documents and the applicable workmanship provisions of the International Building Code.

3.2 INSTALLATION, GENERAL

- A. Build chases and recesses as shown or required by others. Provide not less than 8-inch of masonry between chase or recess and jamb of openings, and between adjacent chases and recesses.
- B. Leave openings for equipment, piping, ducts, and other items to be installed subsequent to starting of masonry Work. After installation of said items, complete masonry Work to match Work immediately adjacent to openings.
- C. Cut masonry units using motor driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide pattern shown and to fit adjoining Work neatly. Use full size units without cutting wherever possible.

3.3 LAYING MASONRY WALLS

- A. General:
 1. Lay out walls in advance for accurate spacing of surface pattern bond with uniform joint widths and to properly locate openings, masonry control joints, returns and offsets. Avoid the use of less than half size units at corners, jambs and wherever possible at other locations.
 2. Lay up walls plumb and true to comply with specified tolerances, with courses level, accurately spaced and coordinated with other Work.
 3. Pattern Bond:
 - a. Lay all concrete masonry Work in running bond with vertical joints in each course centered on units in courses above and below unless otherwise shown.
 - b. Bond and interlock each course of each wythe at corners.
 - c. Do not use units with less than 8-inch horizontal face dimensions at corners or jambs.
- B. Mortar Bedding and Jointing:

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1. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or filled with concrete or grout.
 - a. Lay walls with 3/8-inch joints.
 2. Cut joints flush for masonry walls that are to be concealed or to be covered by other materials, except paint, unless otherwise shown.
 3. Tool exposed joints when mortar is "thumbprint" hard, slightly concave, unless otherwise required to match existing joint treatment. Rake out mortar in preparation for application of caulking or sealants where required.
 4. Concave-tool exterior joints below grade.
 5. Do not use mortar that has begun to set or if more than 30 minutes have elapsed since initial mixing. Do not retemper mortar.
 6. Remove masonry units disturbed after laying; clean and reset in fresh mortar. Do not pound corners at jambs to fit stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar and reset in fresh mortar.
- C. Stopping and Resuming Work: Rack back 1/2-unit masonry length in each course, and do not tooth. Clean exposed surfaces of set masonry, wet units lightly, if required, and remove loose masonry units and mortar prior to laying new masonry.
- D. Built-in Work: As the Work progresses, build in items shown, specified or required by others. Fill cores in one block width solidly with masonry grout around built-in items.
- E. Structural Reinforced Masonry:
1. Shape and dimension reinforcement as shown and are required by governing codes.
 2. Position reinforcing accurately at the spacing shown. Support and secure vertical bars against displacement with rebar positioners.
 3. For columns, piers and pilasters, provide a clear distance between vertical bars as shown, but not less than 1½-inch. Provide lateral ties.
 4. For horizontal bars, provide fully-lapped "L" shaped corner bars at corners and intersections.
 5. Provide lapped splices with reinforcing steel placed in contact with rebar positioners or tied. Provide 48 bar diameter lap length, unless otherwise shown.
- F. Grouting Structural Reinforced Masonry:
1. Place grout within 1.5 hours from introducing water in the mixture and prior to initial set. Discard grout that does not meet the specified slump, has exceeded the 1.5 hour timeframe or has reached initial set.
 2. Solid grout all walls, beams, piers and pilasters, unless noted otherwise.
 3. Provide temporary dams where required or barriers to control horizontal flow of grout at ends of wall sections. Build dams full height of grout pour. If masonry units are used, do not bond into permanent masonry wythes. Remove temporary dams after completion of grout pour.
 4. Grout pour height shall not exceed 5.33 feet for grouting cells of hollow units with dimensions equal to or greater than 2.5"x3".
 5. Grout pour height shall not exceed 1 foot for grouting cells of hollow units with dimensions less than or equal to 1.5"x3".
 6. Terminate pour 1½-inch below top of highest course in pour.
 7. Provide metal wall ties, if required, to prevent blow outs.

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3.4 ANCHORING MASONRY WORK:

- A. Anchor masonry to structural members where masonry abuts or faces, such members to comply with the following:
 - 1. Provide an open space, not less than 1/2-inch in width, between masonry and structural member, unless otherwise shown. Keep open space free of mortar or other rigid materials.
 - 2. Anchor masonry to structural members with metal ties embedded in masonry joints and attached to structure. Provide anchors with flexible tie sections, unless otherwise shown.
 - 3. Space anchors as shown, but not more than 8-inch on center vertically and 36-inch on center horizontally.
 - 4. Provide end blocks, where masonry abuts structural support, to facilitate installation of compressible filler, backer rod and sealant.
- B. Lintels and Bond Beams: Provide masonry lintels and bond beams where shown. Use specially formed "U" shaped lintel and bond beam units with reinforcing bars placed as shown, filled with grout. Temporarily support formed-in-place lintels and bond beams.

3.5 REPAIR, POINTING AND CLEANING

- A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point up all joints at corners, openings and adjacent Work to provide a neat, uniform appearance, properly prepared for application of sealant compounds.
- C. Cleaning Exposed, Unglazed Masonry Surfaces:
 - 1. Wipe off excess mortar as the Work progresses. Dry brush at the end of each day's Work.
 - 2. Final Cleaning: After mortar is thoroughly set and cured, clean sample wall area of approximately 20-square feet as described below. Obtain ENGINEER'S acceptance of sample cleaning before proceeding to clean remainder of masonry Work.
 - a. Dry clean to remove large particles of mortar using wood paddles and scrapers. Use chisel or wire brush if required.
 - b. Presoak wall by saturating with water and flush off loose mortar and dirt.
 - c. Acid type cleaners shall not be permitted.
 - d. Protect other Work from cleaning operations.
- D. Protection: Protect the masonry Work from deterioration, discoloration or damage during subsequent construction operations.

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SECTION 07180

PEDESTRIAN TRAFFIC COATING

PART 1 - GENERAL

1.1 SCOPE

- A. Furnish and apply pedestrian traffic coating for protection and waterproofing of concrete deck substrate.

1.2 SUBMITTALS

- A. Shop Drawings:
 - 1. Data on Coating Materials.
 - 2. Color choices available.
- B. Quality Control Submittals:
 - 1. Manufacturer's Certificate of Compliance.
 - 2. Sample copy of warranty to be provided.

1.3 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Manufacturer shall be regularly engaged for preceding 5 years in the manufacture of pedestrian traffic coatings of similar physical characteristics to those specified.
- B. Applicator's Qualifications:
 - 1. Applicator shall have been regularly engaged for the past 5 years in application of similar materials to those specified.
 - 2. Applicator shall be approved by manufacturer for application of the coating.

1.4 WARRANTY

- A. Warranty period for waterproofing performance shall be 5 years from date of installation.

1.5 DELIVERY AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly indicating the following on each container:
 - 1. Product name
 - 2. Manufacturer
 - 3. Material batch or lot number
 - 4. ICC Evaluation Service Report Number
 - 5. Quality Control Agency Logo
- B. Storage: Store materials in clean, dry area indoors, off ground in accordance with manufacturer's instructions

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- C. Handling: Protect materials during handling and application to prevent contamination or damage.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. System 1:
 - 1. Manufacturer: Enduro Products, www.endurokote.com, 714-526-5898
 - 2. Components:
 - a. Cementitious Powder: Enduro-Flex EFC-UL98
 - b. Acrylic Polymer Dispersion: Enduro-Flex EFL-UL94
 - c. Cementitious Mix: Enduro-Kote EKC
 - d. Acrylic Emulsion: Enduro-Kote EKL
 - e. Acrylic Color Coat: Enduro-Kote EKS
 - f. Fiberglass Reinforcement: ASTM D1668, Type 111, organic resin treated
- B. System 2:
 - 1. Manufacturer: Elasto Fiberdeck 100, AVM Industries, Inc., www.avmindustries.com, 888-414-1041
 - 2. Components:
 - a. Primer: AVM Primer 100
 - b. Fiberglass Mat: AVM Mat 100: multi-directional chopped strand fiberglass mat, minimum weight of $\frac{3}{4}$ ounce per square foot.
 - c. Base Resin: AVM Base Resin 100
 - d. Wear Surface: AVM Texture 100.
 - e. Top Coat: AVM Top Coat Sealer
- C. Other Systems: Other similar systems will be considered for substitution.
- D. Colors: As selected by OWNER from manufacturer's standards.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive pedestrian traffic coating:
 - 1. Verify deck will drain properly, without low spots or high fascia edges
 - 2. Verify galvanized sheet metal flashing at perimeter is as specified in Section 07600, with joints and seams caulked as specified in Section 07900.
- B. Concrete Substrate
 - 1. Verify concrete is clean, dry and sound with steel-troweled, fine-broom finish
 - 2. Verify concrete surface is free of loose particles, fins, ridges, voids and air-entrained holes.
 - 3. Concrete shall have been cured a minimum of 28 days prior to application of traffic coating.

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3.2 PREPARATION

- A. Protection: Protect adjacent surfaces from contact with pedestrian traffic coating
- B. Prepare surfaces to receive pedestrian traffic coating in accordance with manufacturer's instructions.
- C. Remove dirt, dust, debris, oil, grease, curing agents, bond breakers and other surface contaminants which could adversely affect application of pedestrian traffic coating.

3.3 MIXING

- A. Mix materials in accordance with manufacturer's instructions

3.4 APPLICATION

- A. Apply pedestrian traffic coating in accordance with manufacturer's instructions at locations indicated on the Drawings.
- B. Environmental Requirements:
 - 1. Do not apply materials at temperatures below 50 deg F or above 90 deg F if applying in direct sunlight
 - 2. Do not apply materials for 24 hours before or during rain.
- C. Concrete crack isolation:
 - 1. Prepare minor cracks by routing out to a minimum of 1/8-inch in width and depth.
 - 2. Compress Enduro-Flex mixture into routed area and feather into adjacent substrate a minimum of 2 inches in each direction.
 - 3. Apply fiberglass reinforcement in accordance with manufacturer's instructions
 - 4. Treat major cracks as construction, expansion, control or isolation joints. Do not bridge these joints with pedestrian traffic coating.
- D. Pedestrian Traffic Coating Application:
 - 1. System 1 (Enduro):
 - a. First Coat:
 - 1) Mix Acrylic Polymer Dispersion with Cementitious Powder in the proportions recommended by the manufacturer.
 - 2) Trowel mixture until voids and pin holes are closed and sealed.
 - 3) Apply to a minimum thickness of 1/16-inch
 - b. Second Coat:
 - 1) Mix Acrylic Emulsion with Cementitious Mix in the proportions recommended by the manufacturer.
 - 2) Trowel over first coat
 - 3) Apply to a minimum thickness of 1/16-inch
 - c. Finish Coat:
 - 1) Apply smooth finish coat over second coat to achieve finish coat equal to samples accepted by ENGINEER. Smooth coat shall meet standards for non-skid surface.
 - 2) Apply to a minimum thickness of 1/16-inch
 - d. Color Coat:

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- 1) Apply 2 uniform coats of color coat over finish coat.
2. System 2 (AVM):
 - a. Apply AVM Primer 100 to all surfaces
 - b. Install fiberglass mat (AVM Matt 100) and laminate with AVM Base Resin 100.
 - c. Trowel or roll AVM Texture 100 (sprayed sand finish). Apply three coats, with each coat 1/16-inch thick minimum.
 - d. Apply AVM Top Coat Sealer 4150, 2 coats

3.5 PROTECTION

- A. Protect completed coating from pedestrian traffic for a minimum of 24 hours after application of color coat.
- B. Protect coating from damage from contact with solvents.
- C. Protect the roofing materials before, during, and after installation and protect the installed Work and materials of other trades affected by this Work.
- D. In the event of damage, immediately make repairs and replacements as necessary and acceptable to ENGINEER.

+ + END OF SECTION + +

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SECTION 07200
ROOF INSULATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies requirements for building insulation for roofs and associated accessories to result in complete assemblies.

1.2 SUBMITTALS

- A. Shop Drawings:
 - 1. Manufacturer's specifications and installation instructions for type of insulation required. Include data substantiating that the materials comply with specified requirements.
 - 2. Complete layout of all roof insulation showing sizes, placement and number of courses.
 - 3. Manufacturer's specifications and installation instructions showing the sizes and layout of the mechanical fasteners.

1.3 DELIVERY, HANDLING, AND STORAGE

- A. Package and protect during shipment.
- B. Inspect for damage, dampness, and wet storage stains upon delivery to the Work site.
- C. Remove and replace damaged or permanently stained materials that cannot be restored to like-new condition.
- D. Carefully handle to avoid damage to surfaces, edges, and ends.
- E. Do not open packages until ready for use.
- F. Store materials in dry, weathertight, ventilated areas until immediately prior to installation.

1.4 COORDINATION WITH OTHER ROOFING SYSTEM COMPONENTS

- A. Roof insulation shall be part of a coordinated, complete roof system which includes the roofing system and all other roofing system components.
- B. Roof insulation manufacturer shall certify that the roof insulation provided is completely compatible with the roofing system specified and all other roofing system components.

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PART 2 - PRODUCTS

2.1 EXTRUDED POLYSTYRENE RIGID ROOF INSULATION

- A. Composed of extruded polystyrene (XPS) and water-resistant binders formed into rigid, non-combustible boards specifically designed for roofing applications with installation directly on structural steel decks beneath a sheet membrane or a standing seam metal roof.
- B. Size: 48-inches by 96-inches.
- C. Thickness:
 - 1. Base Layer: Thickness as determined by design.
 - 2. Tapered Top Layer: Varies to provide drainage.
- D. Provide the following physical properties:
 - 1. Thermal Resistance, R-Value, ASTM C518: 5.0 hr*ft²*°F/BTU/in.
 - 2. Water Vapor Permeance, ASTM E96: 1.5 maximum perm.
 - 3. Compressive Strength, ASTM D1621: 25 psi.
- E. Provide tapered and non-tapered boards as required to produce a minimum slope to drain of 1/4-inch per foot.
- F. Provide custom pre-cut factory-formed corners, crickets, hips and valleys.
- G. Product and Manufacturer: Provide one of the following:
 - 1. STYROFOAM Brand DECKMATE Plus, by Dow Building Solutions.
 - 2. THERMAPINK 25 by Owens-Corning Fiberglass Corporation.
 - 3. Or equal.

2.2 ROOF INSULATION COVER BOARD

- A. Fiberglass-mat faced roof cover boards.
- B. Provide the following physical properties:
 - 1. Size: 48-inches by 96-inches, 1/2-inch thick
 - 2. Weight: 1.95 psf
 - 3. Water Adsorption, ASTM C1177: < 10%
 - 4. Compressive Strength, ASTM C472: 900 psi
- C. Product and Manufacturer: Provide one of the following:
 - 1. DensDeck Prime by Georgia-Pacific
 - 2. SecurRock by USG
 - 3. Or approved equal

2.3 MISCELLANEOUS MATERIALS:

- A. Mechanical Fasteners: Screw-type 6-gauge minimum self-drilling galvanized steel with sufficient length and quantity to securely anchor system into place and to withstand all super-imposed loads. Provide 1 1/2" diameter disc washers.

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- B. Joint Tape: 6-inch wide glass fiber tape.

PART 3 - EXECUTION

3.1 SEQUENCING

- A. Proceed with and complete the Work only when materials, equipment and tradesmen required for the installation of the roofing membrane over the roof insulation are at the site and are ready to follow with this Work immediately (same day) behind the roof insulation Work.
- B. Do not install any more roof insulation each day than can be covered with complete elastic sheet roofing system by the end of that working day.

3.2 INSPECTION

- A. CONTRACTOR and his installer shall examine the substrate and the conditions under which the insulation Work is to be performed, and notify ENGINEER, in writing, of any unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.

3.3 INSTALLATION

- A. General:
 - 1. Tapered glass fiber board roof insulation system shall be designed and totally precut at the factory.
 - 2. Comply with manufacturer's instructions for the particular conditions of installation in each case. If printed instructions are not available or do not apply to the project conditions, consult the manufacturer's technical representative for specific recommendations before proceeding with the Work.
 - 3. Where skylight or other roof openings are required, provide crickets shaped from tapered glass fiber board to direct roof drainage around opening and too roof drain.
 - 4. Extend roof insulations full thickness, as shown and specified, over entire surface to be insulated.
 - 5. Cut and fit roof insulation Work tightly around obstructions, and fill voids with insulation. Keep back 1/4-inch for all vertical flashings.
- B. Laying Roof Insulation Units:
 - 1. Apply rigid glass fiber board roof insulation to the thickness shown in the Drawings. Provide tapered rigid board roof insulation at crickets and sloped areas shown to provide 1/4-inch per foot positive slope to drains.
 - 2. Mechanically fasten insulation boards to substrate at the UL required spacing.
 - 3. Stagger end joints and stagger joints between courses where two or more courses are used.
 - 4. Lay insulation boards with edge in moderate contact without forcing.

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3.4 PERFORMANCE

- A. Roof insulation Work shall withstand the uplift forces of wind, as defined by the Roofing System Guarantee. Refer to the roofing system specification. Failures of the roof insulation Work, or within the insulation, shall be considered failures of materials or workmanship under the Roofing System Guarantee.

+ + END OF SECTION + +

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SECTION 07211
BUILDING INSULATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope:
1. CONTRACTOR shall provide all labor, materials, tools, equipment and incidentals as shown, specified and required to furnish and install all building insulation.
 2. Extent of each type of building insulation is shown.
 3. Types of products required include the following:
 - a. Glass fiber batt insulation.
 - b. Miscellaneous materials and accessories.
- B. Coordination:
1. Review installation procedures under other Sections and coordinate the installation of items that must be installed with the building insulations.
 2. Notify other contractors in advance of the installation of the building insulations to provide other contractors with sufficient time for the installation of items included in their contracts that must be installed before the building insulations.

1.2 QUALITY ASSURANCE

- A. Manufacturer/Installer Qualifications:
1. Engage single installers for each type of building insulation who are skilled, trained and have a record of successful experience in the application of each product and who have a successful record of performing work in accordance with the recommendations and requirements of the manufacturer or who can submit evidence in writing of being acceptable to the manufacturer for production of guaranteed construction and who agree to employ only tradesmen with specific skill and successful experience in each type of Work.
 2. Submit names and qualifications to ENGINEER along with the following information on a minimum of three successful projects:
 - a. Names and telephone numbers of OWNERS, architects or ENGINEERS responsible for projects.
 - b. Approximate contract cost of the building insulation system installed.
 - c. Amount of area installed.
- B. Source Quality Control:
1. Obtain building insulations, requiring a hydrochlorofluorocarbon blowing agent, from manufacturers who manufacture specified insulation using a blowing agent acceptable for use until the year 2020 complying with the

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- requirements of the Copenhagen Amendments to the Montreal Protocol in all ways.
2. Provide a manufacturer who will provide complete technical services including preparation and review of Shop Drawings, installation methods and proposed detailing for the Work.
- C. Performance Criteria:
1. Thermal Conductivity: Provide thickness for such that the k-value is met at 75 F.
 2. Provide adjusted thicknesses, based on thicknesses shown or specified for building insulations, as required to comply with required thermal resistances for use of material having a different thermal conductivity.
- D. Requirements of Regulatory Agencies: Comply with fire-resistance and flammability ratings as required by local authorities; and comply with code interpretations by governing authorities.
- E. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified:
1. ASTM C 165, Measuring Compressive Properties of Thermal Insulations, Test Method for.
 2. ASTM C 177, Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus, Standard Test Methods for.
 3. ASTM C 203, Breaking Load and Flexural Properties of Block-Type Thermal Insulation, Test Method for.
 4. ASTM C 236, Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box, Standard Test Method for.
 5. ASTM C 272, Water Absorption of Core Materials for Structural Sandwich Constructions, Standard Test Method for.
 6. ASTM C 303, Dimensions and Density of Preformed Block-Type Thermal Insulation, Standard Test Method for.
 7. ASTM C 518, Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of Heat Flow Meter Apparatus, Standard Test Method for.
 8. ASTM C 520, Density of Granular Loose Fill Insulations, Standard Test Method for.
 9. ASTM C 531, Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Monolithic Surfacings, and Polymer Concrete, Standard Test Method for.
 10. ASTM C 549, Perlite Loose Fill Insulation, Standard Specification for.
 11. ASTM C 553, Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications, Specification for.
 12. ASTM C 578, Rigid, Cellular Polystyrene Thermal Insulation, Standard Specification for.
 13. ASTM C 612, Mineral Fiber Block and Board Thermal Insulation, Specification for.

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14. ASTM C 665, Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing, Standard Specification for.
15. ASTM C 764, Mineral Fiber Loose-Fill Thermal Insulation, Specification for.
16. ASTM D 696, Coefficient of Linear Thermal Expansion of Plastics between -30 Degrees C and 30 Degrees C, Standard Test Method for.
17. ASTM D 1621, Compressive Properties of Rigid Cellular Plastics, Standard Test Method for.
18. ASTM D 1622, Apparent Density of Rigid Cellular Plastics, Standard Test Method for.
19. ASTM D 2126, Response of Rigid Cellular Plastics to Thermal and Humid Aging, Standard Test Method for.
20. ASTM D 2842, Water Absorption of Rigid Cellular Plastics, Standard Test Method for.
21. ASTM E 84, Surface Burning Characteristics of Building Materials, Standard Test Method for.
22. ASTM E 96, Water Vapor Transmission of Materials in Sheet Form, Standard Test Method for.
23. ASTM E 119, Standard Methods of Fire Tests of Building Construction and Materials.
24. Underwriters Laboratories, Incorporated, UL 1479, Fire Tests of Through-Penetration Firestops.

F. Codes: Comply with the applicable requirements of the 2006 International Building Code for types of building insulation selected.

1.3 SUBMITTALS

- A. Samples: Submit for approval the following:
1. 12-inch by 12-inch samples of each required type of building insulation.
 2. Samples will be reviewed by ENGINEER for color and texture only. Compliance with all other requirements is the responsibility of CONTRACTOR.
- B. Shop Drawings: Submit for approval the following:
1. Copies of material specifications, installation instructions and general recommendations from the building insulation manufacturers, for each type of building insulation product. Include manufacturer's data substantiating that the materials comply with specified requirements.
 2. Complete selection of fire stop manufacturer's recommended systems for each condition and kind of penetration encountered in the Work. Coordinate with equipment manufacturers for required number and kind of penetrations through fire-rated construction. Provide a schedule of penetrations and the fire stop system to be included for each condition and kind of penetration encountered.
 3. Drawings showing extent of the Work and all details required for the Work referencing system components provided as samples to ENGINEER.
 4. Indicate by copy of transmittal form that installer has received copy of manufacturer's installation instructions.

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- C. Test Reports: Submit for approval the following:
 - 1. Copies of test reports verifying compliance with physical properties and environmental features specified herein.
 - 2. Copies of testing agencies background and experience in performing similar tests to those specified.
- D. Certificates: Submit for approval copies of certificates stating that the manufacturer of the foam-type rigid board insulation has used an environmentally safe blowing agent complying with specified requirements.

1.4 PRODUCT DELIVERY STORAGE AND HANDLING

- A. Delivery of Materials:
 - 1. Deliver building insulation products in manufacturer's original, unopened, factory-sealed containers, bearing manufacturer's name and labels, accurately representing container contents as shown on approved Shop Drawings.
 - 2. Damaged materials shall be permanently removed from Site by CONTRACTOR.
 - 3. Do not deliver insulation materials to the Site before the time of installation.
 - 4. Deliver materials in sufficient quantities to allow uninterrupted continuity of the Work.
- B. Storage of Materials:
 - 1. Store materials in original, undamaged containers with manufacturer's labels and seals intact.
 - 2. Store all materials in a dry, enclosed area, off the ground and away from all possible contact with water, ice or snow.
 - 3. Prevent damage to materials during storage, primarily by minimizing the amount of time they are stored on-Site before being incorporated into construction systems. Store only sufficient quantity of building insulation materials on-Site as necessary for the continuous advancement of the Work without causing delay.
- C. Handling of Materials:
 - 1. Handle materials carefully in order to avoid damage and breakage or compressing of boards to less than their specified thickness, or other damage.
 - 2. Do not open containers, or expose materials to detrimental conditions or physical damage. Materials which are so exposed shall be removed from the Site and shall not be incorporated into the Work. If incorporated into the Work they shall be removed at no additional expense to OWNER.
 - 3. Handle materials in a manner which prevents inclusion of foreign materials.
 - 4. Do not open packages or containers until all necessary preparatory Work is complete and installation will begin immediately.

1.5 JOB CONDITIONS

- A. Protection:

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1. Do not allow building insulation materials to become wet or soiled, or covered with ice or snow. Provide continuous protection of materials against damage, wetting and moisture absorption primarily by storing materials under cover and above ground and away from all other construction traffic.
2. Protect foam plastic building insulation from exposure to sunlight.
3. Do not allow building insulations to come into contact with welding operations or other fire or ignition sources.
4. Do not overload the building structure or damage in-place construction system with the weight of stored materials or use of equipment.
5. Protect materials against damage by construction activities.

B. Scheduling:

1. Proceed with building insulation Work only when preceding Work is ready to receive the Work of this Section.
2. Proceed with the building insulation and associated Work only after curbs, blocking, substrate board, nailer strips, vents, drains and other projections through the substrates have been installed, and when the substrate construction and framing of openings is complete.
3. Proceed with and complete the Work only when materials, equipment and tradesmen required for the installation of the building insulation and backfilling operations are at the Site and are ready to follow with the Work in a manner which will not leave the Work vulnerable to damage or deterioration.
4. Do not advance the installation of building insulation materials beyond that which is necessary for proper sequencing of the Work. Do not advance Work when there is no proper and secure protection from damaging weather and construction activities.

C. Environmental Conditions:

1. Complete the installation and concealment of building insulation materials as rapidly as possible in order to avoid damage from adjacent construction operations and adverse weather conditions.
2. Install building insulations only when weather and temperature conditions comply with building insulations manufacturers' written recommendations.
3. Install building insulations only when damaging environmental condition are not forecasted for the time when exposed systems materials components would be exposed to potential damage.
4. Protect Work from precipitation, frost and direct sun.
5. Do not apply pressure sensitive tape when temperature is below 35 F or above 110 F.
6. Record decisions, conditions and agreements to proceed with the Work when weather conditions might be unfavorable. State the reasons for proceeding, along with the names of persons involved, and any changes or revisions, if required, to allow the Work to proceed.

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1.6 SUBSTITUTIONS

- A. Do not change products, system components, or manufacturers after Shop Drawing approval by ENGINEER.
- B. Clearly identify, in a manner which is highlighted to ENGINEER, all proposed substitutions, modifications, variations and unspecified features. Provide complete comparative data with specified products at time of Shop Drawing submission.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Glass Fiber Insulations: Provide the following types:
 - 1. General: Provide insulations formed from glass fibers and resinous binders fabricated into flexible blankets, semi-rigid and rigid sheets complying with ASTM C665, ASTM C553, and ASTM C612.
- B. Miscellaneous Materials and Accessories: Provide the following:
 - 1. Adhesive for Bonding Insulation: The type recommended by the insulation manufacturer, and complying with fire-resistance requirements.
 - 2. Mechanical Anchors: Type and size shown or, if not shown, as recommended by the insulation manufacturer for the type of application shown and condition of substrate.
 - 3. Wire Arch Insulation Supports: Manufacturer's standard 11-gage galvanized spring-steel clip wire arches, for self-anchoring into wood joists; length as needed for joist spacing.
 - 4. Wire Mesh Insulation Support: 2-inch by 24-gage galvanized steel wire hexagonal woven mesh.
 - 5. Safing Impaling Clips: Provide galvanized steel impaling clips complying with requirements of governing code authorities and as recommended by the insulation manufacturer for full system responsibility.
 - 6. Protection Board: Fiberboard sheathing or heavy duty asphaltic panels as recommended by the insulation manufacturer.
 - 7. Adhesive Tapes: Complete selection of insulation manufacturer's recommended taping materials.
 - 8. Bitumen: Asphalt, ASTM D 449.

PART 3 - EXECUTION

3.1 INSPECTION

- A. CONTRACTOR and his installer shall examine the substrate and the conditions under which the building insulation Work is to be performed, and notify ENGINEER in writing of unsatisfactory conditions. Do not proceed with the Work

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until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.

3.2 SUBSTRATE PREPARATION

- A. Verify that surfaces to receive building insulation are clean of all debris, dirt and other contamination before installation begins in any area.

3.3 INSTALLATION

- A. General:
 - 1. Comply with manufacturer's instructions for the particular conditions of installation in each case. If printed instructions are not available or do not apply to Site conditions, submit to ENGINEER specific recommendations from manufacturer for approval before proceeding with the Work.
 - 2. Extend all insulations full thickness over entire surface to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation.
 - 3. Apply the number of layers of insulation specified, each of the required thickness, or the required thickness to provide the thermal value indicated, unless otherwise shown or required, to make up the total thickness.
- B. Batt-Type Insulation:
 - 1. Install batt insulation above ceilings and between studs and rafters as shown. Extend insulation full width, length and height in all areas shown.
 - 2. Fit tightly around obstructions to form a uniform insulated barrier.

3.4 PROTECTION

- A. All components of the Work shall be protected from detrimental weather conditions and until construction operations including, but not limited to, backfilling, framing and sheathing, aluminum siding and concrete unit masonry Work, is completed and acceptable to ENGINEER.
- B. Work which cannot for reasons acceptable to ENGINEER be covered with complete construction system before onset of weather detrimental to the Work, shall be completely covered and protected in such a manner as to deflect precipitation from the installation without damaging adjacent Work.
- C. Protect building insulations from all damage and abuse from all other contractors and installers involved on the Site until final acceptance by OWNER.

3.5 FIELD QUALITY CONTROL

- A. Submit results of all testing to ENGINEER along with recommendations for remedial Work. Do not delay job progress. Coordinate the submission of tests and remedial Work in a manner which does not impact the acceptability of substrate and which permits expeditious completion of finishing Work.

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3.6 ADJUSTMENT AND CLEANING

- A. System components which are dislodged, damaged, expanded, broken, penetrated, or crushed by subsequent installation operations or damaged by detrimental weather shall be immediately replaced with undamaged material in compliance with the Specifications and properly protected as specified.
- B. Only the original installer shall repair or replace deteriorated or defective Work.

3.7 INSPECTION AND ACCEPTANCE

- A. Do not allow construction traffic which is not associated with the installation of building insulation in the area of Work. Protect the area from access by other installers and contractors until the Work of this Section has been incorporated into finished construction systems.
- B. Building insulations which have become wet, damaged, or deteriorated shall be promptly removed from the Site and replaced with materials meeting the requirements of this Specification.

+ + END OF SECTION + +

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SECTION 08100

METAL DOORS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: Provide and install metal doors as indicated on drawings.

1.2 SUBMITTALS

- A. Shop Drawings: Applicable information for each type of door and frame, including:
 - 1. Frame conditions, complete anchorage details, dimensions, glazing, fire ratings, etc.
 - 2. Reference door numbers used on Drawings and in Door Schedule on shop drawings.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Identify each door with number used on Drawings and in Door Schedule.
- B. Store doors upright, in protected dry area and provide for air circulation around each door. Store doors at least 4-inches off of the floor to prevent water damage and wear of door bottom on floor. Do not cover doors in plastic tarps or other storage provisions which promote water damage and rust. If door packaging becomes wet, remove it immediately.

PART 2 - PRODUCTS

2.1 HOLLOW STEEL DOORS

- A. General:
 - 1. Doors and Frames shall conform to SDI 100, except as modified herein.
 - 2. Doors and Frame cutouts, anchors and reinforcement shall conform to SDI 107 and ANSI A115 to receive hardware as specified elsewhere.
- B. Materials:
 - 1. Doors, frames and frame components shall be manufactured from commercial quality carbon steel conforming to ASTM designation A366, with an A60 zinc-iron alloy coating conforming to ASTM designation A653.
- C. Hollow Metal Doors:
 - 1. Flush Panel Doors: 16-gauge, Grade III, Model 1, with honeycomb or polyurethane core.
 - 2. Trim for doors with glass cutouts shall be 18-gauge galvanized steel. If the trim is installed using screws, screws shall be only visible from the non-secure side of the door. Trim shall be flush or shall protrude no more than 1/16" from the door face, and shall be the same on both sides of the door.

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3. All doors shall have flush end closure at top of doors to eliminate moisture penetration. Door tops shall not have holes or openings.
 4. All doors shall include a self-adjusting, concealed door sweep installed in the bottom channel. The bottom seal shall not include springs.
 5. Glass Lites
 - a. Provide door with a narrow lite (N) located along the lock edge of the door with exposed glass dimensions of approximately 4" x 25" where indicated in the door schedule.
 - b. Provide door with a half glass (G) where indicated in the door schedule.
 - c. Glazing:
 - 1) All glass shall be ¼" thick fully tempered safety glass, manufactured by a horizontal process.
 - 2) The tempered glass shall meet, at the time of installation, quality and strength requirements of ASTM C-1036 and ASTM C-1048 and the safety criteria of CPSC 16 CFR 1201 and ANSI Z97.1-1984.
 - 3) Glass shall be appropriate for service in environmental conditions from -10 degrees Fahrenheit air temperature to 130 degrees Fahrenheit air temperature.
 - 4) Glass shall be labeled as follows: Each pane of safety glass shall be identified by a label specifying the labeler, whether the manufacturer or installer, the type and thickness of glass, and the safety glazing standard with which it complies. Label shall be acid etched, sand blasted, ceramic fired or an embossed mark or otherwise written so that it cannot be removed without destroying the glass.
 6. Louvers
 - a. Provide door with a louver and louver type as shown in the door schedule.
 - 1) Louvers are of the insert type designed to be mounted into a cutout in the door and an overlapping frame. Insert type louvers shall be securely fastened to the door to provide security.
 - 2) Frames for louvers, 20-Gauge minimum.
 - 3) Blades for louvers, 24-Gauge minimum.
 - 4) Provide bird or insect screen.
 - 5) Provide prime painted, except when the louver is used in a factory prefinished door, in which case the louver will be finished painted with a color to match the door.
 - 6) Provide zinc coated louvers in exterior doors.
 7. Door swing shall be as shown on Drawings.
- D. Metal Frames:
1. Products of hollow metal door manufacturer, constructed to coordinate with hollow metal door.
 2. Frames for Doors 14-Gauge: Welded type, of cross-section shown.
 3. Finished size, shape, and profile of frame members as shown.
 4. Concealed fasteners or welding are preferred to through-the-face fasteners.
 5. Identification: Stamp opening number, as shown on Drawings and in Door Schedule, on center hinge reinforcement of each frame.
- E. Finish:
1. Doors and frames shall be cleaned and phosphate treated.

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2. Doors and frames shall be galvanized with A60 or G60 zinc coating in accordance with ASTM A525 (Wipe Coat galvanized coating is not acceptable).
3. Doors and frames shall be finished with a baked-on rust-inhibiting primer in accordance with ANSI A250.3. Doors shall be field finished in accordance with Section 09900.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean and prepare rough opening to accept metal frame. Identify and report any deficiencies in rough opening to Engineer prior to installing metal frame.

3.2 INSTALLATION

- A. Metal Frames:
 1. Set all frames in accordance with SDI 105.
 2. Set welded frames in position prior to beginning partition work.
 3. Brace frames until permanent anchors are set.
 4. Set anchors for frames as work progresses.
 5. Install anchors at hinge and strike levels.
 6. Use temporary setting spreaders at all locations.
 7. Use intermediate spreaders to assure proper door clearances and header braces for grouted frames.
 8. Install frames in prepared openings in concrete and masonry walls using countersunk bolts and expansion shields.
- B. Hollow Metal Doors:
 1. Install hollow metal doors in frames using hardware specified in Section 08700 Door Hardware.
 2. Clearances at edge of doors
 - a. Between door and frame at head and jambs: 1/8 inch.
 - b. At meeting edges pairs of doors and at mullions: 1/8 inch.
 - c. At transom panels, without transom bars: 1/8 inch.
 - d. At sills without thresholds: 5/8 inch maximum above finish floor.
 - e. At sills with thresholds: 1/8 inch above threshold.

3.3 ADJUSTMENT AND CLEANING

- A. Remove dirt and excess sealants, mortar or glazing compounds from exposed surfaces.
- B. Adjust moving parts for smooth operation. Use shims if necessary to allow for proper closing.
- C. Fill all dents, holes, etc. with metal filler and sand smooth and flush with adjacent surfaces - Reprime/paint to match finish.

+ + END OF SECTION + +

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SECTION 08300

METAL COILING OVERHEAD DOORS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: Provide and install interior face-mounted, insulated rolling service door assemblies, completely weather sealed and provided with all necessary accessories and components for a complete installation.

1.2 SUBMITTALS

- A. Shop Drawings: Construction and installation details.
- B. Quality Control: Installer's factory authorization.

1.3 QUALITY ASSURANCE

- A. Qualifications: Experienced, factory authorized installer.

PART 2 - PRODUCTS

2.1 METAL COILING OVERHEAD DOOR

- A. Features:
 - 1. Dimensions: Provide Metal Coiling Overhead doors to fit the openings provided in metal building.
 - 2. Door Curtain Slats: Interlocking roll-formed flat profile type slats as follows:
 - a. The front slat shall be fabricated of 18-gauge galvanized steel.
 - b. The back slat shall be 24-gauge galvanized steel.
 - 3. Provide insulated slats.
 - a. The slat cavity shall be filled with CFC-free formed-in-place polyurethane insulation.
 - 4. Endlocks shall be attached to each end of alternate slats to prevent lateral movement.
 - 5. Windload Design: 20 PSF.
 - 6. Weatherseals: Vinyl bottom seal, exterior guide and internal hood seals.
 - 7. Bottom Bar: Two galvanized steel angles, minimum thickness 1/8" bolted back to back to reinforce curtain in the guides.
 - 8. Guides:
 - a. Provide three galvanized structural steel angles with minimum thickness of 3/16".
 - b. Guides shall be weatherstripped with a vinyl weather seal at each jamb, on the exterior curtain side and interior curtain side.
 - 9. Brackets: Galvanized steel to support counterbalance, curtain and hood.
 - 10. Counterbalance:
 - a. Helical torsion spring type.

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- b. Designed for 100,000 cycle life design.
 - c. Housed in a steel tube or pipe barrel, supporting the curtain with deflection limited to 0.03" per foot of span.
 - d. Adjustable by means of an adjusting tension wheel.
11. Hood:
- a. Galvanized steel
 - b. 24 gauge
 - c. Intermediate supports as required.
 - d. Provide with internal hood baffle weatherseal.
12. Color: Powder coating finish in color as selected by ENGINEER from manufacturer's standard colors.
13. Operation: Manual chain hoist (continuous chain, crank operation).
14. Locking: Interior bottom bar slide boltlock and chain keeper locks.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Examine the substrates and conditions under which the Work is to be installed and notify ENGINEER, in writing, of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until any unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.

3.2 INSTALLATION

- A. Strictly comply with manufacturers installation instructions and recommendations. Coordinate installation with adjacent work to ensure proper clearances.

3.3 TESTING AND ADJUSTING

- A. Upon completion of installation including the work by other trades, test and adjust doors to operate easily, free from warp, twist or distortion.
- B. Test the door in presence of ENGINEER to demonstrate proper operation.

3.4 ADJUSTING AND CLEANING

- A. Adjust doors and operators for smooth, easy operation.
- B. Repair any damage to paint or finishes.
- C. Leave door assemblies clean and remove all debris from work area.

+ + END OF SECTION + +

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SECTION 08700
DOOR HARDWARE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: Provide all materials, equipment, and accessories to furnish and install door hardware.

1.2 SUBMITTALS

- A. Shop Drawings:
1. Product Data: Manufacturers' literature for each item of finish hardware required herein, clearly marked.
 2. Finish Hardware Schedule: Furnish complete and detailed schedule, show product items, numbers, and finishes for all hardware for each separate opening.
 3. Special Tools: Provide listing and description of usage.

1.3 QUALITY ASSURANCE

- A. Qualifications of Supplier: A recognized supplier of architectural finish hardware, with warehousing facilities, who has been furnishing hardware in the vicinity of the Project for not less than 5 years, and who is, or who employs, an architectural hardware consultant.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Provide secure storage for all finish hardware until installation is made.
- B. Before delivery, clearly identify and tag each item of hardware with respect to specified description and location of installation.

1.5 SPECIAL TOOLS

- A. Provide two sets of special tools for installation and maintenance of hardware.

PART 2 - PRODUCTS

2.1 DOOR HARDWARE

- A. Provide all door hardware from a single manufacturer in order to have consistency in appearance, function and maintenance procedures.

2.2 KEYING

- A. Coordinate Keying System with OWNER. Provide master-keying and local-keying to match OWNER's keying system.

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- B. Provide removable construction core system for use during construction.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. In accordance with manufacturer's written instructions.
- B. Make Work neat and secure, develop full strength of components, and provide proper function.
- C. Prevent marring, scratching, or otherwise damaging adjacent finishes during hardware installation.
- D. Latchbolts: Install to engage in strikes automatically, whether activated by closers or manually. In no case shall additional manual pressure be required to engage latchbolt in strike.
- E. Wall Mounted Hardware: Install over solid structural backing or solid blocking in hollow walls.
- F. Thresholds:
 - 1. Cope ends neatly to profile of jamb.
 - 2. Set in sealant and seal ends to jambs.
- G. Hardware: Adjust for easy, noise-free operation.
- H. Replace damaged hardware items.

3.2 MOUNTING DIMENSIONS

- A. Standard Door Hardware Locations: As recommended and published by the Door and Hardware Institute, except as noted or detailed otherwise.
- B. Door Silencers: Install 3 inches from top and bottom of jamb and 1 inch above strike at single doors, and 3 inches from edges of doors in head for pairs of doors.

3.3 MANUFACTURER'S SERVICES

- A. Deliver permanent lock cores to the site.
- B. Remove temporary construction cores and insert permanent cores.
- C. Inspect each lock set to ensure permanent cores are operating satisfactorily.
- D. Deliver to OWNER change and control keys for the permanent system.
- E. Return temporary construction cores to the manufacturer.

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3.4 PROTECTION

- A. Cover and protect exposed surfaces of hardware during installation and until Substantial Completion.
- B. Fit, dismantle, and reinstall finish hardware as required for finish painting work.
- C. Protect and prevent staining of hardware during construction in accordance with manufacturer's recommendations.
- D. Remove protective measures and permanent lock cylinders installed prior to final cleaning.

+ + END OF SECTION + +

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GLAZING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: Provide all materials, equipment, and accessories to furnish and install glazing.

1.2 QUALITY ASSURANCE

- A. Warranty for Insulating Glass: Submit copies of written guarantee agreeing to repair or replace glass which fails to perform as specified for a period of ten (10) years.

1.3 SUBMITTALS

- A. Shop Drawings:
1. Manufacturer's published data, or letter of certification, or certified test laboratory report indicating that each material complies with the requirements and is intended generally for the applications shown.
 2. Plan showing location of each type of glass specified and details of glazing system. Include manufacturer's recommendations for glazing.
- B. Certificates: Submit certification that all glazing materials subject to the applicable standards of the Consumer Product Safety Council, Safety Standard for Architectural Glazing Material are in compliance. The certification shall be issued in conformance to procedures stated in the standard.

1.4 PRODUCT DELIVERY STORAGE AND HANDLING

- A. Delivery of Materials: Deliver glass with manufacturer's labels intact. Do not remove labels until glass has been installed. Keep glass free from contamination by materials capable of staining glass. Deliver glazing compounds and sealants in manufacturer's unopened, labeled containers.
- B. Handling of Materials: Protect glass from edge damage at all times during handling, installation and operation of the building.

PART 2 - PRODUCTS

2.1 GLASS

- A. All glass shall be ¼" thick fully tempered safety glass, manufactured by a horizontal process.

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- B. The tempered glass shall meet, at the time of installation, quality and strength requirements of ASTM C-1036 and ASTM C-1048 and the safety criteria of CPSC 16 CFR 1201 and ANSI Z97.1-1984.
- C. Glass shall be appropriate for service in environmental conditions from -10 degrees Fahrenheit air temperature to 130 degrees Fahrenheit air temperature.
- D. Glass shall be labeled as follows: Each pane of safety glass shall be identified by a label specifying the labeler, whether the manufacturer or installer, the type and thickness of glass, and the safety glazing standard with which it complies. Label shall be acid etched, sand blasted, ceramic fired or an embossed mark or otherwise written so that it cannot be removed without destroying the glass.

2.2 GLAZING SEALANTS AND TAPES

- A. General:
 - 1. Colors: Provide black or other natural color wherever no other color is available. Wherever material is not exposed to view, provide manufacturer's standard color which has the best overall performance characteristics for the application shown. Provide manufacturer's standard colors as shown or, if not shown, provide color selected by ENGINEER from manufacturer's standard colors to either blend or contrast with adjoining surfaces.
 - 2. Hardness shown and specified is intended to indicate the general range necessary for overall performance. Consult the manufacturer's technical representative to determine the actual hardness recommended for the conditions of installation and use. Except as shown or specified, provide glazing materials within the following ranges of hardness (Shore A, fully cured, at 75°F):
 - a. 15 to 35 for elastomeric compounds and tapes used with rigid stops and frames for large glass sizes (in excess of 100 united inches). Provide material sufficiently hard to withstand exposure to abrasion and vandalism.
 - b. 25 to 50 for rubber-like curing compounds used with rigid stops and frames for medium and small glass sizes (less than 100 united inches). Provide materials sufficiently hard to withstand impact of moving sash and doors.
 - c. 35 to 60 for molded gaskets used with rigid stops and frames, depending upon strength needed for application or insertion of units.
 - 3. Compatibility: Before purchase of the specified glazing materials, investigate compatibility with the channel surfaces, joint fillers and other materials in the glazing channel. Provide only materials and manufacturer's recommended variation of the specified materials which are known to be fully compatible with the actual installation condition, as shown by manufacturer's published data or certification.

2.3 MISCELLANEOUS GLAZING MATERIALS

- A. Setting Blocks: Neoprene, 70-90 durometer hardness, with proven compatibility with sealants used as recommended by the glass manufacturer.
- B. Spacers: Neoprene, 40-50 durometer hardness, with proven compatibility with sealants used as recommended by the glass manufacturer.

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- C. Compressible Filler Rod: Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, proven to be compatible with sealants used, flexible and resilient, with 5-10 psi compression strength for 25 percent deflection.
- D. Cleaners, Primers and Sealers: Type recommended by sealant, gasket and glass manufacturer.

PART 3 - EXECUTION

3.1 INSPECTION

- A. CONTRACTOR and his installer shall examine the framing and glazing channel surfaces, backing, removable stop design, and the conditions under which the glazing is to be performed, and notify ENGINEER, in writing, of any conditions detrimental to the proper and timely completion of the Work. Do not proceed with the glazing until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.

3.2 PERFORMANCE

- A. Watertight and airtight installation of each piece of glass is required. Each installation must withstand normal temperature changes, wind loading, impact loading (for operating sash and doors) without failure of any kind, including loss or breakage of glass, failure of sealants or gaskets to remain watertight and air-tight, deterioration of glazing materials and other defects in the Work.
- B. Glass manufacturer's recommended glazing channel dimensions are intended to provide for necessary minimum bite on the glass, minimum edge clearance and adequate sealant thicknesses, with reasonable tolerances. CONTRACTOR is responsible for correct glass size for each opening within the established tolerances and necessary dimensions.

3.3 INSTALLATION

- A. General:
 - 1. Comply with combined recommendations of glass, door and frame and sealant manufacturer and other materials used in glazing, except where more stringent requirements are shown or specified, and except where manufacturer's technical representatives direct otherwise.
 - 2. Comply with Flat Glass Marketing Association, Glazing Manual, except as shown and specified otherwise, and except as specifically recommended otherwise by the manufacturers of the glass and glazing materials.
 - 3. Inspect each piece of glass immediately before installation, and eliminate any which have observable edge damage or face imperfections.
 - 4. Unify appearance of each series of lights by setting each piece to match others with their predominant bow in the same direction convex to the exterior. Inspect each piece and set with pattern, draw and bow oriented in the same direction as other pieces.
 - 5. Cut and install tinted insulating glass as recommended in manufacturer's technical bulletin.

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6. Do not attempt to cut, seam, nip or abrade glass on site which is tempered, heat strengthened, or coated.

3.4 PREPARATION FOR GLAZING

1. Clean the glazing channel, or other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to the substrate. Remove lacquer from metal surfaces wherever elastomeric sealants are used.
2. Apply primer or sealer to joint surfaces wherever recommended by sealant and glass manufacturer.

3.5 GLAZING

A. Tape and Sealant Glazing:

1. Cut glazing tape to length and set against permanent stops. Install horizontal strips first, extending over width of opening, before applying vertical strips. Place setting blocks at quarter points. Remove paper backing from tape. Position glass on setting blocks and press against tape for full contact.
2. Place glazing tape on free perimeter of glass. Seal butt joints of tape with joint sealant.
3. Install removable stop, avoiding displacement of tape, and exert pressure on tape for full continuous contact. Calk space above glazing tape to top of glazing stop. Tool expose surfaces of calking compounds to provide a substantial "wash" away from the glass.
4. Clean and trim excess glazing materials from the installation, and eliminate stains and discolorations.
5. Where wedge-shaped gaskets are driven into one side of the channel to pressurize the sealant or gasket on the opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when subjected to dynamic movement. Anchor gasket to stop with matching ribs, or by proven adhesives, including embedment of gasket tail in cured heel bead.

- ##### B. Gasket Glazing: Install glass in gaskets as recommended by the glass and door manufacturer.

3.6 ADJUSTMENT AND CLEANING

- ##### A. Cure glazing sealants and compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability.
- ##### B. The installer shall advise CONTRACTOR of procedures required for the protection of glass and glazing sealants and compounds during the construction period, so that they will be without deterioration or damage, other than normal weathering, at the time of OWNER'S Final Acceptance.
1. Furnish specific instructions on the precautions and provisions required to prevent glass damage resulting from the alkaline wash from concrete surfaces and similar sources of possible damage.

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- C. Protect exterior glass from breakage, immediately upon installation, by attachment of crossed streamers to framing held away from glass. Do not apply markers of any type to surfaces of glass.
- D. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during the construction period, including natural causes, accidents and vandalism.
- E. Maintain glass in a reasonably clean condition during construction, so that it will not be damaged by corrosive action and will not contribute (by wash-off) to the deterioration of glazing materials and other work.
- F. Wash and polish glass on both faces not more than four (4) days prior to OWNER'S Final Acceptance of the Work in each area. Comply with glass manufacturer's recommendations.

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SECTION 09250
GYPSUM WALLBOARD

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: Furnish all materials, labor, equipment and incidentals required to install gypsum wallboard.

1.2 QUALITY ASSURANCE

- A. General: Regardless of the minimum specifications herein, utilize materials and applications recommended by the manufacturer.
- B. Applicator's Qualifications: Use only workers regularly employed in this type of work who can show experience in the application of similar materials and the specific systems specified.

1.3 SUBMITTALS

- A. Shop Drawings:
 - 1. Control joint pattern proposed for gypsum wallboard.
 - 2. Control joint pattern proposed for gypsum soffit.
 - 3. Manufacturer's list of items and materials proposed for use, with descriptive literature for each system used.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Delivery of Materials:
 - 1. Deliver materials to the project site with manufacturer's labels intact and legible.
 - 2. Deliver fire rated materials bearing testing agency label and required fire classification numbers.
- B. Storage and Handling of Materials:
 - 1. Store materials inside under cover, stack flat, off floor.
 - 2. Stack gypsum wallboard so that long lengths are not over short lengths.
 - 3. Avoid overloading floor system.
 - 4. Store adhesives and finishing compounds in dry areas, and protect against freezing at all times.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Temperature:

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1. In areas receiving gypsum wallboard installation, maintain temperature range between 55 and 70 degrees F for 24 hours before, during, and after gypsum wallboard and joint treatment application.
 2. In areas receiving veneer plaster, where outside air temperature is less than 50 degrees F, maintain interior temperature range between 50 degrees F and 80 degrees F for a period of 1 week before, during, and 1 week after application of veneer plaster, base, and joint treatment.
- B. Ventilation:
1. Provide ventilation during and following adhesives and joint treatment applications.
 2. Use temporary air circulators in enclosed areas lacking natural ventilation.
 3. Keep air circulation at a minimum level during veneer plastering to avoid excessive drying.
 4. Under slow drying conditions, allow additional drying time between coats of joint treatment.
 5. Protect installed materials from drafts of ambient air during hot, dry weather.

PART 2 - PRODUCTS

2.1 GYPSUM WALLBOARD

- A. Regular Board: ASTM C36, Type X, 5/8 inch thick with tapered edges.
- B. Mold and Moisture Resistant Board: ASTM C1396, 1/2 inch thick with tapered edges.

2.2 FASTENERS FOR GYPSUM WALLBOARD

- A. Screws: ASTM C1002, self-drilling, self-tapping, bugle head, for use with power-driven tool.
 1. Type S, 1-inch long for gypsum wallboard to sheet metal.
 2. 1¾-inch long for gypsum wallboard to wood framing.
- B. Nails: ASTM C514, F547, F1667
 1. Reference IBC section 2508 for nail sizes in wood framing.

2.3 JOINT TREATMENT

- A. Joint Tape for General Interior Applications: ASTM C475, perforated paper tape.
- B. Joint Compound for General Interior Applications: ASTM C475, all-purpose, ready-mixed compound.

2.4 ANCILLARY MATERIALS

- A. Adhesives: As recommended by gypsum wallboard manufacturer for intended use.

2.5 TRIM ACCESSORIES

- A. Zinc-Coated Metal, ASTM C1047:

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1. Corner Bead: 1-1/4 inch by 1-1/4 inch:
 - a. United States Gypsum; Dur-A-Bead.
 - b. Award Metals; standard corner beads.
 - c. Clark Dietrich: standard corner beads.
 2. Edge Trim:
 - a. United States Gypsum; L-Trim and J-Trim.
 - b. Award Metals; L-Bead and J-Bead.
 - c. Clark Dietrich: L-Trim and J-Trim.
 3. Metal Control Joint:
 - a. United States Gypsum: No. 093.
 - b. Phillips: 093 control joint.
 - c. Clark Dietrich: No. 093.
- B. Vinyl Wall Base, ASTM F1861:
1. Profile: Standard Cove
 2. Gauge: 1/8-inch
 3. Height: 4-inch
 4. Provide factory corners and all inside and outside corners.
 5. Adhesive: As recommended by manufacturer of wall base.
 6. Manufacturer:
 - a. Roppe Corporation
 - b. Johnsonite
 - c. Or approved equal

2.6 LIGHT-GAUGE METAL FRAMING ACCESSORIES

- A. Z Furring: Galvanized 20-gauge, 1-1/2 inch depth.

2.7 NONSTRUCTURAL FRAMING MEMBERS

- A. ASTM C645, 20-gauge galvanized C-studs with 1-5/8 inch flanges, and ancillary items for interior wall framing, shaft walls, and ceiling framing.
- B. Dry wall studs, tracks, shaft wall studs, Z-furring channels, and accessories.
1. Cemco.
 2. Clark Dietrich
 3. United Metal Products.

2.8 SPRAY TEXTURE

- A. Interior Walls and Ceilings:
1. United States Gypsum; Texture I sand finish.
 2. Gold Bond; Wall Spray texture finish.

2.9 FIBERGLASS-MAT FACED GYPSUM BACKING BOARD

- A. Fiberglass-Mat Faced Gypsum Backing Board: ASTM C1178:

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- B. Water-resistant treated core with glass mat moisture protectant coating and embedded glass mats, both sides, and face side surfaced with heat-cured copolymer water- and vapor-retarding coating.
- C. Thickness: ½-inch
- D. Fasteners:
 - 1. Screws: 1-1/4 inch, type S, Hi-Lo for wood or 22- to 25-gauge steel framing. 1 ¼-inch, Type S-12, for 14- to 20-gauge steel framing. 1-15/16 inch, type S-12, Pilot Point for steel joists.
 - 2. Nails: 1-1/4 inch galvanized roofing nail with 7/16-inch diameter head for wood framing.
- E. Joint Reinforcement: 2 inches wide, glass fiber, open weave tape, as recommended by manufacturer.
- F. Joint Compound: Chemically curing, polyindurate type material, as recommended by manufacturer.
- G. Manufacturer and Product: G-P Gypsum Corp., DENS-SHIELD TILE BACKER.

2.10 ACCESS PANELS

- A. Architectural grade prime coated flush steel panel and frame with concealed hinges and screwdriver-operated locking device.
- B. Provide frame type and anchors to suit opening conditions.
- C. Sizes Not Indicated on Drawings:
 - 1. Smallest standard size that will permit ready access and removal of working parts required for maintenance.
 - 2. Not less than 8 inches square.
- D. Manufacturers:
 - 1. Milcor.
 - 2. Acudor.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Inspect surfaces to receive gypsum wallboard and related materials before beginning work and report to ENGINEER any defects in such work which will adversely affect the quality of work specified herein.

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3.2 PREPARATION

- A. General: Provide, install, and maintain necessary scaffolding, staging, trestles, planking, and temporary heating, lighting, and ventilation as necessary for the duration of the gypsum wallboard work.
- B. Protection: Protect work of other trades.
- C. Coordination:
 - 1. Coordinate work with that of other trades. Check specifications and drawings of other trades to determine parts of work requiring coordination.
 - 2. Cut and repair gypsum wallboard systems for installation of omitted work.
- D. Surface Preparation: Repair defective surfaces prior to starting work. Prepare as specified for application of specific materials.

3.3 ERECTION OF LIGHT-GAUGE METAL FRAMING

- A. Layout: Align partitions as shown on the Drawings.
- B. Tracks:
 - 1. Attach metal runner tracks to floor slabs with suitable fasteners located 2 inches from each end and spaced not more than 24 inches OC.
 - 2. Where partitions terminate at suspended or framed ceilings, attach top tracks to suspended ceiling with toggle or molly bolts spaced 24 inches OC.
 - 3. Where partitions terminate at underside of concrete or metal decking, attach deflection channels to substrate with suitable fasteners located 2 inches from each end and spaced not more than 24 inches OC. Locate partition top racks within deflection channels with a minimum top clearance of 1 inch. Do not attach track to channel.
- C. Studs:
 - 1. ASTM C754.
 - 2. Following manufacturer's printed instructions, position studs vertically, engaging floor and ceiling tracks and spaced as noted on Drawings.
 - 3. Splice: When necessary, use 8-inch nested lap and one positive attachment per stud flange.
 - 4. Place indirect contact with doorframe jambs, abutting partitions, and partition corners. Provide for anchorage of doorframes to studs.
 - 5. Anchor all studs for shelf-walls and those adjacent to window and doorframes, partition intersections, and corners to ceiling and floor runner flanges. Securely anchor studs to jamb and head anchor clips of door or borrowed-light frames by bolt or screw attachment.
 - 6. Over metal door and borrowed-light frames, place horizontally a cut-to-length section of runner, with a web-flanged bend at each end, and secure with one positive attachment per flange. Position a cut-to-length stud (extending to ceiling runner) at vertical panel joints over doorframe header.
 - 7. Locate studs at abutting construction, partition intersections, and partition corners.
 - 8. Spacing: At 16 inches OC, unless otherwise required by manufacturer.
 - 9. At Doorframes and Cased Openings:

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- a. Full height double studs, No. 20 gauge minimum, secured to jamb anchors by bolts, screws, or welds.
 - b. Header Track: Secure to frame head anchors and double studs.
 - c. Provide double channel stiffeners through studs above frame and extend at least one stud space beyond each jamb.
10. Windows: Similar framing to door openings with stiffeners both above and below.
11. Wall Mounting Accessories: Provide channels, horizontal studding, No. 16 gauge sheet 8 inches by 2 inches greater than stud spacing, or other members within walls as required to provide secure and adequate support.

D. Furring:

- 1. Space furring channels the same as studs or as shown on the Drawings.
- 2. Around columns and beams construct furring as shown using metal studs and furring channels securely tied together and anchored in-place.
- 3. Attach resilient furring channels to wood framing with screws.

3.4 APPLICATION OF GYPSUM WALLBOARD

A. Inspection and Preparation:

- 1. Check framing for accurate spacing and alignment.
- 2. Verify that spacing of installed framing does not exceed maximum allowable for thickness of gypsum wallboard to be used.
- 3. Verify that frames are set for thickness of gypsum wallboard to be used.
- 4. Do not proceed with installation of gypsum wallboard until deficiencies are corrected and surfaces to receive gypsum wallboard are acceptable.
- 5. Protrusions from framing, twisted framing members, or unaligned members must be repaired before installation of gypsum wallboard is started.

B. General:

- 1. Meet requirements of ASTM C840 and GA-216.
- 2. Joints: Use gypsum wallboard of maximum lengths to minimize end joints. Stagger end joints when they occur. Locate end joints as far as possible from center of wall or ceiling. Abut gypsum wallboard without forcing. Neatly fit ends and edges of gypsum wallboard. Do not place butt ends against tapered edges.
- 3. Support ends and edges of gypsum wallboard panels on framing or furring members except for face layer of double layer and where ends are back blocked and floated.
- 4. Use metal edge trim where gypsum wallboard abuts another material and where shown or noted on Drawings.
- 5. Use gypsum fiberglass-mat faced gypsum backing board in toilet and shower walls, behind ceramic tile, and elsewhere as indicated on Drawings.
- 6. Follow manufacturer's recommendation of good practice.

C. Over Framing:

- 1. Apply gypsum wallboard first to ceiling and then to walls for single layer horizontal application.
- 2. Use vertical application for fire-rated walls.
- 3. Fasten gypsum wallboard securely to framing using double nailing, screw, or adhesive method.

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3.5 JOINT SYSTEM

- A. Interior Gypsum Wallboard: Conform to ASTM C840.
- B. Required: On exposed gypsum wallboard, under ceramic tile and wall covering, and behind casework.
- C. Prefill: Fill V-grooves formed by abutting rounded edges of gypsum wallboard with prefill joint compound. Fill V-joint flush and remove excess compound beyond groove. Leave clear depression to receive tape. Permit prefill joint compound to harden prior to application of tape.
- D. Taping and Finishing Joints:
 - 1. Taping or Embedding Coat: Apply compound in thin, uniform layer to joints and angles to be reinforced. Apply reinforcing tape immediately. Center tape over joint and seat tape into compound. Leave approximately 1/64-inch to 1/32-inch compound under tape to provide bond. Apply skim coat immediately following tape embedment but not to function as fill or second coat. Fold tape and embed in angles to provide true angle. Dry embedding coat prior to application of fill coat.
 - 2. Filling Coat: Apply joint compound over embedding coat. Fill taper flush with surface. Apply fill coat to cover tape. Feather out fill coat beyond tape and previous joint compound line. For joints with no taper, feather out at least 4 inches on either side of tape. Do not apply fill coat on interior angles. Allow fill coat to dry prior to application of finish coat.
 - 3. Finishing coat: Spread joint compound evenly over and beyond fill coat on joints. Feather to smooth uniform finish. Apply finish coat to tapes angles to cover tape and taping compound. Sand final application of compound to provide surface ready for decoration.
 - 4. Filling and Finishing Depressions:
 - a. Apply joint compound as first coat to fastener depressions. Apply at least two additional coats of compound after first coat is dry. Leave filled and finished depressions level with plane of surface.
- E. Finishing Beads and Trim:
 - 1. First Fill Coat: Apply joint compound to bead and trim. Feather out from ground to plane of the surface. Dry compound prior to application of second fill coat.
 - 2. Second Fill Coat: Apply joint compound in same manner as first fill coat. Extend beyond first coat onto face of gypsum wallboard. Dry compound prior to application of finish coat.
 - 3. Finish Coat: Apply joint compound to bead and trim. Extend beyond second fill coat. Feather finish coat from ground to plane of surface. Sand finish coat to provide flat surface ready for decoration.

3.6 FINAL FINISHES

- A. Levels of Finish: Conform to GA-214.
- B. Level 1:
 - 1. Taping or embedding coat only.

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2. Use in concealed areas, and where indicated, unless a higher level is required for fire-resistant or sound-rated assemblies.
- C. Level 2:
1. Taping, filling, and finishing coats.
 2. Use on fiberglass-mat faced gypsum backing board.
- D. Level 3:
1. Taping, filling, and finishing coats.
 2. Use on surfaces indicated to have spray texture or ceramic tile.
- E. Level 4:
1. Taping, filling, and finishing coats plus two separate coats applied over joints, angles, fastener heads, and trim accessories.
 2. Sand between coats and after last coat.
 3. Use on surfaces indicated to receive wall coverings.
- F. Level 5:
1. Same as Level 4, plus a thin, smooth, uniform skim coat of joint compound, or product specially formulated for this purpose, over entire surface.
 2. Produce surfaces free of tool marks and ridges, ready for decoration.
 3. Use on surfaces not indicated otherwise, those indicated to receive gloss, semi-gloss, and nontextured flat paints, and where indicated.

3.7 SPRAY TEXTURE

- A. Application:
1. Apply on gypsum wallboard and ceiling surfaces, except behind ceramic tile and wall covering, following manufacturer's printed direction for a medium texture.
 2. Before texture application, finish gypsum wallboard as specified for Level 3.
 3. When surfaces are prepared and dry, apply sealer and allow to dry. Mix texture finish material as directed by manufacturer.
 4. Use spray equipment of a size and type to assure acceptable results.
 5. Apply by spray only at a coverage rate not to exceed 8 square feet per pound and in accordance with directions printed on container. Apply material to blend uniformly and cover fully without starved spots or other evidence of thin application. Provide uniform texture without application patterns.

3.8 ADJUST AND CLEAN

- A. Clean: Remove droppings or texture overspray from walls, windows, and floor, leaving room clean for following trades.

3.9 INSTALLATION OF FIBERGLASS-MAT FACED GYPSUM BACKING BOARD

- A. Follow manufacturer's printed instructions for erection, cutting, attachments, and joint treatment.
- B. Verify that framing is installed at maximum 16 inches OC, and that necessary blocking to support all fixtures and accessories has been installed. Where backing plates or straps

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are used, space out from framing to ensure a smooth finish application. Do not proceed until defects are corrected.

- C. Precut boards to required sized and make necessary cutouts. Fasten with appropriate fasteners. Space fasteners 6 inches OC maximum, or as directed by manufacturer. Fit ends closely but not forced together. Maintain ¼-inch spacing between edge of board and fixture. Apply 2-inch glass fiber tape over joints and corners embedded with tile setting mortar.

3.10 ACCESS PANELS

- A. Install in accordance with manufacturer's printed instructions.

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SECTION 09510
SUSPENDED CEILING SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: Furnish all materials, labor, equipment and incidentals required to install a lay in panel suspended ceiling system.

1.2 SUBMITTALS

- A. Shop Drawings:
 - 1. Detailed layout of grid indicating hanger spacing, fastening and splicing details, change in level details, and access location.
 - 2. Manufacturer's recommendation for installation of system.
- B. Samples:
 - 1. One 12-inch square of each panel material to illustrate range of appearance.
 - 2. One full-size Sample of each suspension system member and molding.
 - 3. Mark with the name of the manufacturer and specific design and technical data.

1.3 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials with manufacturer's labels indicating brand name, pattern, size, thickness and fire rating.
- B. Store materials in original protective packaging to prevent soiling, physical damage, or wetting.

1.4 ENVIRONMENTAL REQUIREMENTS

- A. Maintain humidity of 65 to 75-percent in area where materials are to be installed for 25 hours before, during, and 25 hours after installation.
- B. Maintain a uniform temperature of 55 to 70 degrees F prior to and during installation of materials.

1.5 EXTRA MATERIALS

- A. Additional ceiling panel units from the same production run as installed equal to 1 percent of total area.

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PART 2 - PRODUCTS

2.1 SUSPENSION SYSTEMS

- A. All suspension system components, materials, and accessories shall be the product of a single manufacturer.
- B. ASTM C635, Intermediate Duty:
 - 1. Main and Cross Members:
 - a. Single web design, cold-rolled steel, minimum thickness of 0.020 inch, electrozinc-coated and factory-painted low-sheen satin white finish.
 - b. Exposed flange width of 15/16 inch.
 - 2. Exposed Aluminum Tee Grid:
 - a. Nonrated, light-duty, spaced to fit lay-in panels.
 - b. Color: White
 - c. Exposed Flange Width: 15/16 inch.
 - d. Edges: Single molding to match grid.
 - e. Manufacturers:
 - 1) Chicago metallic Corp.; All aluminum 830 system.
 - 2) Armstrong; AL Prelude Plus system.
 - 3) Or Equal.
 - 3. Edge Molding:
 - a. Minimum 0.020-inch steel, channel- or angle-shaped.
 - b. Minimum flange width of 15/16 inch.
 - c. Finish to match main members.
 - 4. Hanger Wire: ASTM A641, minimum 12-gauge, galvanized, soft-annealed, mild steel wire.
 - 5. Wire Ties: ASTM A641, 18-gauge, galvanized, annealed steel wire.
 - 6. Furnish manufacturer's hold down clips and accessories required for a complete system in a seismic zone.

2.2 LAY-IN PANELS

- A. Flat Lay-In Panels:
 - 1. Material: Ceramic and Mineral Fiber Composite, Class A.
 - 2. Reference Specification: ASTM E1264, Type XX, Pattern CE.
 - 3. Pattern: Random fine fissured.
 - 4. Noise Reduction Coefficient (NRC): 0.5 to 0.65.
 - 5. Ceiling Attenuation Class (CAC): 38 minimum.
 - 6. Light Reflectance: LR 0.82.
 - 7. Nominal: 24-inches by 48-inches by 5/8 inch thick.
 - 8. Edges: Square.
 - 9. Finish and Color: Scrubbable factory-applied white vinyl plastic paint.
 - 10. Manufacturer and Product:
 - a. Armstrong; Item 607 Fine Fissured Ceramaguard.
 - b. Or Equal.

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PART 3 - EXECUTION

3.1 SEQUENCING

- A. Lay out grid, centered on the room or space.
- B. Coordinate with mechanical and electrical equipment in framing and cutting material around ceiling penetrations.
- C. Install suspension systems after mechanical work above is complete.
- D. Install lay-in panels.

3.2 INSTALLATION OF SUSPENDED GRID SYSTEM

- A. Hang level and in straight alignment directly from structure in accordance with ASTM C636 and the manufacturer's current printed instructions for type of installation required for this project.
- B. Hanger Wires:
 - 1. Space maximum 4-feet on center each direction and securely attach to structure above.
 - 2. Install additional hangers at ends of each suspension member and at light fixtures, 6 inches from vertical surfaces.
 - 3. Do not splay wires more than 5 inches in a 4-foot vertical drop.
 - 4. Provide four-way wire splays at 45 degrees from main runner to support structure for every 144 square feet of ceiling area.
 - 5. Wrap wire minimum four times horizontally, turning ends upward.
 - 6. Where hanger wires cannot be hung vertically from structure above because of ducts, pipes, cable trays, or other interferences, provide trapezes of steel channels (minimum 2-inch deep, 16-gauge cold-rolled carrying channels) hung on steel rods or 8-gauge wire from structural members above. Hang ceiling wires from these trapezes or similar members supporting ducts or pipes. Do not hang directly from ducts or pipes.
 - 7. Follow suspension system manufacturer's instructions for modified installation for seismic resistance.
- C. Edge Molding:
 - 1. Install at intersection of suspended ceiling and vertical surfaces.
 - 2. Miter corners where moldings intersect or install corner caps.
 - 3. Attach to vertical surface with mechanical fasteners.
- D. Provide additional channels, hangers, and trapezes as required to support edges of ceiling around and under mechanical and electrical work.

3.3 INSTALLATION OF LAY-IN PANELS

- A. Install with pattern running in one direction upon completion of suspended grid system and other concealed work.

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- B. Place material to bear all around on suspension members.

3.4 CLEANING

- A. Clean soiled or discolored unit surfaces after installation.
- B. Touch up scratches, abrasions, voids, and other defects in painted surfaces.

++ END OF SECTION ++

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SECTION 09650
RESILIENT FLOORING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: Furnish all materials, labor, equipment and incidentals required to install resilient flooring.

1.2 QUALITY ASSURANCE

- A. Provide manufacturer's certificate of compliance.

1.3 SUBMITTALS

- A. Samples:
 - 1. Two 12-inch squares of sheet material for each type and color or pattern of resilient flooring.
 - 2. Two 2-1/2 inch wide strips of base material and stair coverings proposed for use.
 - 3. Two 6-inch long strips of trim materials.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Store materials in original containers at not less than 70 degrees F ambient temperature for not less than 24 hours immediately before installation.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Maintain ambient temperature in space to receive flooring between 70 and 90 degrees F for not less than 24 hours before and 48 hours after installation.
- B. Maintain minimum temperature of 55 degrees F after flooring is installed, except as specified above.

1.6 EXTRA MATERIALS

- A. Furnish additional floor covering materials from same production run as installed material at the rate of 45 square feet for each 1,000 square feet.

1.7 SEQUENCING AND SCHEDULING

- A. Do not install floor coverings until concrete slab has cured for 60 days or until primer material in test patches cannot be scraped or peeled from the slab after drying for 24 hours.

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PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Flooring products of the following manufacturers, meeting these specifications, may be used on this project:
1. Afco Rubber Corp.
 2. Armstrong World Industries, Inc.
 3. Azrock Floor Products.
 4. Burke Flooring Products.
 5. Congoleum Corp.
 6. Endura, Division of the Biltrite Corp.
 7. Flintkote Co.
 8. Johnsonite, Division of Duramax, Inc.
 9. Kentile Floors, Inc.
 10. Marley Flexco.
 11. Mercer Plastics Co., Inc.
 12. Nannington Commercial.
 13. National Floor Products Co.
 14. Nora Flooring, Division of Robus Products Corp.
 15. RCA Rubber Co.
 16. R.C. Musson Rubber Co.
 17. Roppe.
 18. U.S. National Rubber Co., Inc.
 19. Vinyl Plastics, Inc.

2.2 FLOOR COVERING MATERIALS

- A. General: Furnish materials uniform in thickness and size with edges cut accurately, and square; uniform color with variations in variegated patterns kept to a minimum.
- B. Sheet Vinyl (SVIN):
1. ASTM F1303, Type II, Grade 1.
 2. Overall Nominal Thickness: 0.082-inch.
 3. Manufacturer and Product:
 - a. Armstrong; Connection Corlon 85713 Sandstone.

2.3 BASE MATERIALS

- A. General: ASTM F1861, uniform in 0.125-inch thickness and in as long of lengths as practicable to suit conditions of installation.
1. Factory premolded internal and external corners to match base when available.
 2. Vinyl Base: Type TV, Group 2.
 3. Style: B, cove.
 4. 4-inches high.
 5. Manufacturer and Product:
 - a. Armstrong; 03 Bisqueware.

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2.4 ACCESSORIES

- A. Trim: Furnish in lengths as long as practical to suit conditions of installation.
- B. Adhesive: Type and brands of adhesive as recommended by manufacturer of floor covering material for conditions of installation.
- C. Primer and Crack Filler: Type and brand recommended by floor covering manufacturer.
- D. Floor Filler: Asphalt mastic as manufactured by:
 - 1. Armstrong, Lancaster, PA.
 - 2. National Floor Products., Florence, AL.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrate for excessive moisture content and unevenness preventing execution and quality of resilient flooring as specified.
- B. Correct defects before installation of resilient flooring.

3.2 PREPARATION

- A. Remove dirt, oil, grease, and other foreign matter from surfaces to receive floor covering materials.
- B. Fill cracks less than 1/16-inch wide and depression less than 1/8-inch deep with floor filler.
- C. Prime surfaces, other than wood, if recommended by floor covering manufacturer.

3.3 APPLICATION OF ADHESIVES

- A. Mix and apply adhesives in accordance with manufacturer's instructions.
- B. Provide safety precautions during mixing and application as recommended by adhesive manufacturer.
- C. Apply uniformly over surfaces:
 - 1. Cover only amount of area that can be covered by flooring material within recommended working time of adhesive.
 - 2. Remove any adhesive that dries or films over.
 - 3. Do not soil walls, bases, or adjacent areas with adhesives.
 - 4. promptly remove any spillage.
- D. Apply adhesives with notched trowel or other suitable tool.

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3.4 INSTALLATION OF SHEET MATERIALS

- A. Cutting and Fitting:
 - 1. Cut sheet material in lengths and sizes required for minimum number of seams and for pattern match between adjacent abutting edges. Double cut if required.
 - 2. Lay cut sheet flat and allow to acclimate to room temperature prior to installation.
- B. Installation:
 - 1. Apply adhesive to back of sheets and roll over floor surface.
 - 2. Work out wrinkles and air pockets.
 - 3. Roll material in two directions, starting at center of sheet.
 - 4. Butt edges of adjoining sheets.
 - 5. Neatly and tightly seals joints with adhesive.
 - 6. Weld seams.

3.5 INSTALLATION OF BASE

- A. General: Remove defects in wall and floor that would prevent level and true installation of base material.
 - 1. Install base around perimeter of room or space, where shown, and at toe spaces of casework and cabinets.
 - 2. Unroll base material and cut into accurate lengths as desired or as required for minimum number of joints.
 - 3. Match edges at seams or double cut adjoining lengths to give continuous appearance.
 - 4. Install with tight butt joints with no joint widths greater than 1/64-inch.
- B. Top-Set Base:
 - 1. Apply adhesive and firmly adhere to wall surface.
 - 2. Press down so bottom cove edge follows floor profile.
 - 3. Ensure top and bottom edges of base are in firm contact with walls and floors.
 - 4. Form internal and external corners by using premolded corners. Other methods, acceptable to ENGINEER, may be used if premolded corners are not available.
 - 5. Scribe base accurately to abutting materials.

3.6 INSTALLATION OF TRIM MATERIALS

- A. Apply adhesives and bond securely to substrates in straight true lines. Meet visible and related features of building construction with a maximum deviation of 1/8-inch in 10 feet.

3.7 CLEANING AND PROTECTION

- A. upon completion of the installation of floor covering and adjacent work, and after materials have set, clean surfaces with a neutral cleaner as recommended by manufacturer for type of floor covering material installed.
- B. Repair adjacent surfaces damaged by flooring installation.
- C. Wax Finishing:

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1. Provide wax, cleaner, or other finishing material as recommended by floor covering manufacturer for the particular type of flooring material.
 2. Apply one coat of nonslip wax or other finish as recommended by floor covering manufacturer, and buff to a sheen.
 3. Do not wax radial rubber tile.
- D. Protect completed work from traffic and damage until Substantial Completion by covering with plastic sheet, kraft paper, or plywood panels.

+ + END OF SECTION + +

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SECTION 09651
RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: Furnish all materials, labor, equipment and incidentals required to install resilient tile flooring.

1.2 QUALITY ASSURANCE

- A. Provide manufacturer's certificate of compliance.

1.3 SUBMITTALS

- A. Samples:
 - 1. Two 12-inch squares of sheet material for each type and color or pattern of resilient tile flooring.
 - 2. Two 2-1/2 inch wide strips of base material and stair coverings proposed for use.
 - 3. Two 6-inch long strips of trim materials.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Store materials in original containers at not less than 70 degrees F ambient temperature for not less than 24 hours immediately before installation.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Maintain ambient temperature in space to receive flooring between 70 and 90 degrees F for not less than 24 hours before and 48 hours after installation.
- B. Maintain minimum temperature of 55 degrees F after flooring is installed, except as specified above.

1.6 EXTRA MATERIALS

- A. Furnish additional floor covering materials from same production run as installed material at the rate of 45 square feet for each 1,000 square feet.

1.7 SEQUENCING AND SCHEDULING

- A. Do not install floor coverings until concrete slab has cured for 60 days or until primer material in test patches cannot be scraped or peeled from the slab after drying for 24 hours.

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PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Flooring products of the following manufacturers, meeting these specifications, may be used on this project:
 - 1. Amtico Flooring Division, American Biltrite, Inc.
 - 2. Armstrong World Industries, Inc.
 - 3. Azrock Floor Products.
 - 4. Burke Flooring Products.
 - 5. Congoleum Corp.
 - 6. Johnsonite, Division of Duramax, Inc.
 - 7. Kentile Floors, Inc.
 - 8. Mannington Commercial
 - 9. Mercer Plastics Co., Inc.
 - 10. National Floor Products Co.
 - 11. R.C. Musson Rubber Co.
 - 12. Roppe.
 - 13. Turtle Plastic.
 - 14. Vinyl Plastics, Inc.

2.2 FLOOR COVERING MATERIALS

- A. General: Furnish materials uniform in thickness and size with edges cut accurately, and square; uniform color with variations in variegated patterns kept to a minimum.
- B. Vinyl Tile (VINT):
 - 1. ASTM F1066, Composition 1, Class 1, solid color tile.
 - 2. Size: 12-inch by 12-inch by 1/8-inch thick.

2.3 BASE MATERIALS

- A. General: Federal Specifications SS-W-40, uniform in 0.125-inch thickness and in as long of lengths as practicable to suit conditions of installation.
 - 1. Factory premolded internal and external corners to match base when available.
 - 2. Rubber Base: Type I.
 - 3. Style: Coved.
 - 4. 4-inches high.

2.4 ACCESSORIES

- A. Trim and Reducers:
 - 1. Standard rubber or vinyl floor reducer in thickness to suit abutting floor covering by 1-inch wide.
 - 2. Taper or beveled edge strip.
 - 3. Furnish in lengths as long as practical to suit conditions of installation.
- B. Adhesive: Type and brands of adhesive as recommended by manufacturer of floor covering material for conditions of installation.

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- C. Primer and Crack Filler: Type and brand recommended by floor covering manufacturer.
- D. Wax: Furnish wax, cleaner, or other finishing material as recommended by floor covering manufacturer for the particular type of flooring material.
- E. Floor Filler: Non-asphalt, cementitious floor leveling compound as recommended by the flooring manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrate for excessive moisture content and unevenness preventing execution and quality of resilient tile flooring as specified.
- B. Correct defects before installation of resilient tile flooring.

3.2 PREPARATION

- A. Remove dirt, oil, grease, and other foreign matter from surfaces to receive floor covering materials.
- B. Fill cracks less than 1/16-inch wide and depression less than 1/8-inch deep with floor filler.
- C. Prime sanded wood with one brush coat of primer.
- D. Prime surfaces, other than wood, if recommended by floor covering manufacturer.

3.3 INSTALLATION OF TILE MATERIALS

- A. Mix and apply adhesives in accordance with manufacturer's recommendations.
- B. Lay tile to center of room or space. Work toward perimeter.
- C. Do not lay tile less than half the width of a field tile except where accepted by the ENGINEER for irregularly shaped rooms or spaces. Cut border tile neatly and accurately to fit within 1/64-inch of abutting surface.
- D. Fit flooring material neatly and tightly into breaks and recesses, bases, around pipes and penetrations, under saddles or thresholds, and around permanent cabinets and equipment.
- E. Lay tile parallel to room axis in straight courses with cross joints parallel. Lay tile with grain or pattern running in direction to match existing.

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3.4 INSTALLATION OF BASE

- A. General: Remove defects in wall and floor that would prevent level and true installation of base material.
 - 1. Install base around perimeter of room or space, where shown, and at toe spaces of casework and cabinets.
 - 2. Unroll base material and cut into accurate lengths as desired or as required for minimum number of joints.
 - 3. Match edges at seams or double cut adjoining lengths to give continuous appearance.
 - 4. Install with tight butt joints with no join widths greater than 1/64-inch.
- B. Top-Set Base:
 - 1. Apply adhesive and firmly adhere to wall surface.
 - 2. Press down so bottom cove edge follows floor profile.
 - 3. Ensure top and bottom edges of base are in form contact with walls and floors.
 - 4. Form internal and external corners by using premolded corners. Other methods, acceptable to ENGINEER, may be used if premolded corners are not available.
 - 5. Scribe base accurately to abutting materials.

3.5 INSTALLATION OF TRIM MATERIALS

- A. Provide where floor covering terminates exposing edge of covering.
- B. Center reducer under door, where floor covering terminates at door opening. Fit end edges to door frames and abutting surfaces and other edges to adjoining materials.
- C. Apply adhesives and bond securely to substrates in straight true lines. Meet visible and related features of building construction with a maximum deviation of 1/8-inch in 10 feet.

3.6 CLEANING AND PROTECTION

- A. Upon completion of the installation of floor covering and adjacent work, and after materials have set, clean surfaces with a neutral cleaner as recommended by manufacturer for type of floor covering material installed.
- B. Repair adjacent surfaces damaged by flooring installation.
- C. Wax Finishing:
 - 1. Apply one coat of nonslip wax or other finish as recommended by floor covering manufacturer, and buff to a sheen.
- D. Protect completed work from traffic and damage until Substantial Completion by covering with plastic sheet, Kraft paper, or plywood panels.

+ + END OF SECTION + +

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SECTION 09900

PAINTING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: Provide and install coatings on all exposed surfaces as indicated herein, in other Specification Sections, and on the Drawings.

1.2 QUALITY ASSURANCE

- A. Experience: Both Coatings Manufacturer and Coatings Installer shall have a minimum 5 years' experience in production and application, respectively, of specified products. Coatings Installer shall be approved and endorsed, in writing, by Coatings Manufacturer.
- B. Regulations: Meet federal, state, and local requirements which apply to the work, including, but not limited to those regulations limiting the emission of volatile organic compounds.
- C. Coatings Manufacturer Recommendations: Coatings Installer shall follow all recommendations of the Coatings Manufacturer regarding storage, handling, surface preparation, application of coatings, recoat times, environmental conditions during storage, preparation and application of coatings, and all other Coatings Manufacturer recommendations.
- D. Warranty: Both Coatings Manufacturer and Coatings Installer shall provide a 1-year complete replacement warranty for all coatings. Manufacturer shall provide 5-year warranty for long-term performance of coatings in addition to 1-year warranty.

1.3 SUBMITTALS

- A. Shop Drawings: Coatings Manufacturer shall submit for approval the following:
 - 1. Copies of Manufacturer's technical information and application instructions for each material proposed for use. Specify exactly which product is being proposed for each coating type (as specified below). This may be accomplished through a reference table along with information on the various products, or by a separate, tabbed section with information on products being submitted for each system in a separate tab of a binder. Submittal of general Manufacturer's literature without detailing which product is proposed for each paint system will be unacceptable.
 - 2. Copies of Manufacturer's complete color charts for each coating system.
 - 3. Letter from the Coatings Manufacturer approving and endorsing Coatings Installer.
 - 4. Furnish copies of the final, approved submittal to the Coatings Installer so that it is clear which product is to be used for which each system.
- B. Reference Samples:
 - 1. Provide reference samples of paint colors and textures as required by the ENGINEER. Reference samples will show the color and texture of the final paint to be applied and

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shall be approved by the ENGINEER prior to painting. Reference samples should be applied to similar substrates to the final surfaces to be painted. If ENGINEER chooses to forego reference samples, CONTRACTOR must receive the allowance to forego reference samples before painting begins or all painted surfaces will be re-painted at the ENGINEER's discretion and at no additional cost to the OWNER.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Protection: Protect all pre-coated items from coating damage during shipping.
- B. Store products in accordance with Manufacturer's directions.
- C. Store products in a neat, orderly fashion. Protect products from damage. Protect storage area from damage from stored products.

PART 2 - PRODUCTS

2.1 PRODUCT AND MANUFACTURER:

- A. Provide coating types as listed in the following table. The systems referenced in the table are those provided by Tnemec. Sherwin-Williams, or Equal are also acceptable manufacturers. If manufacturers other than Tnemec are desired, the CONTRACTOR shall submit equivalent paint systems.

COATING TYPE	DESCRIPTION	Sherwin Williams	TNEMEC SERIES
Clear Polyamine Epoxy	Clear Polyamine Epoxy, high solids, moisture resistant, designed as a one-coat wood sealer.	GP3477	Series 201, Epoxoprime
Acrylic Filler	Waterborne Cementitious Acrylic designed for application on porous surfaces such as rough-faced concrete masonry units	CementPlex 875	Series 130, Envirofill
Acrylic Latex	Single component, finish as required	ProMar 200	N/A
Industrial Acrylic	Single component, high density acrylic finish for interior, exterior surfaces	Shercryn HPA	Series 1029
Latex Primer/Sealer	Waterborne vinyl acrylic primer/sealer for interior gypsum wallboard/plaster. Capable of providing uniform seal and suitable for use with specified finish coats.	ProMar 200 Primer	Series 115
Polyamine Epoxy Sealer	Waterborne Polyamine Epoxy, penetrating, flexible and low-odor primer designed for sealing porous substrates.	Multi Purpose Acrylic Primer	Series 151, Elasto-Grip FC
Acrylate	Modified Waterborne Acrylate designed for application on porous surfaces such as rough-faced concrete masonry units or wood surfaces.	Loxon XP	Series 156, Enviro-crete

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	Flexible and breathable, moisture and UV resistant. Matte Finish		
Amine Epoxy	Polyamidoamine Epoxy designed for use on steel or other ferrous metals not in contact with potable water but submerged or immersed in wastewater or non potable water.	Sherglass FF	Series N69, Hi-Build Epoxoline II
	Polyamidoamine Epoxy designed for use on steel or other ferrous metals in contact with potable water.	Macropoxy 5500	Series 140, Pota-Pox Plus
Polyurethane	Aliphatic Acrylic Polyurethane designed for exterior weathering, abrasion and corrosion resistance	Hi Solids Polyurethane-100	Series 73, Endura-Shield
Silane Water repellent Sealant	Silane/Siloxane penetrating water repellent blend designed for application on above-grade concrete, stucco, block, masonry and stone surfaces	Loxon 7% Siloxane	Series 636, Dur A Pell 20
Wood Sealer / Stain	Single component, 250 g/l wood stain in clear or standard colors	Minwax 250	
Wood Varnish Finish	Single component polyurethane varnish	Minwax	

2.2 COLOR

- A. Color Pigments: Pure, nonfading, lead-free applicable types to suit the substrates and service indicated.
- B. Provide colors as described in the drawings or specifications, or as selected by ENGINEER from standard color palette. For piping system colors, reference pipe schedule.
- C. Where existing colors are to be matched or satisfactory color is not available from standard color palette, provide custom-mixed colors.
- D. Provide samples of each color on the substrate to be coated for approval by the ENGINEER prior to beginning coating application.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

- A. Coatings Installer shall prepare all surfaces to be painted in strict accordance with Coatings Manufacturer's recommendations.
- B. Coatings Manufacturer representative shall observe Coatings Installer's methods of preparing surfaces and approve of the work prior to Coatings Installer beginning coating installation. If, after a period of time, Coatings Manufacturer is satisfied with Coatings Installers methods, Coatings Manufacturer can allow Coatings Installer to proceed

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without inspection following surface preparation. Coatings Manufacturer and installer will still both be held equally accountable for any coatings failure.

C. Wood surface preparation

1. Coatings Installer shall clean and prepare all wood surfaces in accordance with the Coating Manufacturer's recommendations. Patching may be required where approved by the Engineer. All joints in wood members including trim, siding, soffits, and joints between wood and dissimilar materials shall be filled with joint sealant prior to coating.

3.2 PROTECTION

- A. Protect all adjacent surfaces from overspray, dripping or other transfer of coatings not intended for those surfaces. Use masking, tape, drop cloths, plastic and other protective materials as appropriate.
 1. Remove, mask, or otherwise protect hardware, lighting fixtures, switchplates, aluminum surfaces, stainless steel surfaces, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces not intended to be painted.
 2. Protect working parts of mechanical and electrical equipment from damage during surface preparation and painting process. Mask openings in motors, fan housings, etc. to prevent coatings from falling inside.
 3. Correct all damages by cleaning, repairing or replacing, and repainting, as acceptable to ENGINEER.
- B. Completely remove all masking, tape, drop cloths, plastic and other protective materials within 48 hours of completion of application of finish coat. Take special care to remove masking and plastic which cover tank vent openings, HVAC registers, vents, motor vents, and other areas where airflow is critical to proper operation.

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3.3 APPLICATION

- A. Paint all exposed surfaces not specifically excluded in 3.3.C, below. Provide and install Coatings in accordance with the following Table, unless otherwise specified in other Sections:

COATING SYSTEM NO.	SURFACE TO BE COATED	PRIMER COATING	NO OF PRIMER COATS	PRIME COAT THICKNESS (EACH COAT)	FINISH COATING	NO OF FINISH COATS	FINISH COAT THICKNESS (EACH COAT)
100	Concrete Masonry Units (Interior)	Acrylic Filler	1	70 SF/Gal Application Rate	Acrylate	2	135 SF/Gal Application Rate
101	Concrete Masonry Units (Exterior)	Silane Waterproofing Sealant	1	250 SF / Gal Application Rate	None		
102	Concrete Roof Slab (Exterior)	Silane Waterproofing Sealant	1	250 SF/Gal Application Rate	None		
200	Wood (Interior and Exterior)	Polyamine Epoxy	1	250 SF/Gal Application Rate	Acrylate	2	135 SF/Gal Application Rate
201	Wood (Interior, where noted)	Wood Sealer	1	250 SF/Gal Application Rate	Wood Finish	1	350 SF/Gal Application Rate
202	Gypsum Board (Interior)	Latex Primer/Sealer	1	350 SF/Gal Application Rate	Acrylic Latex (Semigloss)	2	400 SF/Gal Application Rate
300	Exposed Ferrous Pipe Systems and Exposed Steel Items	Polyamidoamine Epoxy	2	4-6 MDFT	Polyurethane	2	2-3 MDFT
301	Exposed, Non-metallic Pipe Systems	Latex Primer/Sealer	1	3-5 MDFT	Acrylic Latex (Semigloss)	2	3-5 MDFT
302	Immersed Ferrous Pipe Systems and Steel Items	Polyamidoamine Epoxy*	1	6-10 MDFT	Polyamidoamine Epoxy	1	6-10 MDFT

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COATING SYSTEM NO.	SURFACE TO BE COATED	PRIMER COATING	NO OF PRIMER COATS	PRIME COAT THICKNESS (EACH COAT)	FINISH COATING	NO OF FINISH COATS	FINISH COAT THICKNESS (EACH COAT)
303	Immersed Non-metallic Pipe Systems	Latex Primer/Sealer	1	4-6 MDFT	Acrylic Latex (Semigloss)	1	4-6 MDFT
304	Buried Ferrous and Steel Items	Polyamidoamine Epoxy	1	8-10 MDFT	Polyamidoamine Epoxy	1	8-10 MDFT
305	Aluminum Surfaces in Contact with Concrete	Polyamidoamine Epoxy	1	4-6 MDFT	None		
	Steel Tank	Per 09871, Coating of Steel Water Storage Tank					
	Pumps	Touch up factory applied coatings, per Pump Specifications					

* Where in contact with potable water, coating shall be NSF-61 certified.

B. Items Delivered with Factory Applied Primer:

1. For items delivered with a factory applied primer and requiring painting under this Section, the factory applied primer may be used in lieu of field applied primer only under the following conditions:
 - a. The ENGINEER approves the use of the factory applied primer in lieu of field applied primer.
 - b. The factory applied primer is certified by the Coatings Manufacturer as compatible with the field applied finish coat.
 - c. The Coatings Manufacturer's recommended recoat time for the factory applied primer has not been exceeded.
2. If all of the above conditions are not met, the Coatings Installer shall re-prepare all surfaces to be painted in strict accordance with Coatings Manufacturer's recommendations and primer applied, in accordance with this Section.

C. Table Definitions:

1. SF/Gal: Square foot of coverage per gallon of coating used.
2. MDFT: mil dry film thickness
3. mil: 1/1000 of an inch paint thickness
4. Ferrous Pipe: Includes Ductile Iron, Cast Iron, Steel, and Galvanized Steel piping
5. Steel Items: Includes steel and galvanized steel items such as structural steel, doors, window frames, overhead coiling doors, bollard posts, steel gates, steel fences, and all other steel and galvanized steel items.
6. Non-Metallic Pipe: Polyvinyl Chloride, Chlorinated Polyvinyl Chloride, Fiberglass Reinforced Plastic, High Density Polyethylene
7. Exposed: Located above grade, exposed to the atmosphere not submerged. Includes surfaces inside and outside of buildings.
8. Submerged: In an area which normally is under water or other liquid or is intermittently under water or other liquid.
9. Buried: Located below grade, surrounded by backfill.

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D. Surfaces Not Requiring Painting:

1. Unless otherwise stated or shown below or in other sections, the following areas or items will not require painting or coating:
 - a. Concrete surfaces.
 - b. Reinforcing steel.
 - c. Copper, bronze, brass, Monel, aluminum, chromium plate, and stainless steel surfaces, except where:
 - 1) Required for electrical insulation between dissimilar metals.
 - 2) Aluminum and stainless steel are embedded in concrete or masonry, or aluminum is in contact with concrete or masonry.
 - 3) Color coding of equipment and piping is required.
 - d. Pipe unions or portions of piping systems where painting would make disassembly difficult or impossible.
 - e. Prefinished electrical, mechanical and architectural items such as motor control centers, switchboards, switchgear, panelboards, transformers, disconnect switches, HVAC equipment enclosures, ductwork, acoustical tile, cabinets, louvers, and wall panels.
 - f. Electrical conduits.
 - g. Cathodic protection anodes.
 - h. Insulated piping and insulated piping with jacket will require prime coat only.
 - i. Fiberglass reinforced plastic (FRP) surfaces with an integral ultra-violet resistant colored gel coat do not require painting, provided the color is as selected.
 - j. Glass, plexiglass or other transparent or translucent material intended to allow passage of light.
 - k. Civil/site materials such as asphalt, gravel, rock, chain-link fence, and plantings.

3.4 RECOAT TIMES:

- A. Coatings Installer shall observe all requirements of the Coatings Manufacturer regarding recoat times.

3.5 PAINT LOG

- A. Coatings Installer shall keep a paint log
1. Specific details of the contents and format paint log shall be determined by the Coatings Installer and approved by the ENGINEER.
 2. At a minimum, paint log shall record, on a daily basis for any day when coating work is performed:
 - a. Weather conditions, including 3-day forecast
 - b. Which surfaces were prepared for coating
 - c. Approval of surface preparation by the Coatings Manufacturer representative
 - d. Which surfaces or systems were coated that day
 - e. Who the installer was (specific names of persons on crew)
 - f. Which coating type was used
 - g. Which coat was installed
 - h. What the application rate or MDFT was (as approved by ENGINEER)
 3. Paint log shall be kept on-site. Paint log shall be signed on a daily basis, for any day when coating work is performed, by the supervisor of the coatings installer field crew and by the ENGINEER.

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4. Any painted surface which was not recorded in the paint log shall be stripped, re-prepared, and recoated at the ENGINEER's discretion.

3.6 WARRANTY INSPECTION

- A. Warranty inspection shall be conducted during the eleventh month following completion of the Work. All defective Work shall be repaired by the CONTRACTOR in accordance with this Specification and to the satisfaction of the ENGINEER and at the CONTRACTOR'S expense.
- B. Any location where paint has peeled, bubbled, or cracked and any location where rusting is evident shall be considered to be a failure of the system. The CONTRACTOR shall make repair at all points where failures are observed by removing the deteriorated paint, cleaning the surface, and recoating or repainting with the same system. If the area of failure exceeds 25 percent of the total coated or painted surface, the entire coating or paint system may be required to be removed and repainted in accordance with this specification as determined by the ENGINEER.
- C. All costs for CONTRACTOR'S inspection, Manufacturer's inspection and all costs for repair shall be borne by the CONTRACTOR.

+ + END OF SECTION + +

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SECTION 05000

FURNISHINGS

PART 1 - GENERAL

1.1 GENERAL SYSTEMS REQUIREMENTS

- A. Design and provide fixed and movable furnishings for all areas as indicated in drawings.

PART 2 - FIXTURES, FURNISHINGS AND EQUIPMENT

2.1 GENERAL

- A. Develop design as described and in accordance with the drawings. Include in the design all loose furnishings required to produce an optimum functional facility, consistent with quality commercial design.

2.2 BUILT-IN ACCESSORIES

- A. Window Shades
 - 1. Provide all windows and other glazed openings to the exterior of the building with horizontal blinds.
- B. Mirror
 - 1. Provide bathroom mirror above lavatories and counters in bathrooms.
- C. Partition Divider
 - 1. Provide stainless steel toilet, shower, and urinal partitions in all toilet rooms with more than one water closet or urinal.
- D. Water Closet Accessories
 - 1. Provide stainless steel toilet grab bars at each water closet location on the left-hand side of toilet.
 - 2. Provide stainless steel toilet paper dispenser at each water closet location on the left-hand side of toilet.
- E. Sink Accessories
 - 1. Provide a liquid soap dispenser at each sink location.
 - 2. Provide a paper towel dispenser for each sink location. Bathroom sink banks can have one towel dispenser which services the entire sink line-up.
 - 3. Provide an appropriately sized trash receptacle near each towel dispenser location.
 - 4. Provide an automated paper towel dispenser in the handicapped bathroom.

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F. Shower Accessories

1. Provide shower appropriate soap dispensers at each shower location.
2. Provide a stainless steel shower grab bar in the handicapped bathroom shower.
3. Provide a stainless steel folding ADA compliant shower bench at each shower location.

2.3 FIXED FURNITURE

A. Bench

1. Provide a hardwood topped locker room bench in the men's locker room.

B. Locker

1. Provide steel construction and enamel finish single tier 15" wide, 78" tall, 18" deep assembled lockers.

PART 1 - EXECUTION

1.1 PREPARATION

- A. Assemble all Miscellaneous Furnishings in accordance with manufacturers instructions.

1.2 INSTALLATION

- A. Install plumb, level and without damaging adjacent surfaces or item being installed.
- B. Clean all furnishings prior to final acceptance.

++End of Section++

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SECTION 12500

PLASTIC LAMINATE CASEWORK

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: Furnish all labor, materials, equipment and incidentals required and install cabinets and plastic-laminate countertops and backsplashes as shown on the Drawings and as specified herein.

1.2 QUALITY ASSURANCE

- A. All casework specified in this section shall be furnished by the same manufacturer and shall be installed by the Manufacturer or his/her authorized representative.
- B. Quality Standards:
 - 1. Unless otherwise indicated comply with the following standards:
 - a. Cabinets: KCMA A161.1.
 - 1) KCMA Certification: Provide cabinets with KCMA's "Certified Cabinet" seal affixed in a semi-exposed location.
 - b. Plastic-Laminate Countertops: KCMA A161.2.

1.3 SUBMITTALS

- A. Shop Drawings:
 - 1. Plans, elevations, details and attachments to other work. Include layout of units in relation to surrounding walls, doors, windows and other building components. Show materials, finishes, filter panels, hardware, edge and backsplash profiles, methods of joining countertops, and cutouts for fixtures.
 - 2. Copies of Manufacturer's data and installation instructions for each type of casework, accessories, fixtures, and equipment.
- B. Product Data:
 - 1. Complete selection of Manufacturer's standard, custom and multi-color tone selections for cabinets, countertop material and cabinet hardware.
- C. Samples:
 - 1. Provide selected Manufacturer's current full range of colors and patterns, identifying those colors and patterns with premium costs.
 - 2. Submit one sample of each type of required hardware in specified finish.
 - 3. Submit one set of samples showing the current range of colors for PVC edge banding for selection by ENGINEER.

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1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. All casework shall be delivered to the building, uncrated, placed in the proper location, leveled and assembled complete with scribes, fillers, knee space panels, shelf supports and cut outs so as to provide a complete and finished assembly.
- B. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or other protective covering.

PART 2 - PRODUCTS

2.1 CABINETS

- A. General:
 - 1. All products shall be made without urea formaldehyde.
 - 2. Hardwood Lumber: kiln dried to 7 percent moisture content.
 - 3. Softwood Lumber: Kiln dried to 10 percent moisture content.
 - 4. Hardwood Plywood: HPVA HP-1.
 - 5. Particleboard: ANSI A208.1, Grade M-2.
 - 6. Medium-Density Fiberboard: ANSI A208.2.
 - 7. Hardboard: HA A135.4, Class 1, Tempered.
- B. Construction:
 - 1. Face Style: Flush overlay.
 - 2. Cabinet Style: Frameless.
 - 3. Door and Drawer Fronts: 5/8-inch thick plastic-laminate faced particleboard, with plastic laminate edge banding.
 - 4. Face Frames: 5/8-inch by 1-5/8-inch solid wood with plastic laminate facing.
 - 5. Exposed Cabinet End Finish: Plastic laminate.
- C. Exposed Materials:
 - 1. Wood Species: Birch.
 - a. Adjacent exposed surfaces shall be similar in color, grain, figure, and natural character markings.
 - b. Staining and Finish: As selected by ENGINEER from Manufacturer's full range.
 - 2. Solid Wood: Clear hardwood lumber of species indicated, free of defects.
 - 3. Plywood: Hardwood plywood with face veneer of species indicated, with Grade A faces and Grade C backs of same species as faces.
 - 4. Plastic Laminate: Particleboard faced with high-pressure decorative laminate complying with NEMA LD 3, Grade VGS.
 - a. Colors, Textures and Patterns: As selected by ENGINEER from Manufacturer's full range.
 - 5. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.
 - a. Provide PVC or polyester edge banding complying with LMA EDG-1.
 - b. Colors: As selected from ENGINEER from Manufacturer's full range.
 - 6. Thermoformed Vinyl-Faced Panels: Medium-density fiberboard, milled to required shapes, with a thermoformed vinyl overlay applied in a vacuum or membrane press.

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- a. Color: As selected from ENGINEER from Manufacturer's full range.
- 7. PVC Edge Molding: Rigid PVC extrusions, through color with satin finish, 3 mm thick at doors and drawer fronts, and 1 mm thick elsewhere.
 - a. Color: As selected from ENGINEER from Manufacturer's full range.
- D. Semi-Exposed Materials:
 - 1. Solid Wood: Sound hardwood lumber, selected to eliminate appearance defects. Same species as exposed surfaces.
 - 2. Plywood: hardwood plywood with Grade C faces and not less than Grade 3 backs of same species as faces. Face veneers of same species as exposed surfaces.
 - 3. Plastic Laminate: Particleboard faced with high-pressure decorative laminate complying with NEMA LD 3, Grade VGS.
 - a. Colors, Textures and Patterns: As selected by ENGINEER from Manufacturer's full range.
 - 4. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper complying with LMA SAT
 - a. Provide PVC or polyester edge banding complying with LMA EDG-1.
 - b. Colors: As selected from ENGINEER from Manufacturer's full range.
 - 5. Vinyl-Faced Particleboard: Medium-density particleboard with embossed, wood-grain-patterned vinyl film adhesively bonded to particleboard.
 - a. Colors, Textures and Patterns: As selected by ENGINEER from Manufacturer's full range.
- E. Concealed Materials:
 - 1. Solid wood or plywood, of any hardwood or softwood species, with no defects affecting strength or utility; particleboard; medium-density fiberboard; or hardboard.

2.2 CABINET HARDWARE

- A. General: Provide Manufacturer's standard units complying with BHMA A156.9, of type, size, style, material, and finish as selected by ENGINEER.
- B. Door and Drawer Pulls:
 - 1. Pulls shall be of modern design, offer a comfortable hand-grip and be securely fastened to doors and drawers with screws.
 - 2. All pulls shall be aluminum wire type with 4 inch centers and without escutcheons.
 - 3. Two pulls shall be required on all drawers over 24 inches wide. Use of plastic pulls (molded or extruded), or a design not compatible for usage by the handicapped will not be acceptable.
- C. Hinges: Concealed European-style self-closing.
- D. Drawer Guides:
 - 1. Epoxy-coated metal, self-closing, designed to prevent rebound when drawers are closed.
 - 2. Nylon-tired, ball bearing rollers.
 - 3. Comply with BHMA A156.9, Type 05011 or B05091.

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2.3 COUNTERTOP

- A. Plastic Laminate: High-pressure decorative laminate complying with NEMA LD 3.
 - 1. Grade, Colors, Textures and Patterns: As selected by ENGINEER from plastic-laminate Manufacturer's full range.
- B. Particleboard: ANSI A2081, Grade M-2, exterior glue.
- C. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.
- D. Backsplash and Endsplash: ¾-inch wide by 4-inch tall.
- E. Solid Wood Edges and Trim: Clear Birch lumber, free of defects, selected for compatible grain and color, and kiln dried to 7 percent moisture content.
 - 1. Provide on front, backsplash and endsplash.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install cabinets with no variation in flushness of adjoining surfaces; use concealed shims. Where cabinets abut other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and molding in finish to match cabinet face.
- B. install cabinets without distortion so doors and drawers fit openings and are aligned. Complete installation of hardware and accessories.
- C. install casework level and plumb to a tolerance of 1/8-inch in 8 feet.
- D. Fasten cabinets to adjacent units and to backing:
 - 1. Fasten wall cabinets through back, near top and bottom, at ends and not less than 24 inches on center with No. 10 wafer-head screws sized for 1-inch penetration into framing, blocking, or hanging strips.
 - 2. Fasten wall cabinets through back, near top and bottom, at ends and not less than 24 inches on center with toggle bolts through metal backing behind gypsum wallboard.
- E. Fasten plastic-laminate countertops by screwing through corner blocks of base units into underside of countertop. Form seams using splines to align adjacent surfaces, and secure with glue and concealed clamping devices designed for this purpose.
- F. Adjust cabinets and hardware so doors and drawers are centered in openings and operate smoothly without warp or bind. Lubricate operating hardware as recommended by Manufacturer.

+ + END OF SECTION + +

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SECTION 13005
METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Design and manufacture of metal building including all components, primary and secondary framing system, lateral support system, roof system including gutters and downspouts, insulation, ventilation, and finish painting.
- B. The metal building requires a separate building permit from the City of Roseville Building Department. Following review and approval by ENGINEER the metal building drawings and structural calculations shall be submitted to the Building Department for a building permit. CONTRACTOR shall include in their bid all time and effort required to obtain a building permit.

1.2 QUALITY ASSURANCE

- A. Reference Standards: Buildings and appurtenances shall be designed, fabricated and inspected according to the latest edition of the following standards:
 - 1. American Institute of Steel Construction (AISC 360-10) Specification for Structural Steel Buildings.
 - 2. AISC Specification for Structural Joints Using ASTM A325 or A490 Bolts.
 - 3. AISC Steel Design Guide Series 3 – Serviceability Design Considerations for Low-Rise Buildings
 - 4. American Iron and Steel Institute (AISI) Specification for the Design of Cold-Formed Steel Structural Members.
 - 5. American Welding Society Structural Welding Code – Steel.
 - 6. American Society of Testing Materials (ASTM)
 - 7. International Building Code (2016 IBC).
 - 8. Metal Building Manufacturer's Association current Metal Building Systems Manual.
- B. Qualifications:
 - 1. Designer: Licensed Professional Civil or Structural Engineer valid in same state as Project.
 - 2. Manufacturer: AISC Quality Certification under the Metal Building Certification Program with not less than five (5) years of experience in manufacturing metal buildings.
 - 3. Erector: AISC Quality Certification as Certified Steel Erector (CSE), or five (5) years of experience in erection of metal building systems in lieu of AISC certification.
- C. Warranty: Furnish manufacturer's extended guarantee or warranty, with OWNER named as beneficiary, in writing, as special guarantee. Special guarantee shall provide for correction, or at the option of manufacturer, removal and replacement of Work specified in this Specification section found defective during a minimum period of 5 years and as stated below after date of Substantial Completion. Duties and obligations for correction or removal and replacement of defective Work as specified in the General Conditions.

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1. Conditions: Finish on metal roof and wall panels, flashing, and trim shall not chalk, crack, check, blister, peel, flake, chip, or lose adhesion for twenty (20) years.

1.3 SUBMITTALS

- A. Submittals shall be in accordance with Section 01330 and as specified herein.
- B. Submit the following items to the ENGINEER for approval:
 1. Shop Drawings: Shop drawings shall be specifically prepared for this Project. Mark out details that do not apply to this Project.
 - a. Stamped and signed by Manufacturer's engineer: Show the following items, at minimum:
 - 1) Design load criteria.
 - 2) Column reactions.
 - 3) Material specifications for framing members and connections.
 - 4) Roof framing plan with dimensions and member sizes.
 - 5) Base plate details showing anchor bolt size and bolt layout.
 - 6) Elevations of wall framing and bracing.
 - 7) Instructions for temporary bracing.
 - 8) Framing around roof and wall openings.
 - 9) Details for joining and sealing of roof panels and wall cladding.
 - 10) Sections and details for all components and accessories.
 2. Product Data:
 - a. Manufacturer's literature and technical data.
 - b. Painting System: Specifications including paint manufacturer's name, product trade-name, and preparation for shop and field coats.
 - c. Structural Calculations stamped and signed by Manufacturer's engineer:
 - 1) Complete analysis and design of structural components and connections in accordance with design requirements indicated.
 - 2) Consider prying action of bolts for bolted moment-resistant connections in primary framing.
 - 3) Design column bases as pinned, unless specifically indicated otherwise.
 - 4) Provide only calculations specific to this Project.
 - d. Manufacturer's written instructions for shipping, handling, storage, protection and erection, or installation of building and components.
 - e. Manufacturer: AISC Quality Certification showing name and address of manufacturer, effective date, and category of certification.
 - f. Erector:
 - 1) AISC Quality Certification showing name and address of erector, effective date, and category of certification, or, in lieu of AISC certification, documentation of past 5 years' experience record to include project name, location, date of completion, building manufacturer, and name and phone number of contact person.
 - 2) Certification of approval by manufacturer.
 3. Quality Control Submittals:
 - a. Certificate of Compliance with these specifications.
 - b. Copy of the manufacturer's Quality Assurance Program.
 - c. Manufacturer's Certificate of Proper Installation.
 - d. Manufacturer's warranty.

- e. Provide reference samples of paint colors and textures as required by the ENGINEER. Reference samples will show the color and texture of the final paint to be applied and shall be approved by the ENGINEER prior to erection.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Protect building components and accessories from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Deliver to site with parts individually tagged.
- C. Store on wood blocking or pallets, flat and off ground, to keep clean and to prevent any damage or permanent distortion. Support bundles so there is no danger of tipping, sliding, rolling, shifting, or material damage. Cover with tarpaulins or other suitable weathertight ventilated covering.
- D. Protect finish of metal panels by application of removable plastic film or other suitable material placed between panels. Do not allow panels to come in contact with other material that would result in scratching, denting, staining or other damage to the panel finish.

PART 2 - PRODUCTS

2.1 MANUFACTURER:

- A. Buildings manufactured or supplied by the following manufacturers, and meeting these Specifications, may be used on this Project:
 - 1. Butler Manufacturing Company
 - 2. CBC Steel Buildings
 - 3. Nucor Building Systems
 - 4. Or Equal

2.2 SERVICE CONDITIONS

- A. General:
 - 1. All loads shall be proportioned and applied in accordance with the current MBMA Metal Building Systems Manual and 2012 IBC.
 - 2. Deflection requirements shall be in accordance with the acceptable provisions of Chapter 16 in the 2012 IBC.
 - 3. Assembly shall permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to temperature range of 110 degrees F.
- B. Roof drainage system shall withstand rainfall intensity of 4 inches per hour with 5 minute duration.

2.3 COMPONENTS:

- A. Clear span rigid frame.

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B. Structural Framing and Bracing:

1. Primary Framing: ASTM A36, A529, A572, or A992 with 3/16-inch minimum thickness and factory primer compatible with finish coating.
2. Secondary Framing: Steel for cold-formed galvanized channel and z-sections shall be ASTM A653, Structural Steel (SS) Grade 33 or High-Strength Low-Alloy Steel (HSLAS) Grade 50 Type A or B, with G60 galvanized coating and minimum design thickness equal to 0.0346 inch.
3. Bracing: ASTM A36 or F1554, Grade 36, for threaded rod, or ASTM A36 for rolled shapes. Wire rope or cable for permanent bracing will not be accepted.
4. Bolted Connections:
 - a. Primary Framing: ASTM A325 or ASTM A490 high-strength bolted connections.
 - b. Secondary Framing: ASTM A307 or ASTM A325.

C. Lateral Support System: Cross bracing or portal frames.

D. Roof and Wall Panels:

1. Material: ASTM A653 or ASTM A792 preformed ribbed steel panels, Grade 50, minimum.
2. Minimum 26-gauge galvanized steel with roll-formed corrugations for structural stiffness and appearance.
3. Finish: Factory-applied Hylar or Kynar fluorocarbon paint system, in color selected by ENGINEER.
4. Roof Panel System:
 - a. ASTM E1514 structural standing seam steel roof panel system.
 - b. Panels shall be one piece from eave to ridge, with concealed clips and fasteners to purlins to allow for thermal movement over 120-degree ambient temperature range.
 - c. Roof panel system shall be approved for the roof slope shown on the drawings.
5. Wall Panel System:
 - a. One-piece from eave to finish floor with base trim at sill and standard trim at all ends.
 - b. Sidelaps: Overlapping major ribs with exposed color-matched fasteners.
6. Wall Liner Panels:
 - a. One piece, height to top of first wall girt (7 feet 0 inch plus or minus) as shown on Drawings.
 - b. Sidelaps: Overlapping major ribs with exposed color-matched fasteners.

E. Personnel Doors:

1. Reference Specification Section 08100.

F. Roll-Up Doors:

1. Reference Specification Section 08300.

G. Roof Accessories:

1. Ridge Ventilator with screen and manually actuated damper:
 - a. Material: 4- to 26-gauge galvanized steel; by 10 feet 0 inch long factory finish to match wall panels.
 - b. Free Airflow: Minimum 9-inch throat.
 - c. Provide complete manually actuated vent damper operator package (with chain to finished floor elevation).
2. Translucent Light Panels:

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- a. Translucent light panels shall be insulated glass fiber reinforced composite panels capable of supporting a 200 pound concentrated load on any one-foot square.
 - b. Panels shall be produced to match the roof panel configuration.
 - c. Panels shall have a minimum "Light Transmission" of 55-60% per ASTM D1494.
 - d. Panels shall be rated for the wind and roof snow load specified above.
- H. Metal Building Blanket Insulation:
 - 1. ASTM C991, Type I, 3-1/2 inch thick.
 - 2. 2-mil thick white vinyl vapor barrier backing with Water Vapor Permeance Rating of 0.1 maximum, ASTM E96, Procedure A.
 - 3. Flame Spread: ASTM E84, less than 25.
 - 4. Provide at roof and walls.
- I. Thermal Blocks: High-density, 3/4 inch thick extruded polystyrene, for installation over structural framing members.
- J. Trim: Factory-formed and factory-painted ridge cap, rake trim, simple eave trim, panel side trim, corner trim, door trim, flashing, wall panel closure, and other trim as necessary.
- K. Gutter, Fascia and Downspouts:
 - 1. Material: ASTM A653/A653M 26-gauge galvanized steel.
 - 2. Gutter Fascia:
 - a. Prefinish.
 - b. Furnish hangers with factory-applied paint.
 - 3. Preformed Corner Closures: Furnish to match configuration of gable fascia.
 - 4. Downspouts:
 - a. Configuration: Nominal 4-inch corrugated rectangular box with minimum 11 square inches of cross-section area.
 - b. Factory finish to match wall panels.
- L. Miscellaneous: Furnish fasteners, metal-backed neoprene washers, weatherstripping, sealants, roof jacks, roof curbs, flashing, gaskets, and other items as required for a complete installation.

2.4 FABRICATION

- A. Factory fabricate to manufacturer's written standards, MBMA Metal Building Systems Manual, and AISC Specification for Structural Steel Buildings.
- B. Building Sections: Accurate and dimensionally correct to facilitate building erection without field alteration.
- C. Welded connections shall be in accordance with AWS standards.

PART 3 - EXECUTION

3.1 SITE INSPECTION

- A. Inspect supporting concrete slabs, mechanical and electrical equipment locations, and anchorage systems for compliance with requirements for installation tolerances.

3.2 INSTALLATION

- A. Erect building system in accordance with manufacturer's standards and instructions.
- B. Provide temporary bracing in accordance with MBMA standards and as required for safe installation.
- C. Structural Framing:
 - 1. Do not field cut or alter primary or secondary framing members.
 - 2. Set columns base plates with non-shrink grout to achieve full plate bearing.
 - 3. Installation and tolerances shall be in accordance with MBMA Metal Building Systems Manual.
- D. Roof and Wall Panels:
 - 1. Field cutting of panels by torch is not permitted.
 - 2. Attach panels to structural supports to maintain a weathertight seal while allowing for thermal and structural movement.
 - 3. Install exposed fasteners in true vertical and horizontal alignment.
 - 4. Field seam side laps of standing seam roof panels using electrically operated seaming machine.
 - 5. Use proper tools to install screw fasteners to compress neoprene washer without damaging washer or stripping metal.
 - 6. Install manufacturer's standard joint sealants, gaskets, closure strips, and flashing as required for weathertight installation.
 - 7. Field Cutting and patching, if required, shall be in a manner so as not to impair appearance, weathertightness, or structural capacity of panel system.

3.3 REPAIR, CLEANING, AND PAINTING

- A. Immediately following erection, remove all unused material, screws, fasteners, and other debris from completed installation. Use caution in removing metal cuttings from surface of prefinished metal panels.
- B. Replace damaged, dented, buckled, or discolored metal panels.
- C. Repair damaged painted and galvanized surfaces as specified in Section 09900, PAINTING.
- D. Finish Painting: As specified in Section 09900, PAINTING.

3.4 MANUFACTURER'S SERVICES

- A. Provide manufacturer's representative at site as required for installation assistance, inspection, and certification of proper installation.

+ + END OF SECTION + +

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SECTION 15000

PLUMBING

PART 1 - GENERAL

1.1 SYSTEM DESCRIPTION

- A. The plumbing system for the Crew Facility consists of all fixtures, potable cold and hot water piping and equipment, piping insulation, water heating equipment, sanitary waste and vent piping systems, and other specialty piping and equipment within 5 foot (1.5 meter) of the building.
- B. Provide appropriate piping support systems for a complete installation.

1.2 GENERAL SYSTEM REQUIREMENTS

- A. Provide working space around all equipment. Provide all required fittings, connections and accessories required for a complete and usable system. Design and install in accordance with International Plumbing Code (IPC). Where the word "should" is used in the manufacturer's recommendations, substitute the word "must".

1.3 SUBMITTALS

- A. Provide submittals for interior and exterior plumbing plans for approval by owner. Show connections for owner purchased equipment.
- A. Shop Drawings:
 - 1. Product data sheets for make and model.
 - 2. Complete catalog information, descriptive literature, specifications, and identification of materials of construction.
 - 3. Certificate of Compliance for: Butterfly valves; full compliance with AWWA C504.
- B. Tests and inspection data.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide quantity and type of plumbing fixtures required for the occupancy, use, and functions described for this facility. See drawings "Furnishing Key Note Table" for a description of the plumbing fixtures required. Provide quantity of fixtures as indicated on drawings.

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2.2 VALVES

- A. All valves shall be the same size as the pipe in which they are installed, unless specifically noted otherwise on the Drawings.
- B. All valves shall include all appurtenant parts (operators, chainwheels, handwheels, valve stems, floor stands, gear boxes, operating nut, etc.) for a complete operating valve.
 - 1. Valve shall be, as much as practical, fully factory assembled.
- C. All valves shall open by turning counter-clockwise. Maximum force required for operation shall be 40 lbs.
- D. Where Lead-Free Bronze or Brass is required for NSF-61 installation, materials shall be in compliance with California Health & Safety Code Section 116875. Not more than a weighted average of 0.25 percent of the wetted surface of the valve shall be lead. Valve shall be provided with a "hang tag" or other marking that easily identifies the valve as Lead-Free.
- E. Coatings and Linings:
 - 1. Provide factory-applied coatings as described herein.
 - 2. Where liquid epoxy coatings are specified, coatings shall conform to AWWA C550.
 - 3. Field coat the exterior of all valve bodies with the same coating as is required for the adjacent pipe in Section 09900, PAINTING and Section 15100, PIPE AND FITTINGS, unless otherwise specified.
- F. Provide isolation valves at supply to each floor.
- G. Provide one (1) hose bibb in shop.
- H. Provide hose bibbs along the building exterior such that all points along the perimeter can be reached with a 100 foot (30 meter) long hose.
- I. Provide hose bibbs to service rooftop HVAC equipment.

2.3 OPERATORS:

- A. Operator force not to exceed 40 pounds under any operating condition, including initial breakaway. Gear reduction operator when force exceeds 40 pounds.
- B. Operator self-locking type or equipped with self-locking device.
- C. Provide position indicator on all valves.
- D. Worm and gear operators one-piece design worm-gears of gear bronze material. Worm hardened alloy steel with thread ground and polished. Traveling nut type

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operators threaded steel reach rods with internally threaded bronze or ductile iron nut.

- E. Valve handles, wheels, etc. to be designed to accommodate a padlock.

2.4 PLUMBING AND SANITARY ACCESSORIES

A. LAVATORIES

- 1. Provide countertop lavatories in each restroom space as indicated on drawing.

B. KITCHEN SINK

- 1. Provide countertop stainless steel kitchen sink with two compartments and dual lever handles in the breakroom space. Provide waste disposer unit.

C. UTILITY SINK

- 1. Provide a utility sink in shop area as indicated on drawings.
 - a. One-piece molded construction of impact resistant polypropylene
 - b. Heavy gauge steel legs with adjustable levers
 - c. Swivel faucet with 24" long pull-out spout and lever handles

D. SHOWERS

- 2. Provide a one-piece chrome finished commercial shower stall and shower supply fittings in the shower space.
- 3. Provide push button flow control for handheld showerheads.
- 4. Provide a handicap accessible shower in the handicapped bathroom.

E. WATER CLOSETS

- 1. Provide floor mounted flush valve water closets.
- 2. Fixture:
 - a. Floor mounted
 - b. Vitreous china
 - c. Elongated bowl
 - d. Siphon Jet action
 - e. Bolt-mounted tank with spud nut
 - f. 1.6-gallons per flush
- 3. Seat:
 - a. Olsonite corp.; 10-CC-SS, or equal, with open front.

F. URINALS

- 1. Provide flush valve urinals.

G. Light-Duty Electric Water Heater

- 1. Type: Light-duty commercial electric water heater
- 2. Features:
 - a. Non-simultaneous wiring
 - b. Steel housing construction

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- c. High temperature porcelain enamel coating
- d. Magnesium anode SHOWERrod for corrosion protection
- e. 2-1/2" rigid polyurethane foam insulation
- f. Surface-mounted thermostat for automatic temperature control
- g. Certified maximum working pressure rating: 150 psig
- h. UL certified
- i. Factory equipped with ASME rated temperature and pressure relief valve
- j. Provide corrosion-resistant drip pan with 3/4-inch drain.
- k. ASHRAE Energy Factor: 0.91 – 0.95

2.5 PIPES AND FITTINGS

- A. Provide PVC piping and fittings for above ground and buried piping.

2.6 DOMESTIC WATER EQUIPMENT

- A. Provide backflow preventers of types and at points within domestic water systems as specified by IPC. Locate building backflow preventer inside the Crew Facility on service entrance lines where not provided exterior to the building.
- B. Provide reduced pressure principle type backflow preventer at all make-up water lines inside the Crew Facility.
- C. Provide electric water heater for heating of domestic water.
- D. Provide domestic hot water recirculation system with high efficiency recirculation pump and recirculation loop with all associated fixtures, equipment, and appurtenances, Provide in-line base mounted circulator for domestic hot water distribution system.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION

- A. Provide mineral fiber insulation with vapor barrier on domestic hot water supply and recirculation piping.
- B. Provide identification for piping and equipment.
- C. Install a fully functional plumbing system to serve all water demands within the crew facility. This includes but is not limited to: kitchen, bathrooms, and shop facilities. Provide connections for owner purchased furnishings as required and where shown on drawings.

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3.2 PLUMBING FIXTURE INSTALLATION

- A. General:
 - 1. Install all plumbing fixtures plumb, level and per the manufacturer's instructions.
- B. Plumbing Fixtures, Mounting Heights:
 - 1. Standard rough-in catalogued heights, unless shown otherwise on Drawings.
 - 2. Caulk fixtures in contact with finished walls with waterproof, white, non-hardening sealant which will not crack, shrink, or change color with age.
- C. Fixture Trim: Install fixture trim where applicable on fixtures.
- D. Water Heater:
 - 1. Install water heater and all appurtenances in accordance with the local plumbing code.
 - 2. Route the drains from the relief valve, drip pan, and how water tank drain to the nearest floor drain. Provide an air gap.
- E. Plumbing Specialties:
 - 1. Water Hammer Arresters:
 - a. Install PDI-certified and rated water hammer arresters, sized and located in accordance with PDI WH-201 and as shown on Drawings.
 - b. Install adjacent to equipment wherein quick closing valves are installed.
 - c. Install at each emergency safety shower.
 - d. Concealed water hammer arresters shall have access panels or be otherwise accessible.
- F. Drains and Cleanouts:
 - 1. Install top flush with finished floor elevation.
 - 2. Install PVC p-traps at each floor drain.
 - 3. Provide cleanouts where shown and where required by code.
- G. Trap Priming Valves:
 - 1. Provide one trap priming valve for each floor drain. Trap priming valves and associated piping are not shown on the Drawings, but are required.
 - 2. Connect each trap priming valve to W1 system.
 - 3. Connect trap priming valve to floor drain using ½" Type K soft copper tubing. Install copper tubing at the time of floor drain installation (before concrete for floor is placed). Route tubing to final location of trap priming valve.
 - 4. Locate trap priming valves as required, however, group trap priming valves for floor drains in the same area.
 - 5. Provide shut-off valve (1/2" ball valve) between trap priming valve and W1 line feeding trap priming valve directly adjacent to trap priming valve.
 - 6. Label trap priming valve indicating which floor drain is served.
- H. Roof Drain Leaders:

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1. Slope horizontal leaders ¼-inch per foot in the downstream direction.

3.3 PREPARATION

- A. Cleaning:
 1. Clean all mating faces of valve (threads, flange faces, etc.) prior to assembly.
 2. Remove all debris from valve body prior to assembly.
 3. Take extra care to clean mating faces of existing pipe and fittings which may have corrosion, dirt, debris and mineral build-up which should be removed for a proper fit.
- B. Apply joint compound, lubricant, etc. as recommended by valve manufacturer for proper installation prior to installation.
- C. Install valves in accordance with the following schedule and as noted on the Drawings:

3.4 INSTALLATION

- A. Install valves per manufacturer's recommendations.
- B. Install valves so handles operate from fully open to fully closed without encountering obstructions.
- C. Install valves in location and orientation for easy access for routine operation and maintenance. Access should be such that an operator can operate the valve by reaching a handle, chain, etc. at a height between 2'-6" and 5'-0" above adjacent work surface (for buried valves, this is accomplished with a t-handle wrench and the operating nut being within 12" of finished grade).
- D. Install plug valves with the seat side as indicated on the drawings. If manufacturer's recommendations differ from indicated seat direction on the drawings, or if no seat side is indicated, install plug valves with seat side as recommended by the manufacturer after obtaining approval from the ENGINEER.

3.5 TESTS AND INSPECTION

- A. Valve may be either tested while testing pipelines, or as a separate step.
- B. Test that valves open and close smoothly under operating pressure conditions. Test that two-way valves open and close smoothly under operating pressure conditions from both directions.
- C. Inspect air release and vacuum valves as pipe is being filled to verify venting and seating is fully functional.

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- D. Count and record number of turns to open and close valve; account for any discrepancies with manufacturer's data.
- E. Set, verify, and record set pressures for all relief and regulating valves.
- F. Automatic valves to be tested in conjunction with control system testing. Set all opening and closing speeds, limit switches, as required or recommended by the ENGINEER.

++End of Section++

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SECTION 15100
PIPE AND FITTINGS

PART 1 - GENERAL

1.1 GENERAL

- A. Provide a fully functional piping distribution system to support the facilities at the crew building. This includes, but is not limited to, potable water supply piping to the kitchen, bathroom, and shop sinks, washer, and ice machine; drain piping servicing all sinks, toilets, showers, etc; and all other systems as noted in drawings.
- B. Provide connections to city utilities for potable water supply and sewer connection.
- C. Follow all applicable city codes and standards for utility connections.

1.2 SUBMITTALS

- A. Shop Drawings:
 - 1. Product data sheets for each piping system.
 - a. Include information on pipe, fittings and joint systems.
 - 2. Complete catalog information, descriptive literature, specifications, and identification of materials of construction.
 - 3. Complete descriptions and data for all coatings and linings.
 - 4. Tests and inspection data for pipe and coatings/linings.
 - 5. Qualifications for welders and/or technicians performing joining processes that requires specialized equipment to perform the work or as specifically identified herein.

1.3 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. In accordance with manufacturer's directions.

PART 2 - PRODUCTS

2.1 PIPING SYSTEM DATA SHEETS

- A. Piping system data sheets (PSDS) have been attached to this Specification and are incorporated herein by reference. Provide piping systems in accordance with piping system data sheets.

2.2 THRUST RESTRAINT

- A. Provide rigid or restrained joints and fittings for all piping systems specified with a test pressure in the Pipe Schedule.

- B. Unless otherwise specified in the Pipe Schedule or shown on the Drawings, thrust blocks shall not be used.

PART 3 - EXECUTION

3.1 PIPE SCHEDULE

- A. CONTRACTOR to provide pipe material and fittings which are appropriate for the intended service and acceptable to the ENGINEER.

3.2 PREPARATION

- A. Inspect pipe and fittings before installation, clean ends thoroughly, and remove foreign matter and dirt from inside.
- B. Repair any coatings or linings which were damaged during shipping and handling using manufacturer-approved coating and lining repair materials in accordance with manufacturer's instructions.

3.3 INSTALLATION

- A. General:
 - 1. Join pipe and fittings in accordance with manufacturer's instructions, unless otherwise shown or specified.
- B. Joint Assembly:
 - 1. Flanged Joints (FLG):
 - a. Bolt Holes: Straddle vertical centerlines, aligned with connecting equipment flanges or as shown.
 - b. Follow a bolt tightening pattern which produces uniform bearing pressure.
 - c. Do not over-tighten bolts. Follow manufacturer's recommendation for bolt torque.
 - d. Provide gasket at every flanged joint.
 - e. Provide insulating flange kit where indicated on Drawings and required in this Specification.
 - 2. Threaded and Coupled Joints (THR):
 - a. Conform to ANSI B1.20.1.
 - b. Produce sufficient thread length to ensure full engagement when screwed home in fittings.
 - c. Ream pipe ends and clean chips and burrs after threading.
 - d. Make connections with not more than three threads exposed.
 - e. Lubricate male threads only with thread lubricant or tape as specified on Piping Data Sheets.
 - f. PVC Threaded Joints:
 - 1) Provide Schedule 80 threaded nipple where necessary to connect to threaded valve or fitting.
 - 2) Use strap wrench for tightening threaded plastic joints. Do not overtighten fittings.
 - g. HDPE Threaded Joints:

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- 1) Joining HDPE pipe with threaded connections is not allowed unless specifically approved by the ENGINEER
 - h. Provide dielectric union or insulating coupling where indicated on Drawings and required in this Specification.
 3. Grooved-End Joints (GRV):
 - a. Type: Rigid, except where joints are used to correct misalignment, to provide flexibility, and where shown otherwise, in which case provide flexible type.
 - b. Grooved end joints are not allowed for plastic pipes unless approved by the ENGINEER.
 4. Soldered Joints (SLD):
 - a. Before soldering, remove stems and washers from solder joint valves.
 - b. Use only solder specified for particular service.
 - c. Cut pipe ends square and remove fins and burrs.
 - d. Protect adjacent surfaces from damage during soldering.
 - 1) Protect from high temperatures due to flame
 - 2) Protect from damage due to dripping flux or solder
 - e. After thoroughly cleaning pipe and fitting of oil and grease using solvent and emery cloth, apply noncorrosive flux to the male end only.
 - f. Solder Joint
 - g. Wipe excess solder from exterior of joint before hardened.
 5. Solvent Welded Joints (SLV):
 - a. Use only solvent cement which is rated for use in the service intended. Check compatibility of solvent cement with service, especially in pipelines which carry chemicals.
 - b. Observe all manufacturer's requirements for environmental conditions for use of solvent cement.
 - c. Cut pipe ends square and remove fins and burrs.
 - d. Apply appropriate primer.
 - e. Apply solvent cement and assemble joint.
 - 1) Hold in place long enough for solvent cement to set-up and hold joint, as assembled, until solvent cement has cured.
 - f. Wipe excess solvent cement from exterior of joint before hardened.
 6. Proprietary Restrained Mechanical Joints (PRJ):
 - a. PRJ piping shall be furnished with factory-fabricated retainer weldment on spigot end.
 - b. If PRJ piping is field cut, the pipe joint shall be restrained using Restrained Mechanical Joint (RMJ) Glands as specified in Section 15120, Piping Specialties. Field welding of retainer weldment will not be allowed.
- C. Exposed Piping Installation:
1. Piping Runs:
 - a. Parallel to building or column lines and perpendicular to floor, unless shown otherwise.
 - b. Piping upstream and downstream of flow measuring devices shall provide straight lengths as required for accurate flow measurement.
 2. Supports: As specified in Section 15010, PIPING SUPPORT SYSTEMS.
 3. Group piping wherever practical at common elevations; install to conserve building space and not interfere with use of space and other work.
 4. Provide unions or flanges at each piping connection to equipment or instrumentation on equipment side of each block valve to facilitate installation and removal.

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5. Install piping so that no load or movement in excess of that stipulated by equipment manufacturer will be imposed upon equipment connection;
6. Install piping to allow for contraction and expansion without stressing pipe, joints, or connected equipment.
7. Piping clearance, unless otherwise shown:
 - a. Over Walkway and Stairs: Minimum of 7 feet 6 inches, measured from walking surface or stair tread to lowest extremity of piping system including flanges, valve bodies or mechanisms, insulation, or hanger/support systems.
 - b. Between Equipment or Equipment Piping and Adjacent Piping: Minimum 3 feet 0 inch, measured from equipment extremity and extremity of piping system including flanges, valve bodies or mechanisms, insulation, or hanger/support systems.
 - c. From Adjacent Work: Minimum 1 inch from nearest extremity of completed piping system including flanges, valve bodies or mechanisms, insulation, or hanger/support systems.
 - d. Do not route piping in front of or to interfere with access ways, ladders, stairs, platforms, walkways, openings, doors, or windows.
 - e. Headroom in front of openings, doors, and windows shall not be less than the top of the opening.
 - f. Do not install piping containing liquids or liquid vapors in transformer vaults or electrical equipment rooms.
 - g. Do not route piping over, around, in front of, in back of, or below electrical equipment including controls, panels, switches, terminals, boxes, or other similar electrical work.

D. Buried Pipe Installation:

1. Pipe Placement:

- a. Keep trench dry until pipe laying and joining are completed.
- b. Exercise care when lowering pipe into trench to prevent twisting or damage to pipe.
- c. Prevent foreign material from entering pipe during placement.
 - 1) Close and block open end of last laid pipe section when placement operations are not in progress and at close of day's work.
- d. Lay pipe upgrade with bell ends pointing in direction of laying.
- e. Deflect pipe at joints for pipelines laid on a curve using unsymmetrical closure of spigot into bell. Utilize a maximum of 75 percent of manufacturer's recommended allowable joint deflection.
 - 1) If joint deflection of standard pipe lengths will not accommodate horizontal or vertical curves in alignment, provide:
 - a) Shorter pipe lengths.
 - b) Fittings/bends.
- f. Secure pipe which has been placed from movement or damage while placing the next section of pipe.
- g. Prevent uplift and floating of pipe prior to backfilling.

E. Cleaning:

1. Following assembly and testing, and prior to disinfection and final acceptance, flush pipelines with water at 2.5 fps minimum flushing velocity until foreign matter is removed. At a minimum, flush for a period of time which will flush the entire pipeline volume three times.

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- a. If impractical to flush large diameter pipe at 2.5 fps, clean in-place from inside by brushing and sweeping, then flush line at lower velocity. If lower velocity is used, flush the entire pipeline volume five times.
2. Provide temporary means of removing flushing water from pipeline during flushing.
3. Provide means for removal/screening of debris from the flushing water, disposal of debris and disposal of flushing water.

3.4 TESTING

- A. Pressure test piping in accordance with the Pipe Schedule, and Section 15990, Pressure Testing of Piping Systems.

3.5 SUPPLEMENTS

- A. The following supplements are attached to this Specification section and incorporated herein by reference:
 1. 15100 PSDS COP – Copper Pipe
 2. 15100 PSDS GSP – Galvanized Steel Pipe
 3. 15100 PSDS PVC1 – Solvent Welded Polyvinyl Chloride Pipe
 4. 15100 PSDS PVC3 – Polyvinyl Chloride Drain, Waste and Vent Pipe

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SECTION 15100 PSDS COP

PIPING SYSTEM DATA SHEET – COPPER PIPE

ITEM	DESCRIPTION
Tubing	Seamless, conforming to ASTM B88 as follows: Potable water (buried)Type K, soft or hard temper Potable water (exposed)Type L, hard drawn Compressed air serviceType L, hard drawn P-Trap priming serviceType L, soft temper
Fittings	Commercially pure wrought copper, socket joint, conforming to ASTM B75, dimensions conforming to ANSI B16.22.
Flanges	Commercially pure wrought copper, socket joint, conforming to ASTM B75, faced and drilled 150-pound ANSI B16.24 standard.
Bolting	ASTM A307, carbon steel, Grade A hex head bolts, and ASTM A563 Grade A hex head nuts.
Gaskets	1/16-inch thick nonasbestos compression type, full face, Cranite, John Manville.
Solder	Joins 2-1/2 Inch and Smaller: Wire solder (95 percent tin), conforming to ASTM B32 Alloy Grade Sn95. Do not use cored solder. Joins Larger Than 2-1/2 Inch: Wire solder, melt range approximately 440 degrees F to 660 degrees F, conforming to ASTM B32 Alloy Grade HB or HN. Do not use cored solder.

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SECTION 15100 PSDS GSP**PIPING SYSTEM DATA SHEET – GALVANIZED STEEL PIPE**

ITEM	SIZE	DESCRIPTION
Pipe	2 inch & smaller 2-1/2 thru 6 inch 8 thru 12 inch 14 inch	Galvanized carbon steel, ASTM A106, Grade B seamless or ASTM A53 Rev A, Grade B seamless or ERW. Schedule 80. Schedule 40. Schedule 30. Standard weight.
Joints	3 inch & smaller 4 inch & larger	Threaded or flanged at valves and equipment, or grooved end meeting the requirements of AWWA C606. Flanged at valves and equipment, or grooved end meeting the requirements of AWWA C606.
Fittings		Threaded: 150- or 300-pound malleable iron, ASTM A197 or ASTM A47, dimensions in accordance with ANSI B16.3. Grooved End: Malleable iron ASTM A47 or ductile iron ASTM A536, 250 psi working pressure, grooved ends to accept couplings without field preparation. Victaulic or equal.
Branch Connections	2 inch & smaller 2-1/2 inch & larger	Tee or reducing tee in conformance with Fittings, above, galvanized 2,000-pound WOG threadolet or welding boss; galvanize after welding. Branch Same Size as Run: Grooved end tee in accordance with Fittings, above. Branch One or More Sizes Smaller Than Run: Grooved end reducing tee in accordance with Fittings, above.
Flanges		Galvanized forged carbon steel, ASTM A105/A105M, ANSI B16.5 Class 150 or Class 300, threaded, 1/16-inch raised face. Grooved end adapter flange, malleable iron ASTM A47 or ductile iron ASTM A536. Victaulic or equal.
Unions		Threaded malleable iron, ASTM A197 or A47, 300-pound WOG, brass to iron seat, meeting the requirements of ANSI B16.3.
Couplings		Grooved End: Rigid joint malleable iron, ASTM A47 or ductile iron, ASTM A536, 250 psi working pressure. Victaulic or equal.
Plugs		Forged carbon steel, ASTM A181/A181M Rev A, Grade II, round head, threaded, galvanized.
Bolting		Grooved End Couplings: Carbon steel, ASTM A183

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ITEM	SIZE	DESCRIPTION
		bolts and nuts, 110,000 psi minimum tensile strength. Flanges: Carbon steel ASTM A307, Grade A hex head bolts and ASTM A563, Grade A hex head nuts.
Gaskets	All Flanges Grooved end Couplings	Flanged, Water and Sewage Service: 1/8-inch thick, red rubber (SBR), hardness 80 (Shore A), rated to 200 degrees F., conforming to ANSI B16.21, AWWA C207, and ASTM D1330, Grades 1 and 2. Blind flanges shall be gasketed covering the entire inside face with the gasket cemented to the blind flange. EPDM or chlorinated butyl per ASTM D2000 for water and air to 230 degrees F, dimensions conforming to AWWA C606.
Thread Lubricant	2 inch & smaller	Teflon tape or joint compound that is insoluble in water.

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SECTION 15100 PSDS PVC1

PIPING SYSTEM DATA SHEET – SOLVENT WELDED POLYVINYL CHLORIDE PIPE

ITEM	DESCRIPTION
Pipe	Schedule 80 Polyvinyl Chloride (PVC), unless indicated otherwise. Type I, Grade I or Class 12454-B conforming to ASTM D1784 and ASTM D1785. Pipe shall be manufactured with 1% titanium dioxide for ultraviolet protection. All pipes designed to carry recycled water shall be colored purple or distinctively wrapped in purple tape.
Fittings	Schedule to match pipe above, ASTM D2466 and ASTM D2467 for socket weld type and Schedule 80 ASTM D2464 for threaded type. Fittings shall be manufactured with 1% titanium dioxide for ultraviolet protection.
Joints	Solvent socket weld except where connection to threaded valves and equipment may require future disassembly.
Flanges	One piece, molded hub type PVC flat face flange in accordance with Fittings above, 125-pound ANSI B16.1 drilling
Bolting	Hex Bolts: ASTM A193 B8, Type 304 stainless steel Nuts: ASTM A194 Grade 8, Type 304 stainless steel
Gaskets	Flat-Face Mating Flange: Full-faced 1/8-inch thick EPDM rubber.
Solvent Cement	As recommended by the pipe and fitting manufacturer conforming to ASTM D2564, except solvent weld cement for PVC pipe joints in sodium hypochlorite service shall be free of silica filler and shall be certified by the manufacturer to be suitable for that service. Certification shall be submitted.
Thread Sealant	Teflon Tape.

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SECTION 15100 PSDS PVC3

PIPING SYSTEM DATA SHEET – POLYVINYL CHLORIDE DRAIN, WASTE AND VENT PIPE

ITEM	DESCRIPTION
Pipe	PVC Drain Waste and Vent type, ASTM D1785, Type 2110, Schedule 40.
Fittings	Schedule to match pipe above, ASTM D2665 Drain, Waste and Vent Type
Joints	Solvent socket weld except where connection to threaded valves and equipment may require future disassembly.
Solvent Cement	As recommended by the pipe and fitting manufacturer conforming to ASTM D2564.
Thread Sealant	Teflon Tape.
Special Installation Instructions for DWV Piping	<ol style="list-style-type: none">1. Approximate routing as shown on drawings. Provide drain waste and vent piping to produce a complete, code-compliant drain, waste and vent system.2. Provide and install all required fittings, adapters, etc. to produce a complete system.3. Set piping above floor slab true and plumb.4. Set risers in CMU walls where possible, set exposed risers as close to walls as possible.5. Where vent stacks pass through roof, fit with flashing sleeve secured to roof.6. Extend vents minimum 1 foot above roof.

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SECTION 15100 PSDS PVC6

PIPING SYSTEM DATA SHEET – POLYVINYL CHLORIDE STORM DRAIN PIPE

ITEM	DESCRIPTION
Pipe	Conform to the requirements of ASTM D3034 (4 to 15-inch) and ASTM F679 (18 to 24-inch). Provide minimum SDR-26 storm drain pipe with a minimum pipe stiffness of 115 PSI. PWEagle, or Equal.
Fittings	Conform to the requirements of ASTM D3034 (4 to 15-inch) and ASTM F679 (18 to 24-inch). GPK, or Equal.
Joints	Rubber-gasketed bell and spigot or rubber-gasketed couplings conforming to ASTM D3212.
Gaskets	Conforming to the requirements of ASTM F477.
Joint Lubricant	Manufacturer's standard.

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SECTION 15500

HVAC

PART 1 - GENERAL

1.1 SYSTEM REQUIREMENTS

- A. Provide working space around all equipment. Provide all required fittings, connections and accessories required for a complete and usable system. Install all equipment in accordance with manufacturer's recommendations. Where the word "should" is used in manufacturer's instructions, substitute the word "must".
- B. Provide air conditioning and heating for spaces as indicated and for the following Design conditions:

1. Outdoor Design Conditions

Summer	
Outdoor Dry-Bulb Temperature	107 °F
Outdoor Wet-Bulb Temperature	71 °F
Winter	
Outdoor Dry-Bulb Temperature	34 °F

2. Indoor Design Conditions

Summer	
Pump Room Indoor Dry-Bulb Temperature	84 °F
Electrical/Control Room Dry-Bulb Temperature	71 °F
Chlorine Room Dry-Bulb Temperature	71 °F
Winter	
Electrical/Control Room Dry-Bulb Temperature	71 °F
Chlorine Room Dry-Bulb Temperature	71 °F

- C. Provide Ventilation rates and systems in accordance with ASHRAE Standard 62.1, *Ventilation for Acceptable Indoor Air Quality*.
- D. Configure the HVAC system to provide each zone with the choice of heating or cooling year-round unless otherwise indicated. Provide each zone with its own limited range of control, as allowed by the control system central workstation.
1. See the drawings for zone descriptions.
- E. Provide minimum 4-inch (100 mm) thick concrete housekeeping pads and vibration isolators as required under all floor-mounted equipment.

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- F. Provide all mechanical equipment HVAC cooling/heating coils with a manufacturer approved coating system. The heat transfer rating must be as installed.
- G. For unoccupied mode, provide the following night setback temperatures:
 - 1. For winter, 10 degrees F (6 degrees C) lower than indoor heating design conditions, but no lower than 55 degrees F (12.8 degrees C).
 - 2. For summer, 5 degrees F (3 degrees C) higher than indoor cooling design conditions, but no higher than 85 degrees F (29.4 degrees C).

1.1 SUBMITTALS:

- A. Complete specifications, descriptive drawings, catalog cuts, and descriptive literature that include make, model, dimensions, weight of equipment, horsepower, and electrical schematics for products and control system components specified.
- B. Complete performance data that indicates full compliance with the Specifications.
- C. Recommended procedures for protection and handling of equipment and materials prior to installation.
- D. Manufacturer's standard finish color selection for cabinet finishes.
- E. Operation and maintenance manuals.
 - 1. List of recommended spare parts for equipment and materials specified.
 - 2. Manufacturer's Certificate of Conformance for the heat pumps.

PART 2 - PRODUCTS

2.1 CONTROLS AND INSTRUMENTATION

- A. HVAC CONTROLS
 - 1. ELECTRONIC CONTROLS
 - a. Provide electronic controls with programmable thermostats for the HVAC systems and equipment.

2.2 SYSTEMS TESTING AND BALANCING

- A. Provide complete Testing and Balancing of all air and water distribution systems and HVAC equipment.

++End of Section ++

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SECTION 15600

TESTING, ADJUSTING AND BALANCING OF HVAC SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. Provide all labor, materials, equipment and incidentals as shown on the Drawings, specified and required to perform the testing, adjusting and balancing of HVAC systems.

1.2 QUALITY ASSURANCE

A. Balancer's Qualifications:

1. Submit biographical data on employee proposed to directly supervise the testing, adjusting and balancing Work.
2. Submit proof of certification by NEBB (National Environmental Balancing Bureau), AABC (Associated Air Balance Council), or SMACNA (Sheet Metal and Air Conditioning Contractors' National Association), proof of registration in the State of Arizona and a record of at least five years experience in the testing and balancing contracting industry, engaged in heating, ventilating and air conditioning (HVAC) Work.

1.3 SUBMITTALS

A. Data Forms:

1. Submit data forms on each item of testing equipment required. Include name of device, manufacturer's name, model number, latest date of calibration, and correction factors.
2. All field data pertaining to each item of equipment being tested must be tabulated and submitted on the standard forms of NEBB, AABC, or SMACNA.
3. Testing agency shall sign and date each form in the space provided and proof of certification shall accompany the final report.

B. Report Forms:

1. Submit example copies of report forms for ENGINEER'S approval.
2. Forms shall be 8-1/2 by 11-inch paper for loose-leaf binding, with blanks for listing of the required test ratings and for certification of report.
3. Reports shall be on the organizations approved forms imprinted with the company's name.
4. Certified report outlining procedure used to balance the system and the types of measuring devices used.

C. Test results shall be submitted on approved forms in a typed format.

D. Submit certified copies of required test reports to the ENGINEER for approval.

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1.4 JOB CONDITIONS

- A. Heating, ventilating and air conditioning equipment shall be completely installed and in continuous operation as required to accomplish the testing, adjusting and balancing Work specified.
- B. Testing, adjusting and balancing shall be performed when outside conditions approximate design conditions indicated for heating and cooling functions.

1.5 OPERATING INSTRUCTIONS

- A. Reports shall be certified by CONTRACTOR verifying that the methods used and the results achieved are as specified.

1.6 CORRECTIVE ADJUSTMENTS

- A. Should corrective measures caused by faulty installation require retesting, adjusting and balancing, such Work shall be performed by CONTRACTOR, at no additional cost to the OWNER.
- B. Inspections:
 - 1. Fan Belt Deflection: No less than 1/4-inch or more than a 1/2-inch.
 - 2. Finned Coils: Fins shall be combed out with a fin comb for appropriate fin spacing. Helical fins shall be straightened with blunt bladed instrument.

PART 2 - PRODUCTS

2.1 BALANCING INSTRUMENTATION

- A. Provide all necessary instrumentation, tools, ladders, etc. to complete all air balancing, tests and adjustments.
- B. Instrumentation shall be in accordance with NEBB, AABC, or SMACNA requirements and shall be calibrated to the accuracy standards stipulated by these organizations.
- C. Flow-measuring hoods (manufactured, not fabricated) shall be acceptable for measurement of ceiling diffuser performance only.
- D. Assume full responsibility for safe keeping of all instrumentation during the course of the Work.

PART 3 - EXECUTION

3.1 GENERAL

- A. Testing, adjusting, and balancing of air systems shall be performed in compliance with the standard procedure manual published by the testing, adjusting, and balancing

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organization affiliated with CONTRACTOR. Submit one copy of the standard procedure manual to the ENGINEER for record purposes only.

- B. Sole responsibility for the protection and safeguarding of the Work and providing every protection against accidents, injury, and damage to persons and property belongs to CONTRACTOR.
- C. Keep dust, dirt, and debris to an absolute minimum and reinstall all removed ceiling components to their original positions at the end of each day.
- D. Full responsibility for removal and reinstallation of ceiling system and replacement of any component damaged belongs to CONTRACTOR.
- E. Install additional access panels, at no additional cost to the OWNER, as required to gain access to equipment concealed above ceilings, behind walls, or any other concealed space.
- F. Air systems shall be tested, adjusted, and balanced with clean filters.
- G. Provide final air balancing report to Maricopa Building Official prior to notifying Maricopa County for final inspection of mechanical work. (IMC, Section 107)

3.2 INSPECTION

- A. Pre-Startup Inspection:
 - 1. Verify proper equipment mounting and setting.
 - 2. Verify that control, interlock and power wiring is complete.
 - 3. Verify alignment of motors and drives.
 - 4. Verify proper piping connections and accessories.
 - 5. Verify that lubrication is completed.
- B. First Run Observations:
 - 1. Verify direction of rotation.
 - 2. Verify setting of safety controls.
 - 3. Monitor heat build up in bearings.
 - 4. Check motor loads against manufacturer's nameplate data.
- C. Equipment Check:
 - 1. Verify proper overload heater sizes.
 - 2. Verify function of safety and operating controls.
 - 3. Verify proper operation of equipment.
 - 4. Report on inspection, observation and checking procedures.

3.3 AIR SYSTEMS

- A. Preliminary:
 - 1. Identify and list size, type and manufacturer of all equipment to be tested, including air terminals.

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B. Central Systems:

1. Test rpm for all equipment, including adjustment to each fan and air handling unit, and air conditioning unit to design requirements within the limits of mechanical equipment provided.
2. Adjust or change drive sheaves as required to adjust actual cfm to scheduled cfm.
3. Test and record motor voltages and running amperes, including motor manufacturer's nameplate data, and starter heater ratings for each unit as listed above.
4. Make Pitot tube traverse of main supply, exhaust and return ducts, determine cfm at all fans and units and adjust fans and units to within five percent of design requirements.
5. Test and record system suction and discharge static pressure.
6. Test and adjust system for design outside air, cfm.
7. Test and adjust system for design recirculated air, cfm.
8. Test and record heating apparatus outdoor entering air temperatures, dry bulb.
9. Test and record heating apparatus return air temperatures, dry bulb.
10. Test and record heating apparatus mixed air temperatures, dry bulb.
11. Test and record heating apparatus leaving air temperatures, dry bulb.
12. Test and record cooling apparatus outdoor entering air temperatures, dry bulb and wet bulb.
13. Test and record cooling apparatus return air temperatures, dry bulb and wet bulb.
14. Test and record cooling apparatus mixed air temperatures, dry bulb and wet bulb.
15. Test and record cooling apparatus leaving air temperatures, dry bulb and wet bulb.
16. Record all fan and air handling unit speeds.
17. Record air quantity delivered by each fan and air handling unit.

C. Distribution:

1. Adjust volume dampers, control dampers, splitter dampers, air extractors, etc. to proper design cfm in main ducts, branch ducts, and zones.

D. Air Terminals:

1. Identify each air terminal as to location and determine required flow reading.
2. Test and adjust each air terminal to within tolerance of design requirements as listed below:
 - a. Diffusers and Supply Registers: 0 percent to +10 percent.
 - b. Return Registers: 0 percent to -10 percent.
 - c. Exhaust Registers: 0 percent to -10 percent.
3. Test procedure on air terminals shall include recording comparison of required cfm and observed cfm, adjustment of terminal, and recording of final cfm.
4. Adjust flow patterns from air terminal units to minimize drafts to extent design and equipment permits.

E. Verification:

1. Prepare summation of readings of observed cfm for each system, compared with required cfm, and verify that duct losses are within specified allowable range.
2. Verify design cfm at fans as described above.
3. If the air systems are not properly balanced, rebalance and recheck all data in the presence of ENGINEER and as approved by the ENGINEER.

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3.4 AUTOMATIC CONTROL SYSTEM

- A. In cooperation with the control manufacturer's representative, set and adjust automatically operated devices to achieve required sequence of operations.
- B. Verify all controls for proper calibration and operation and list those controls requiring adjustment by control system installer.

3.5 MANUFACTURER'S SERVICES

- A. A factory trained representative shall be provided for installation supervision, start-up and test services and operation and maintenance personnel training services. The representative shall make a minimum of 2 visits, minimum 4 hours on-site for each visit, to the site. The first visit shall be for assistance in the installation of equipment. The second visit shall be for checking the completed installation and start-up of the system and instruction of Operations and Maintenance Personnel. Manufacturer's representative shall test operate the system in the presence of the ENGINEER and verify that the equipment and controls conform to requirements. Representative shall revisit the job site as often as necessary until all trouble is corrected and the installation is entirely satisfactory.
- B. All costs, including travel, lodging, meals and incidentals, shall be considered as included in CONTRACTOR'S bid price.

+ + END OF SECTION + +

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SECTION 15930
FIRE SUPPRESSION SPRINKLER SYSTEM

PART 1 - GENERAL

1.1 DESIGN REQUIREMENTS

A. General

1. Design the fire suppression sprinkler system and fire pumping system in accordance with the requirements of this Section.
2. Coordinate the design of the fire suppression sprinkler system with the authorities having jurisdiction in the Project locality. Obtain required permits and arrange for inspections required by such permit.
3. Coordinate fire suppression sprinkler system routing with building structure, other piping, ductwork, and electrical.
4. Verify and incorporate into the design the actual water pressure and available waterflow for the fire suppression sprinkler system.
5. Coordinate the design with electrical systems and provide appropriate circuits for all required electrical devices.
6. Sprinkler Heads: Locate in ceiling tile in a generally symmetrical configuration.

1.2 SUBMITTALS

A. Shop Drawings:

1. Reflected ceiling plans showing sprinkler head locations.
2. Schematic, wiring, and interconnection diagrams of system and control panel.
3. Catalog cuts of system components.
4. Design calculations.

B. Quality Control Submittals:

1. Written documentation showing proof of system designer's and installer's qualifications.
2. Manufacturer's installation instructions for supervisory switches.
3. Certificate of Compliance: Upon completion of the system installation, verify all fire department hose connections, and check all fire safety devices to ensure their readiness for emergency connection and operation.
4. Written evidence that required permits have been secured and that inspections and acceptance tests have been satisfactorily performed.
5. Written test reports of each test and inspection.
6. Operation and maintenance manual.

1.3 QUALITY ASSURANCE

- A. Qualifications: Design and installation shall be performed by persons with an established reputation in the fire protection industry who can furnish a list of satisfactory installations of the type of system specified.
- B. Regulatory Requirements:
 - 1. NFPA 13
 - 2. International Fire Code
 - 3. Requirements of OWNER's insurance underwriter, if applicable.
 - 4. City or State authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Materials manufactured within scope of Underwriters Laboratories shall conform to UL Standards and have an applied UL listing mark.
- B. All equipment shall be Factory Mutual (FM) approved.
- C. Provide all valves, backflow preventers, fittings, supports, electrical conduit, wire, breakers, etc. for a complete system in accordance with NFPA 13 from the point of tie-in with the main water line as indicated on the drawings.

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

- A. Upon completion of fire protection system, perform acceptance test as required and outlined in NFPA 13 and NFPA 14.
- B. Notify the authority having jurisdiction of acceptance test readiness.

3.2 PERFORMANCE TEST

- A. Test in accordance with NFPA 13 and NFPA 14.
- B. Perform under actual or approved simulated operating conditions.
- C. Test for a continuous 3-hour period without malfunction.
- D. Perform with the ENGINEER and authority having jurisdiction present.

+ + END OF SECTION + +

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SECTION 15990

TESTING OF PRESSURE PIPING SYSTEMS

PART 1 - SUBMITTALS

1.1 TESTING PLAN

- A. Testing Plan: Submit prior to testing and include at least the information that follows.
 - a. Testing dates.
 - b. Piping systems and section(s) to be tested.
 - c. Test type.
 - d. Method of isolation.
 - e. Calculation of maximum allowable leakage for piping section(s) to be tested.
2. Certifications of Calibration: Testing equipment.
3. Certified Test Report.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 NOTIFICATION

- A. Notify ENGINEER in writing 5 days in advance of testing. Perform testing in presence of ENGINEER.

3.2 PRESSURE TESTING

- A. General:
 1. Complete installation of piping system, including all thrust restraint, prior to pressure testing.
 - a. If thrust blocking is specified, wait 5 days minimum after concrete thrust blocking is installed to perform pressure tests. If high-early strength cement is used for thrust blocking, wait may be reduced to 2 days.
 2. Prior to test, remove and replace with pipe spools or suitably isolate appurtenant instruments or devices that could be damaged by pressure testing.
 3. New Piping Connected to Existing Piping: Isolate new piping with grooved-end pipe caps, spectacle blinds, blind flanges, or as acceptable to ENGINEER.
 4. Piping to be Pressure Tested and Test Pressure: as indicated on Piping Schedule.
- B. Testing with Water (non-HDPE2 pipe):
 1. Fluid: Clean, potable water.
 2. Pipeline Protection:
 - a. Maximum Filling Velocity: 0.25 foot per second, applied over full area of pipe.
 - b. Vent piping during filling. Open vents at high points of piping system or loosen flanges, using at least four bolts, or use equipment vents to purge air pockets.
 3. Exposed Piping:

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- a. Perform testing on insulated piping prior to application of insulation
- b. Maintain hydrostatic test pressure continuously for 60 minutes, minimum, and for such additional time as necessary to conduct examinations for leakage.
- c. Examine joints and connections for leakage.
 - 1) Correct visible leakage and retest as specified.
 - 2) Empty pipe of water prior to final cleaning or disinfection.
4. Buried Piping:
 - a. Test after backfilling has been completed.
 - b. Expel air from piping system during filling.
 - c. Apply and maintain specified test pressure with hydraulic force pump. Valve off piping system when test pressure is reached.
 - d. Maintain hydrostatic test pressure continuously for 2 hours minimum, reopening isolation valve only as necessary to restore test pressure.
 - e. Determine actual leakage by measuring quantity of water necessary to maintain specified test pressure for duration of test.
 - f. Maximum Allowable Leakage:

$$L = \frac{SD(P)^{1/2}}{133,200}$$

where:

- L = Allowable leakage, in gallons per hour.
 S = Length of pipe tested, in feet.
 D = Nominal diameter of pipe, in inches.
 P = Test pressure during leakage test, in pounds per square inch.
- g. Correct leakage greater than allowable, and retest as specified.

3.3 PIPE PRESSURE TESTING LOG

- A. All pressure tests shall be witnessed by ENGINEER. CONTRACTOR shall keep a pipe pressure testing log to document the pressure testing and ENGINEER's approval of such.
 1. Specific details of the contents and format pipe pressure testing log shall be determined by the CONTRACTOR and approved by the ENGINEER.
 2. At a minimum, pipe pressure testing log shall record, on a daily basis for any day when pipe pressure testing is performed:
 - a. Test Report Documentation:
 - 1) Test date.
 - 2) Description and identification of piping tested.
 - 3) Test fluid.
 - 4) Test pressure.
 - 5) Remarks, including:
 - a) Leaks (type, location).
 - b) Repair/replacement performed to remedy excessive leakage.
 3. Pipe pressure testing log shall be kept on-site. Pipe pressure testing log shall be signed on a daily basis, for any day when pipe pressure testing log work is performed, by the supervisor of the CONTRACTOR's field crew and by the ENGINEER.
 4. Any piping system which was pressure testing, but which was not recorded in the pipe pressure testing log shall be re-tested at the ENGINEER's discretion.

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+ + END OF SECTION + +

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SECTION 15995

DISINFECTION OF POTABLE WATER SYSTEMS

PART 1 - GENERAL

1.1 SUBMITTALS

- A. Informational Submittals:
 - 1. Plan describing and illustrating conformance to appropriate AWWA standards and this Specification.
 - 2. Procedure and plan for cleaning system.
 - 3. Procedures and plans for disinfection and testing.
 - 4. Proposed locations within system where Samples will be taken.
 - 5. Type of disinfecting solution and method of preparation.
 - 6. Certification that employees working with concentrated chlorine solutions or gas have received appropriate safety training.
 - 7. Method of disposal for highly chlorinated disinfecting water.
 - 8. Independent Testing Agency: Certification that testing agency is qualified to perform bacteriological testing in accordance with AWWA standards, agency requirements, and this Specification.
 - 9. Certified Bacteriological Test Results:
 - a. Facility tested is free from coliform bacteria contamination.
 - b. Forward results directly to ENGINEER.

1.2 QUALIFICATIONS

- A. Independent Testing Agency: Certified in the State of California with 10 years' experience in field of water sampling and testing. Agency shall use calibrated testing instruments and equipment, and documented standard procedures for performing specified testing.

PART 2 - PRODUCTS

2.1 WATER FOR DISINFECTION

- A. Clean, uncontaminated, and potable.
- B. CONTRACTOR shall make arrangements for water supply and convey water in disinfected pipelines or containers.

2.2 CONTRACTOR'S EQUIPMENT

- A. Furnish chemicals and equipment, such as pumps and hoses, to accomplish disinfection.
- B. Water used to fill pipeline may be supplied using a temporary connection to existing distribution system. Provide protection against cross-connections as required by AWWA C651.

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PART 3 - EXECUTION

3.1 GENERAL

- A. Conform to AWWA C651 for pipes and pipelines, C652 for tanks and reservoirs, C653 for water treatment plants and filters, and C654 for wells, except as modified in these Specifications.
- B. Disinfect the following items installed or modified under this Project, intended to hold, transport, or otherwise contact potable water:
 - 1. Pipelines: Disinfect new pipelines that connect to existing pipelines up to point of connection.
- C. Disinfect surfaces of materials that will contact finished water, both during and following construction, using one of the methods described in AWWA C652 and C653. Disinfect prior to contact with finished water. Take care to avoid recontamination following disinfection.
- D. Prior to application of disinfectants, clean pump, tank, filters, and pipelines of loose and suspended material.
- E. Allow freshwater and disinfectant solution to flow into pipe or vessel at a measured rate so chlorine-water solution is at specified strength. Do not place concentrated liquid commercial disinfectant in pipeline or other facilities to be disinfected before it is filled with water.

3.2 PIPING

- A. Cleaning:
 - 1. Before disinfecting, clean all foreign matter from pipe in accordance with AWWA C651.
- B. If the continuous feed method or the slug method of disinfection, as described in AWWA C651 are used, flush pipelines with potable water until clear of suspended solids and color. Provide hoses, temporary pipes, ditches, and other conduits as needed to dispose of flushing water without damage to adjacent properties.
- C. Flush service connections and hydrants. Flush distribution lines prior to flushing hydrants and service connections. Operate valves during flushing process at least twice during each flush.
- D. Flush pipe through flushing branches and remove branches after flushing is completed.
- E. Disinfecting Procedure: In accordance with AWWA C651, unless herein modified.

3.3 DISPOSAL OF HEAVILY CHLORINATED WATER

- A. Do not allow flow into a waterway without neutralizing disinfectant residual.

- B. See the appendix of AWWA C651, C652, C653, and C654 for acceptable neutralization methods.

+ + END OF SECTION + +

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SECTION 16050

GENERAL ELECTRICAL PROVISIONS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope:
 - 1. CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown, specified, and required to complete the electrical Work.
- B. Coordination:
 - 1. Review installation procedures under other Sections and coordinate the installation of items that shall be installed with the formwork, walls, partitions, ceilings and panels.
 - 2. CONTRACTOR shall be responsible for the installation of all conduits, inserts and other items to be embedded in the concrete, or built into walls, partitions, ceilings or panels constructed by other contractors. CONTRACTOR shall provide other contractors with detailed plans or sketches of the location of said conduits and other built-in items as may be required. CONTRACTOR shall keep himself fully informed of the construction where conduits and other built-in items are to be installed. CONTRACTOR shall install said conduits and other built-in items in such a manner and within such time periods as will not unnecessarily delay the Work of the other contractors.
- C. General:
 - 1. Interpretation of Drawings:
 - a. Dimensions shown on the Drawings that are related to equipment are based on one manufacturer's equipment. Coordinate the dimensions of the equipment furnished with the space allocated for that equipment.
 - b. The Drawings show the principal elements of the electrical installation. They are not intended as detailed working drawings for the electrical Work but as a complement to the Specifications to clarify the principal features of the electrical systems.
 - c. It is the intent of this Section that all equipment and devices, furnished and installed under this and other Sections, be properly connected and interconnected with other equipment so as to render the installations complete for successful operation, regardless of whether all the connections and interconnections are specifically mentioned in the Specifications or shown on the Drawings.

1.2 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies:
 - 1. Permits: Obtain all permits required to commence work and, upon completion of the Work, obtain and deliver to ENGINEER a Certificate of Inspection and Approval from the State Board of Fire Underwriters or other authority having jurisdiction.
 - 2. Codes: Material and equipment shall be installed in accordance with the current standards and recommendations of the National Electrical Code, the National

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Electrical Safety Code and with local codes which apply. Where discrepancies arise between codes, the most restrictive regulation shall apply.

3. Tests by Independent Regulatory Agencies: Electrical material and equipment shall be new and shall bear the label of the Underwriters' Laboratories, Inc., or other nationally-recognized, independent testing laboratory, wherever standards have been established and label service regularly applies.
4. Utilities:
 - a. Work in connection with the electric service and utility metering shall be done in strict conformance with the requirements of the serving electric utility.
- B. Reference Standards: Electrical material and equipment shall conform in all respects to the latest approved standards of the following:
 1. National Electrical Manufacturers Association.
 2. The American National Standards Institute.
 3. The Institute of Electrical and Electronic Engineers.
 4. Insulated Power Cable Engineers Association.
 5. National Electrical Code (NEC).
 6. National Electrical Safety Code (NESC)

1.3 SUBMITTALS

- A. General:
 1. Conform to requirements of Section 01330, Submittal Procedures.
- B. Shop Drawings shall include the following information to the extent applicable to the particular item:
 1. Manufacturer's name and product designation or catalog number.
 2. Electrical ratings.
 3. Conformance to applicable standards or specifications of ANSI, ASTM, ICEA, IEEE, ISA, NEC, NEMA, NFPA, OSHA, UL, or other organizations.
 4. Dimensioned plan (including weight), section, and elevations showing means for mounting, conduit connection, and grounding.
 5. Materials and finish specification, including paints.
 6. List of components including manufacturer's names and catalog numbers.
 7. Internal wiring diagram indicating all connection to components and numbered terminals for external connections.

1.4 PROJECT CLOSEOUT

- A. Operation and Maintenance Data: Submit complete manuals including:
 1. Copies of all Shop Drawings, test reports, maintenance data and schedules, description of operation, and spare parts information.
 2. Furnish Operation and Maintenance Manuals in conformance with the requirements of Section 01330, Submittal Procedures.
- B. Record Drawings:
 1. Record Drawings shall include the following:
 - a. One line wiring diagram of the distribution system.
 - b. Actual in place conduit and cable layouts with schedule of conduit sizes and number and size of conductors.

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- c. Layouts of the grounding system and lighting arrangement.
- d. Control wiring diagrams with terminal numbers and all control devices identified.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Delivery of Materials: CONTRACTOR shall instruct the manufacturers and vendors as to the maximum shipping sizes of equipment that can be accommodated at the site.
- B. Handling and Storage of Materials: Conform to the requirements of Section 01650, Transportation, Handling, and Storage.

1.6 CONTROL CABINETS AND PANELS

- A. All control cabinets and panels located outdoors shall be weatherproof NEMA 3R steel, unless noted otherwise specified or noted on the Drawings.

1.7 ELECTRICAL EQUIPMENT

- A. All electrical equipment shall be capable of operating successfully at full-rated load, without failure, with an ambient outside air temperature of 25°F to 131°F and an elevation of 1,050 feet (MSL).
- B. All electrical devices and equipment shall have ratings based on 75°C terminations.

1.8 SCHEMATIC DIAGRAMS

- A. Schematic diagrams are provided for the CONTRACTOR'S guidance in fulfilling the operational intent of the Contract Documents.
- B. It shall be the CONTRACTOR'S responsibility to meet all safety and electrical codes, and to provide all equipment, appurtenances and specialty items required to provide for complete and operable systems.
- C. Review of control schemes submitted by the CONTRACTOR shall not relieve the CONTRACTOR of his contractual responsibility to provide complete and successfully operating systems.

PRODUCTS (NOT USED)

EXECUTION (NOT USED)

++ END OF SECTION ++

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EXHIBIT I

VOLUME 4 OF 4 - CONCEPT DRAWINGS (RFP #08-089)

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WEST SIDE TANK AND PUMP STATION OPERATIONS CREW FACILITY 4501 WESTPARK DRIVE ROSEVILLE, CA 95747 VOLUME 4 OF 4 - CONCEPT DRAWINGS (RFP# 08-089)

INDEX TO DRAWINGS

SHEET NO.	DRAWING NO.	TITLE
<u>GENERAL</u>		
1	G-01	COVER SHEET
<u>CIVIL</u>		
2	C-01	OVERALL SITE PLAN
3	C-02	SITE PLAN
<u>ARCHITECTURAL/STRUCTURAL</u>		
4	AS-01	ELEVATIONS
5	AS-02	ELEVATIONS
6	AS-03	PLAN
7	AS-04	FURNISHING KEY NOTE TABLE
8	AS-05	HVAC PLAN
<u>ELECTRICAL</u>		
9	E-01	LIGHTING AND RECEPTICLE PLAN
10	E-02	DATA PLAN

LIST OF DEFERRED SUBMITTALS:

- DESIGN DRAWINGS:
 - ARCHITECTURAL
 - STRUCTURAL
 - MECHANICAL
 - ELECTRICAL
- STRUCTURAL CALCULATIONS FOR BUILDING FRAMING, INCLUDING ROOF FRAMING.
- HVAC AND LIGHTING PLAN AND FIXTURE SCHEDULE.
- PLUMBING PIPING AND FIXTURE SCHEDULE.
- FIRE SUPPRESSION SYSTEM CALCULATIONS AND PLAN AND FIRE ALARM CONTROL SYSTEM.
- FURNISHING SCHEDULE.
- FINISH SCHEDULE AND FINISH SELECTIONS.
- DOOR AND WINDOW SCHEDULE.
- ENVIROMENTAL PROTECTION PLAN PER SPEC SECTION 01145.
- ACCESS, CONTROL AND SECURITY PLAN.
- ALL OTHER DESIGN RELATED CALCULATIONS SHALL BE SUBMITTED FOR APPROVAL.

JANUARY 2021
CONCEPT DRAWINGS



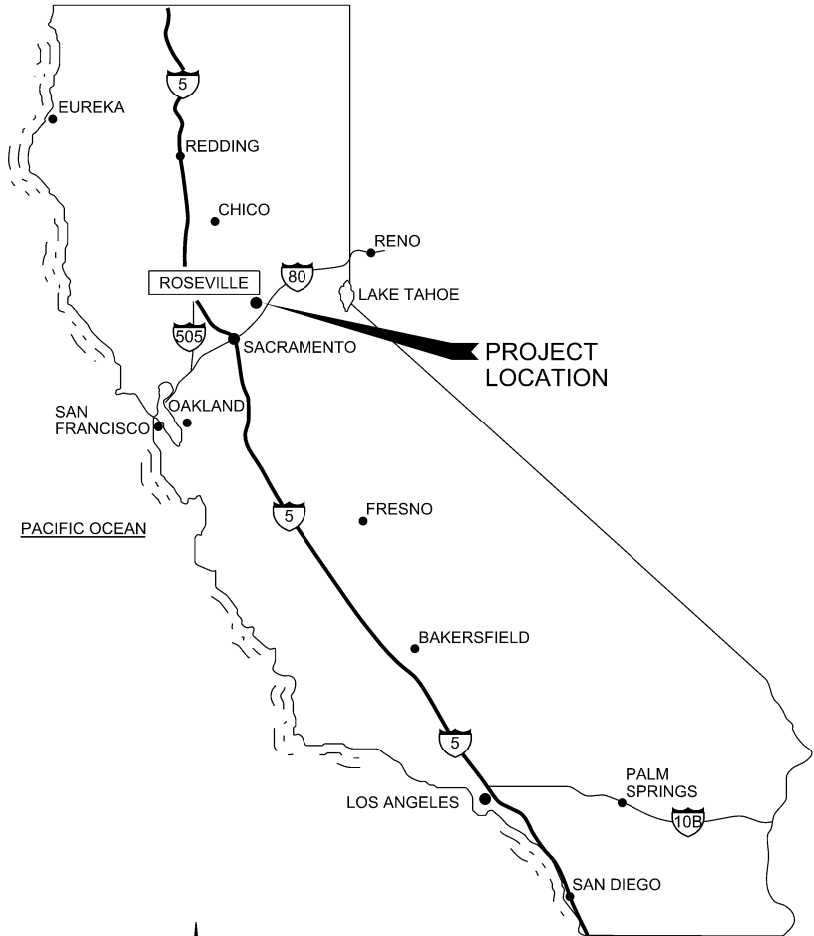
WATERWORKS
ENGINEERS

APPROVED BY EU DIRECTOR _____ DATE _____

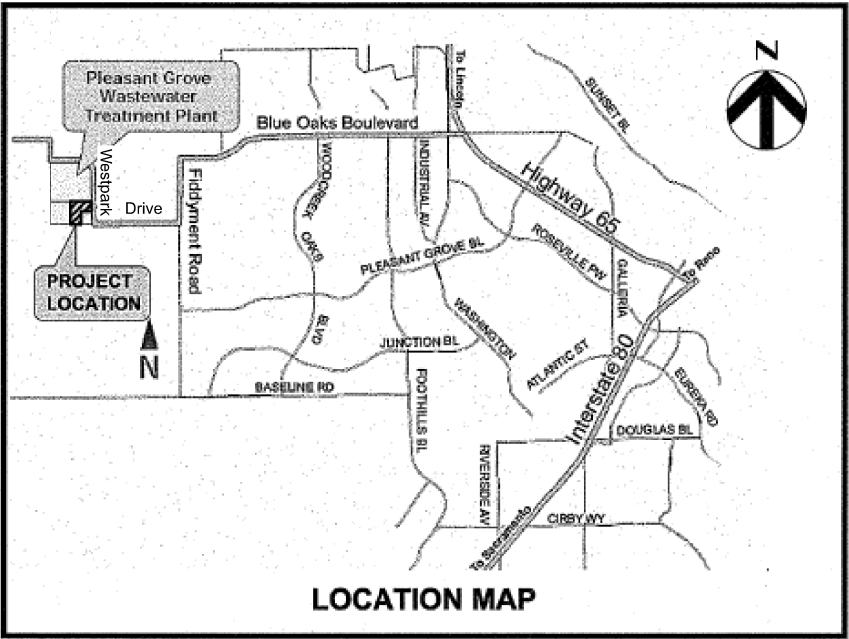
APPROVED BY WATER UTILITY MANAGER _____ DATE _____

APPROVED BY SENIOR ENGINEER _____ DATE _____

SUBMITTED BY _____ DATE _____



VICINITY MAP
NTS



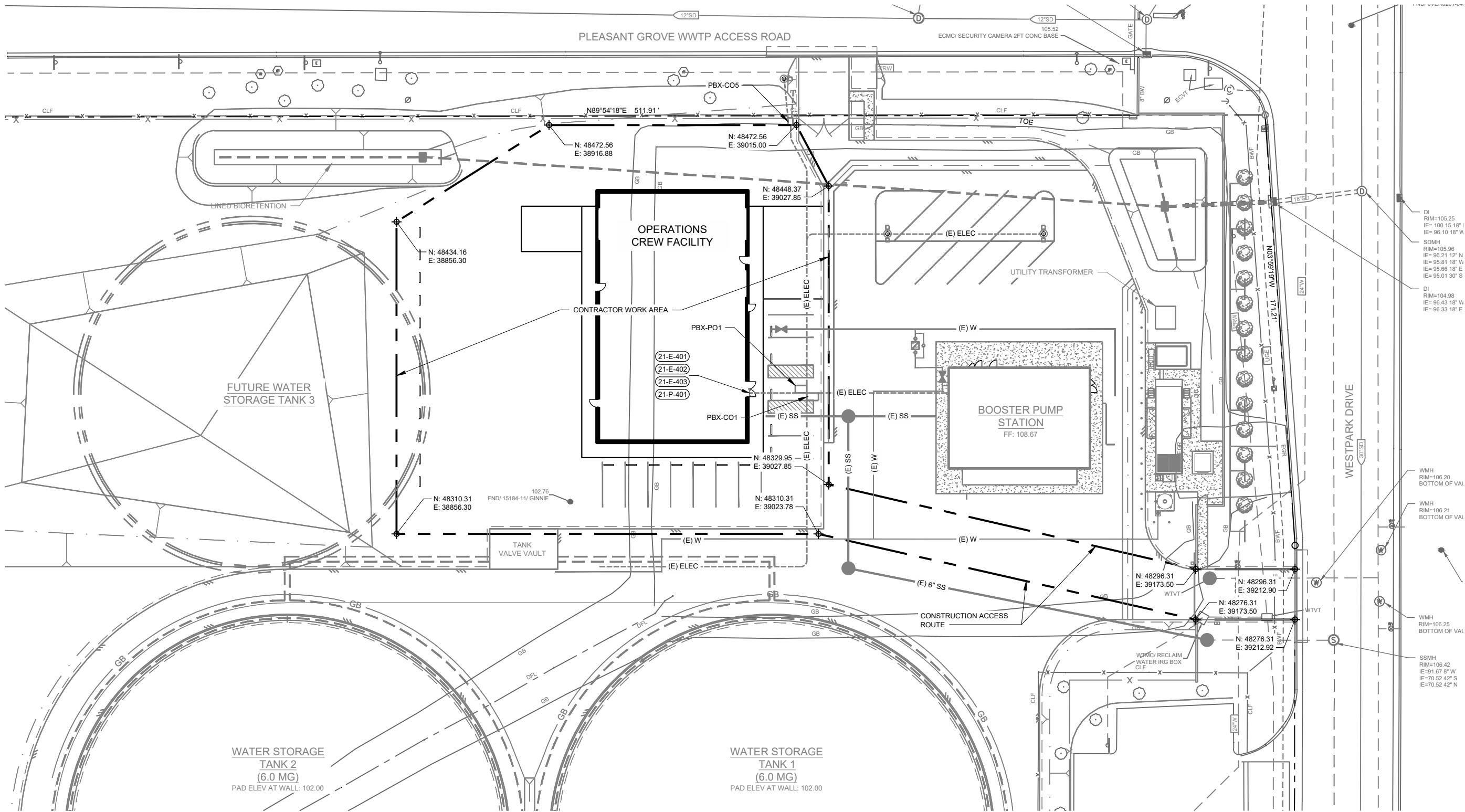
LOCATION MAP

LOCATION MAP
NTS

FOR INFORMATION REGARDING
THIS PROJECT CONTACT:

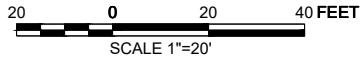
MIKE FISHER, PE
(916) 780-2888 EXT 401

L:\CAD\PROJECTS\17-083 ROSEVILLE WEST SIDE TANK - PS_(S)\PROJECT FILES\DELIVERABLES\CREW FACILITY\WD4500C001.DWG



NOTES:

- CONSTRUCTION AREA FOR OPERATIONS CREW FACILITY CONTRACTOR. KEEP CLEAR AT ALL TIMES AND COORDINATE OPERATIONS AND SWPPP ACTIVITIES WITH TANK AND PUMP STATION CONTRACTOR



PRELIMINARY - NOT FOR CONSTRUCTION

JOB NUMBER: 17-083 FILENAME: WD4500C001.DWG PLOT DATE: 12/30/20

PRELIMINARY - NOT FOR CONSTRUCTION

CIVIL

CITY OF ROSEVILLE

WEST SIDE TANK
AND PUMP STATION
OPERATIONS CREW FACILITY

ROSEVILLE, CALIFORNIA

OPERATIONS CREW FACILITY
OVERALL SITE PLAN

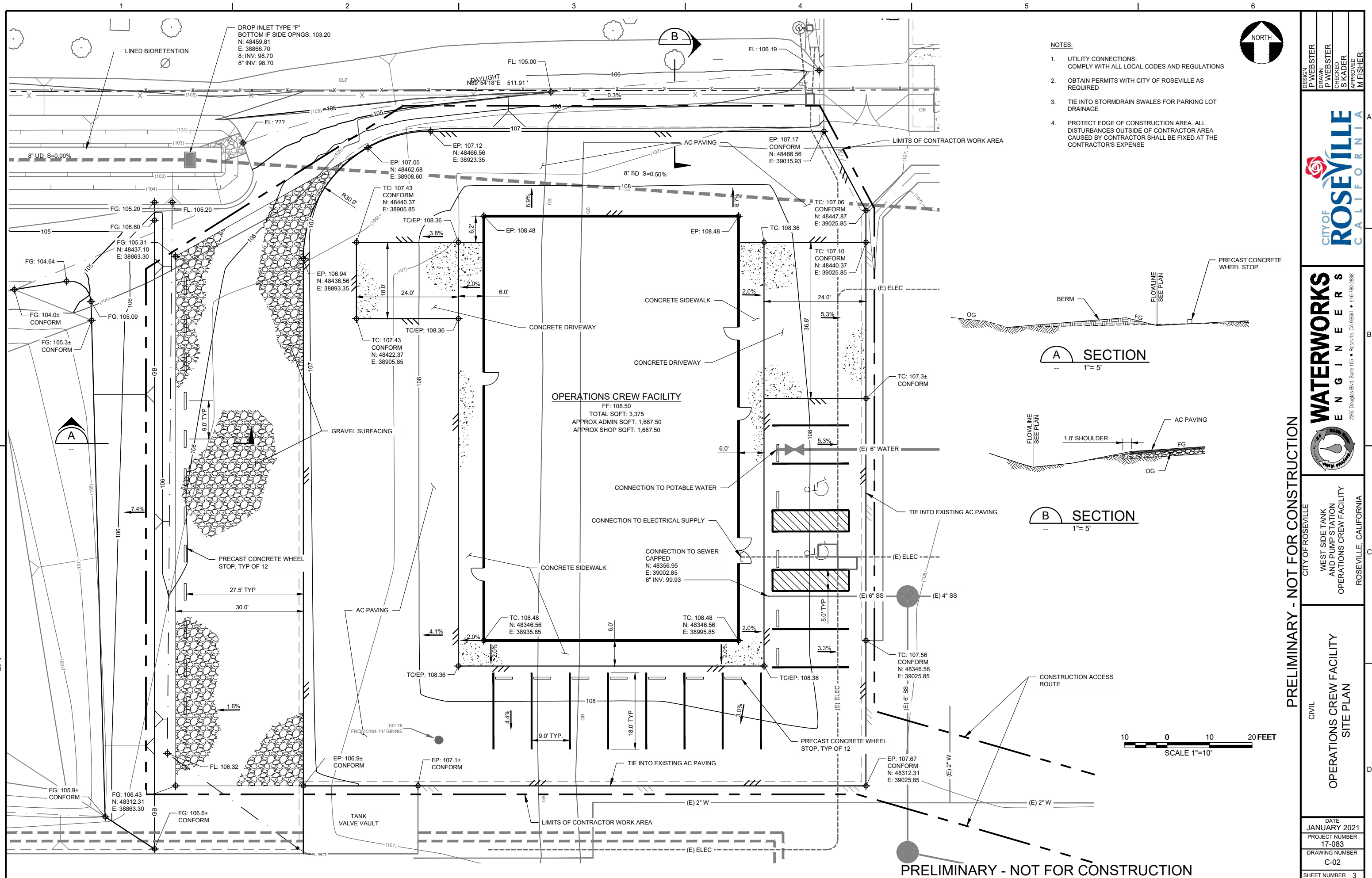
DATE
JANUARY 2021
PROJECT NUMBER
17-083
DRAWING NUMBER
C-01
SHEET NUMBER 2

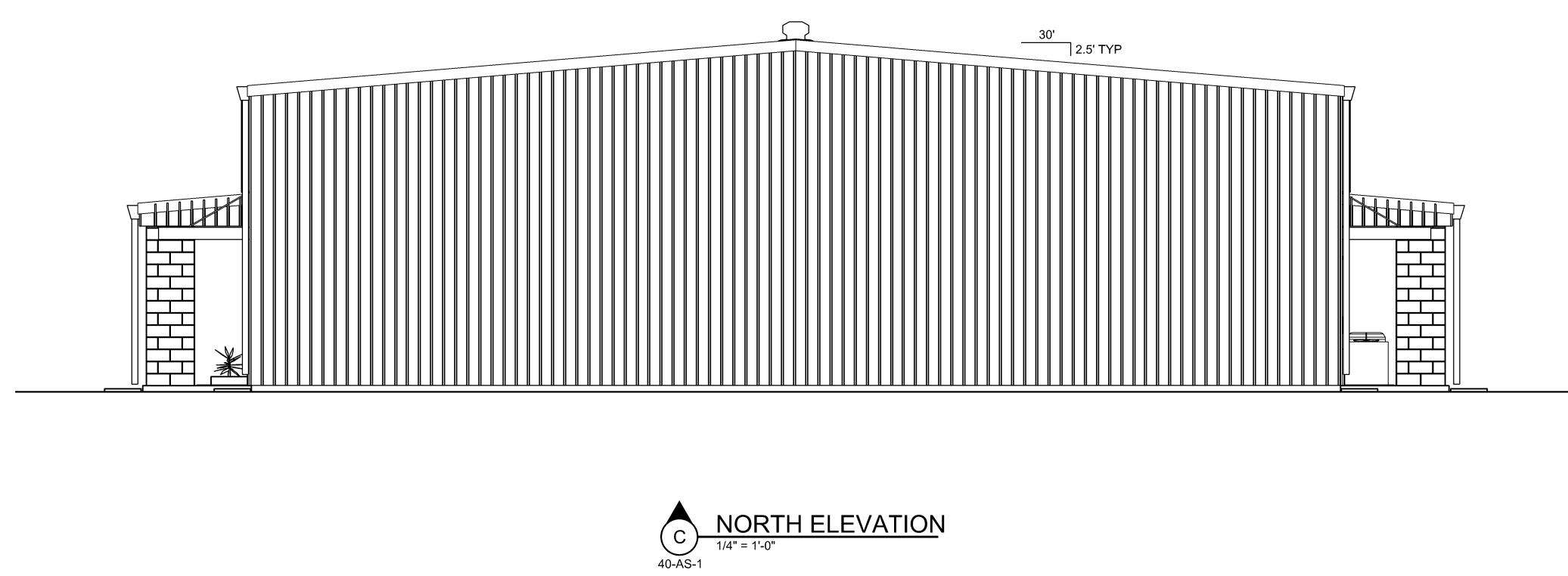
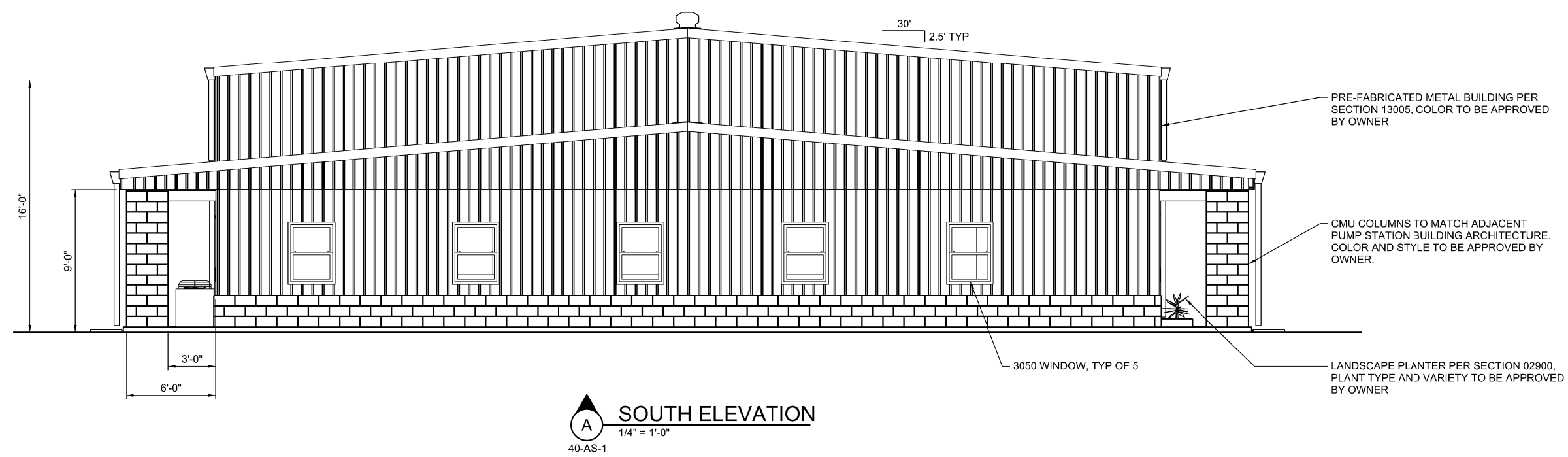
WATERWORKS
ENGINEERS
2200 Douglas Blvd., Suite 105 • Roseville, CA 95661 • 916-790-2988

CITY OF ROSEVILLE
CALIFORNIA

DESIGN
P. WEBSTER
DRAWN
P. WEBSTER
CHECKED
S. KADER
APPROVED
M. FISHER

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NOTES:

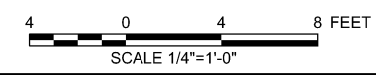
1. DRAWINGS SHOW MINIMAL REQUIREMENTS FOR THE PURPOSE OF DESIGN-BUILD PROPOSAL DEVELOPMENT, FINAL DETAILED DESIGN TO BE DEVELOPED BY CONTRACTOR AND APPROVED BY OWNER.

PRE-FABRICATED METAL BUILDING PER SECTION 13005, COLOR TO BE APPROVED BY OWNER


CMU COLUMNS TO MATCH ADJACENT PUMP STATION BUILDING ARCHITECTURE. COLOR AND STYLE TO BE APPROVED BY OWNER.

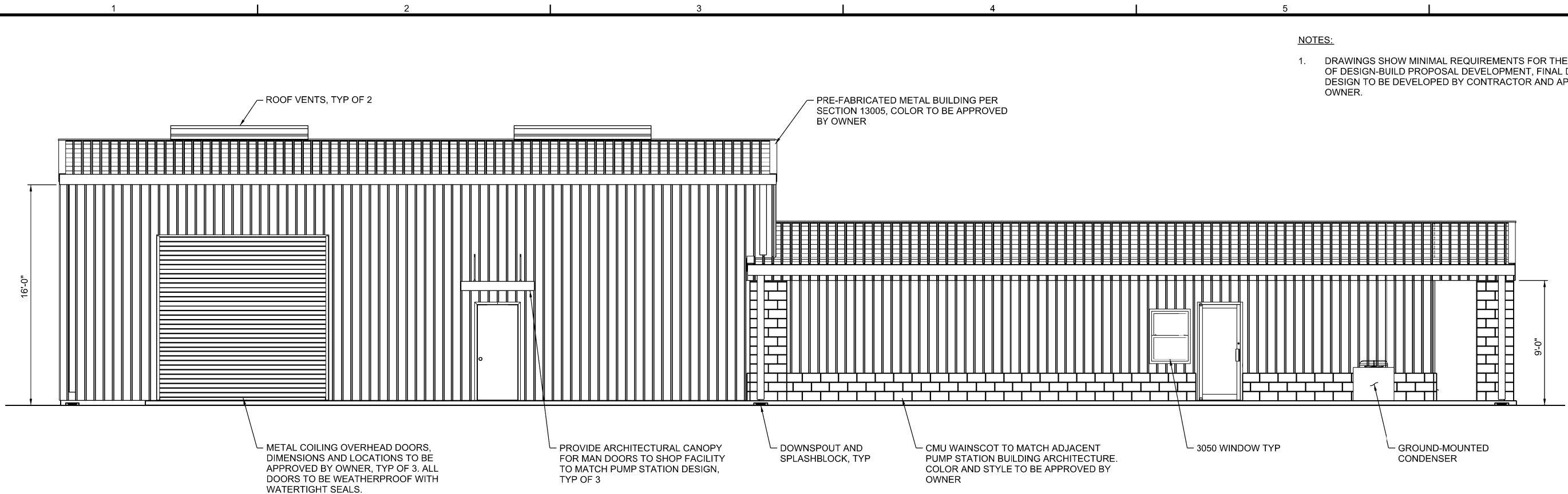
3050 WINDOW, TYP OF 5

LANDSCAPE PLANTER PER SECTION 02900, PLANT TYPE AND VARIETY TO BE APPROVED BY OWNER

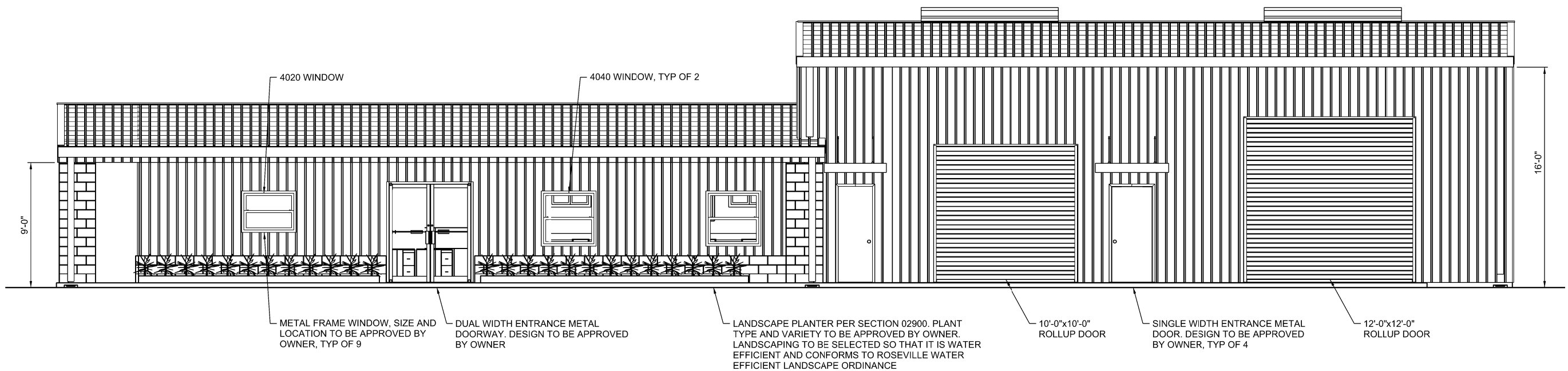


PRELIMINARY
NOT FOR
CONSTRUCTION

DESIGNED S. KADER	DRAWN J. MARTIN	CHECKED S. KADER	APPROVED M. FISHER
			
WATERWORKS ENGINEERS 2260 Douglas Blvd, Suite 105 • Roseville, CA 95661 • 916-789-2888			
CITY OF ROSEVILLE WEST SIDE TANK AND PUMP STATION OPERATIONS CREW FACILITY ROSEVILLE, CALIFORNIA			
ARCHITECTURAL/STRUCTURAL OPERATIONS CREW FACILITY ELEVATIONS			
DATE JUNE 2020			
PROJECT NUMBER 17-083			
DRAWING NUMBER AS-01			
SHEET NUMBER 4			



EAST ELEVATION
1/4" = 1'-0"
B
40-AS-1



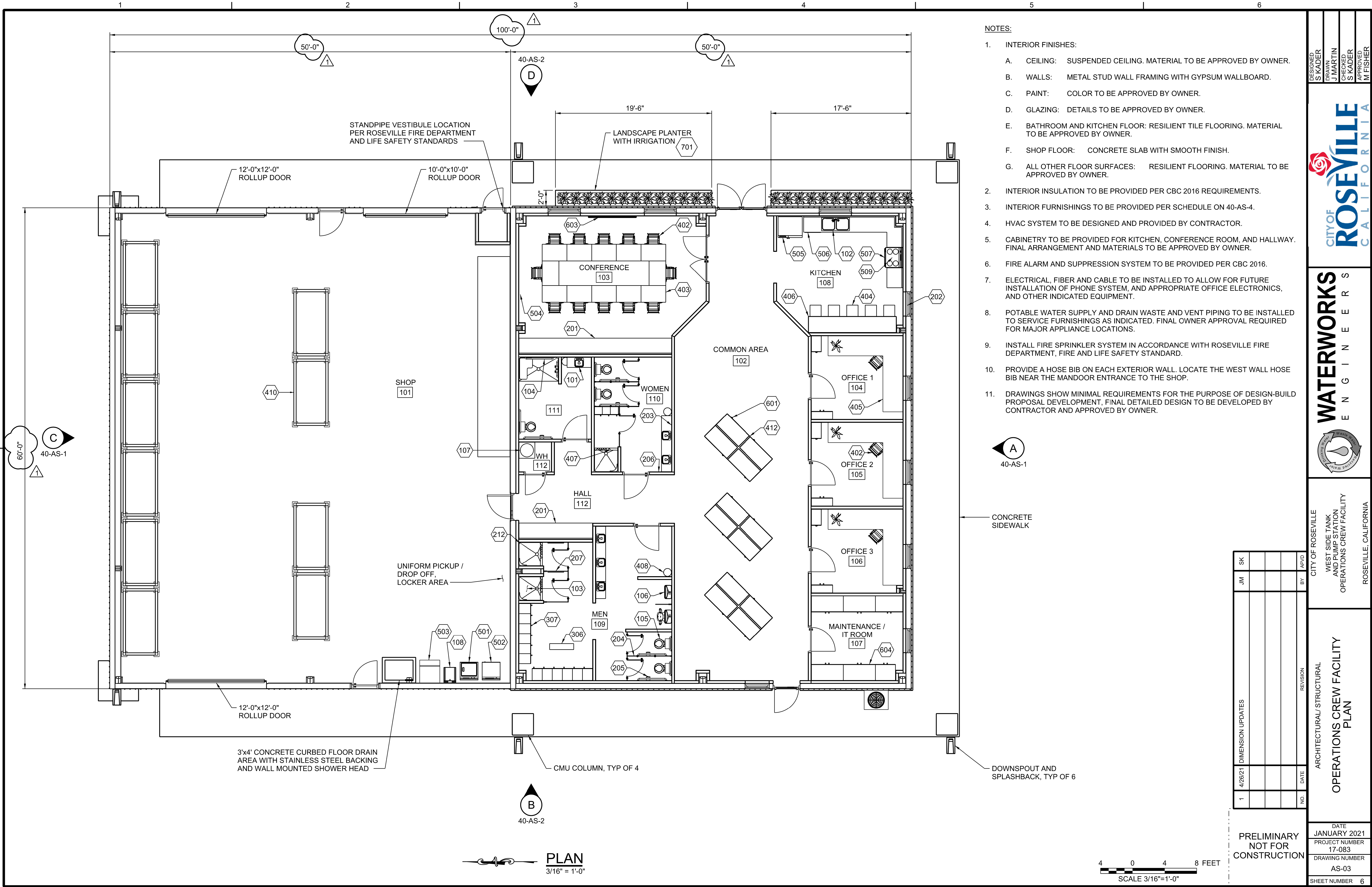
WEST ELEVATION
1/4" = 1'-0"
D
40-AS-1

NOTES:
1. DRAWINGS SHOW MINIMAL REQUIREMENTS FOR THE PURPOSE OF DESIGN-BUILD PROPOSAL DEVELOPMENT, FINAL DETAILED DESIGN TO BE DEVELOPED BY CONTRACTOR AND APPROVED BY OWNER.

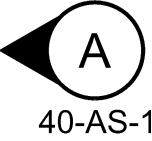
4 0 4 8 FEET
SCALE 1/4"=1'-0"

PRELIMINARY
NOT FOR
CONSTRUCTION

DESIGNED S. KADER	DRAWN J. MARTIN	CHECKED S. KADER	APPROVED M. FISHER
			
WATERWORKS ENGINEERS 2260 Douglas Blvd, Suite 105 • Roseville, CA 95661 • 916-795-2888			
CITY OF ROSEVILLE WEST SIDE TANK AND PUMP STATION OPERATIONS CREW FACILITY ROSEVILLE, CALIFORNIA			
ARCHITECTURAL/STRUCTURAL OPERATIONS CREW FACILITY ELEVATIONS			
DATE JUNE 2020			
PROJECT NUMBER 17-083			
DRAWING NUMBER AS-02			
SHEET NUMBER 5			

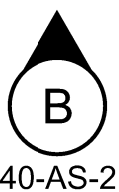


- NOTES:
- INTERIOR FINISHES:
 - CEILING: SUSPENDED CEILING. MATERIAL TO BE APPROVED BY OWNER.
 - WALLS: METAL STUD WALL FRAMING WITH GYPSUM WALLBOARD.
 - PAINT: COLOR TO BE APPROVED BY OWNER.
 - GLAZING: DETAILS TO BE APPROVED BY OWNER.
 - BATHROOM AND KITCHEN FLOOR: RESILIENT TILE FLOORING. MATERIAL TO BE APPROVED BY OWNER.
 - SHOP FLOOR: CONCRETE SLAB WITH SMOOTH FINISH.
 - ALL OTHER FLOOR SURFACES: RESILIENT FLOORING. MATERIAL TO BE APPROVED BY OWNER.
 - INTERIOR INSULATION TO BE PROVIDED PER CBC 2016 REQUIREMENTS.
 - INTERIOR FURNISHINGS TO BE PROVIDED PER SCHEDULE ON 40-AS-4.
 - HVAC SYSTEM TO BE DESIGNED AND PROVIDED BY CONTRACTOR.
 - CABINETRY TO BE PROVIDED FOR KITCHEN, CONFERENCE ROOM, AND HALLWAY. FINAL ARRANGEMENT AND MATERIALS TO BE APPROVED BY OWNER.
 - FIRE ALARM AND SUPPRESSION SYSTEM TO BE PROVIDED PER CBC 2016.
 - ELECTRICAL, FIBER AND CABLE TO BE INSTALLED TO ALLOW FOR FUTURE INSTALLATION OF PHONE SYSTEM, AND APPROPRIATE OFFICE ELECTRONICS, AND OTHER INDICATED EQUIPMENT.
 - POTABLE WATER SUPPLY AND DRAIN WASTE AND VENT PIPING TO BE INSTALLED TO SERVICE FURNISHINGS AS INDICATED. FINAL OWNER APPROVAL REQUIRED FOR MAJOR APPLIANCE LOCATIONS.
 - INSTALL FIRE SPRINKLER SYSTEM IN ACCORDANCE WITH ROSEVILLE FIRE DEPARTMENT, FIRE AND LIFE SAFETY STANDARD.
 - PROVIDE A HOSE BIB ON EACH EXTERIOR WALL. LOCATE THE WEST WALL HOSE BIB NEAR THE MANDOOR ENTRANCE TO THE SHOP.
 - DRAWINGS SHOW MINIMAL REQUIREMENTS FOR THE PURPOSE OF DESIGN-BUILD PROPOSAL DEVELOPMENT, FINAL DETAILED DESIGN TO BE DEVELOPED BY CONTRACTOR AND APPROVED BY OWNER.



CONCRETE SIDEWALK



DOWNSPOUT AND SPLASHBACK, TYP OF 6



PLAN
3/16" = 1'-0"

4 0 4 8 FEET
SCALE 3/16"=1'-0"

PRELIMINARY
NOT FOR
CONSTRUCTION

DESIGNED S KADER	DRAWN J MARTIN	CHECKED S KADER	APPROVED M FISHER
			
WATERWORKS ENGINEERS			
			
CITY OF ROSEVILLE WEST SIDE TANK AND PUMP STATION OPERATIONS CREW FACILITY ROSEVILLE, CALIFORNIA			
ARCHITECTURAL/STRUCTURAL OPERATIONS CREW FACILITY PLAN			
DATE JANUARY 2021			
PROJECT NUMBER 17-083			
DRAWING NUMBER AS-03			
SHEET NUMBER 6			

CONTRACTOR SUPPLIED FURNISHINGS			
TAG	QUANTITY	NAME	DIMENSIONS (W, L/H, D)
NOTE: ALL HEAT-GENERATING FURNISHINGS ARE TO BE ELECTRICAL (WATER HEATER, STOVE, ETC.) NO GAS IS TO BE PROVIDED TO FACILITY.			
100 - PLUMBING AND SANITARY ACCESSORIES			
101	6	LAVATORY	STANDARD
102	1	KITCHEN SINK	33" X 19" SIM
103	3	SHOWER STALL	32" X 72" X 32" SIM
104	1	HANDICAP SHOWER STALL	60" X 77" X 33" SIM
105	5	WATER CLOSET	STANDARD
106	2	URINAL	STANDARD
107	1	ELECTRIC WATER HEATER	20" X 49" X 20" SIM
108	1	UTILITY SINK	40" X 34" X 24" SIM
200 - CABINETY AND BUILT-IN ACCESSORIES			
201	3	CABINETY	VARIES, SEE DRAWINGS
202	9	WINDOW SHADES	VARIES, SEE DRAWINGS
203	3	MIRROR	COUNTER LENGTH X 30"
204	12	PARTITION DIVIDERS	STANDARD
205	5	WATER CLOSET ACCESSORIES	N/A
206	9	SINK ACCESSORIES	N/A
207	5	SHOWER ACCESSORIES	N/A
300 - FIXED FURNITURE			
306	1	BENCH	36" X 17" X 9" SIM
307	12	LOCKERS	15" X 78" X 18" SIM
700 - LANDSCAPING			
701	25	ORNAMENTAL PLANTS	5 GAL

OWNER SUPPLIED FURNISHINGS			
TAG	QUANTITY	NAME	DIMENSIONS (W, L/H, D)
NOTE: SHOWN ON DRAWINGS TO DEMONSTRATE INTENT AND GUIDE ELECTRICAL, PLUMBING, AND HVAC DESIGN			
400 - NON-FIXED FURNITURE			
402	TBD	OFFICE CHAIR	TBD
403	1	COLLABORATIVE TABLE	180" X 84" SIM
404	5	GUEST CHAIR	TBD
405	9	OFFICE DESK	TBD
406	2	PEDESTAL TABLE	24" X 29" X 44" SIM
407	4	SHOWER CURTAIN	TBD
408	3	TRASH CAN	TBD
410	10	STORAGE RACKS	TBD
412	5	CUBICLES	60" X 65" X 60" SIM
500 - APPLIANCES			
501	1	WASHER	27.5" X 42.0" X 27" SIM
502	1	ELECTRIC DRYER	29" X 27.8" X 43.4" SIM
503	1	ICE MACHINE	22" X 32" X 21" SIM
504	2	TV	TBD
505	1	REFRIGERATOR	33" X 66" X 27" SIM
506	1	COMPACT DISH WASHER	18" X 35" X 23" SIM
507	1	ELECTRIC STOVE AND RANGE	30" X 47.1" X 26" SIM
509	1	MICROWAVE	TBD
600 - OFFICE ACCESSORIES			

FURNISHING KEY NOTE TABLE

PRELIMINARY
NOT FOR
CONSTRUCTION

DESIGNED
S KADER

DRAWN
J MARTIN

CHECKED
S KADER

APPROVED
M FISHER



CITY OF ROSEVILLE
CALIFORNIA



WATERWORKS
ENGINEERS

CITY OF ROSEVILLE
WEST SIDE TANK
AND PUMP STATION
OPERATIONS CREW FACILITY

ROSEVILLE, CALIFORNIA

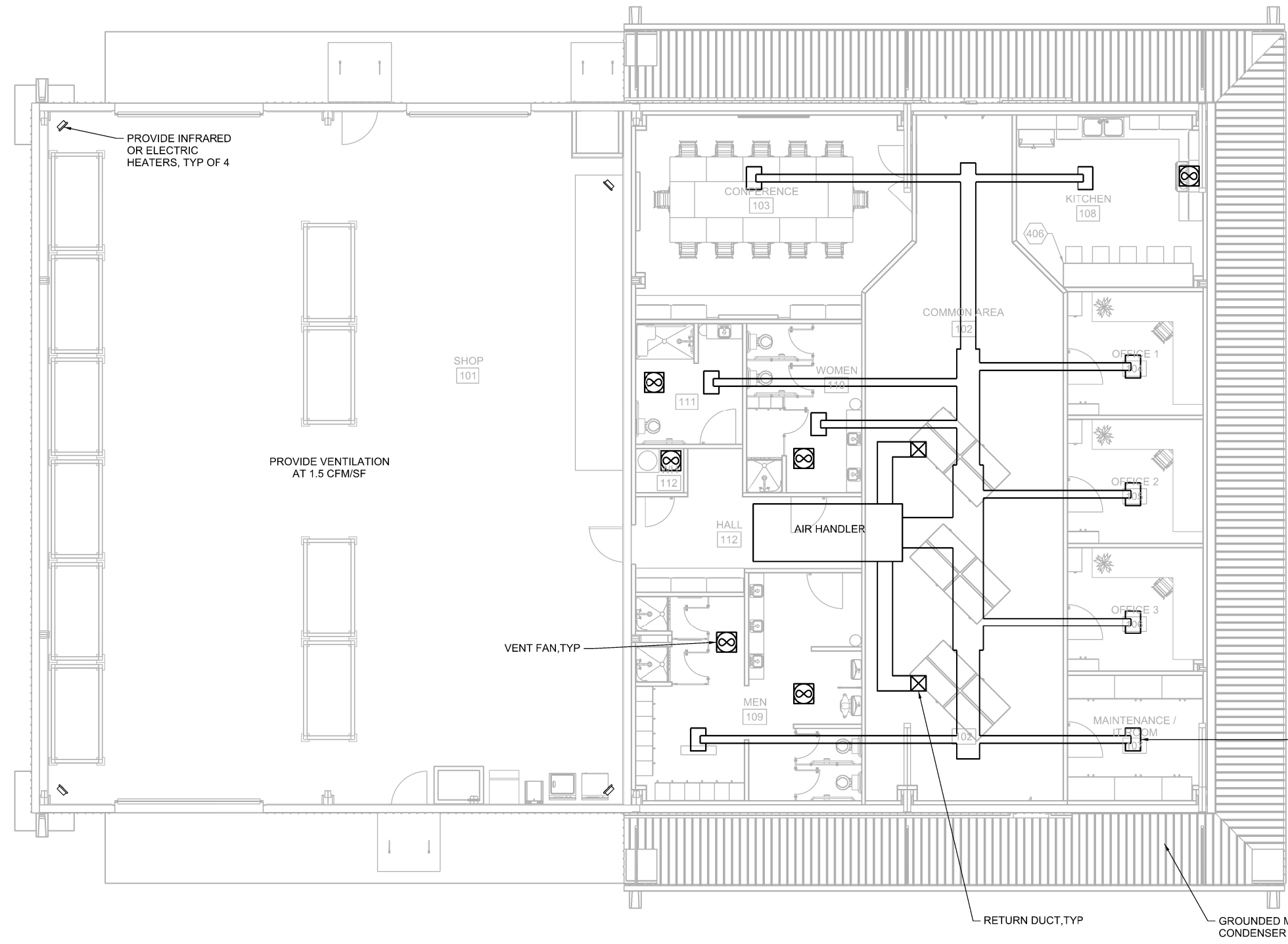
ARCHITECTURAL / STRUCTURAL
OPERATIONS CREW FACILITY
FURNISHING KEY NOTE TABLE

DATE
JUNE 2020

PROJECT NUMBER
17-083

DRAWING NUMBER
AS-04

SHEET NUMBER
7



- NOTES:
- COORDINATE THE INSULATION THICKNESS AS REQUIRED TO COMPLY WITH THE TITLE 24 CA 2016 BUILDING EFFICIENCY STANDARDS. IF THE BUILDING IS TO BE PERMITTED IN 2020 OR LATER, COMPLY WITH THE 2019 BUILDING ENERGY EFFICIENCY STANDARDS.
 - PROVIDE 1/4" THICK FULLY TEMPERED SAFETY GLASS.
 - PROVIDE A MINIMUM 17-SEER HVAC EQUIPMENT.
 - PROVIDE VENTILATION RATES AND SYSTEMS IN ACCORDANCE WITH ASHRAE STANDARD 62.1, VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY PER THE OCCUPANCY RATES GIVEN.
 - DRAWINGS SHOW MINIMAL REQUIREMENTS FOR THE PURPOSE OF DESIGN-BUILD PROPOSAL DEVELOPMENT, FINAL DETAILED DESIGN TO BE DEVELOPED BY CONTRACTOR AND APPROVED BY OWNER.
 - DESIGN-BUILD CONTRACTOR SHALL FOLLOW ALL CITY OF ROSEVILLE ENVIRONMENTAL UTILITIES (EU) ORICISS CONTROL STANDARDS (PCS). ALL DEVIATIONS FROM THE STANDARDS MUST BE SUBMITTED IN A VARIANCE REQUEST FORM AND APPROVED BY THE CITY OF ROSEVILLE.

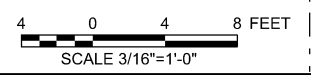
FACILITY OCCUPANCY

FACILITY:	OCCUPANCY:
SHOP OFFICE	GROUP F-2 GROUP B

- OFFICE HVAC REQUIREMENTS:
- PROVIDE SPLIT SYSTEM AIR CONDITIONING AND HEAT PUMP DUCTED OR DUCTLESS WITH ZONED THERMOSTATS FOR: KITCHEN, CONFERENCE ROOM, OFFICES, BATHROOM: MEN'S, BATHROOM: WOMEN'S, MAINTENANCE/IT ROOM.
 - PROVIDE VENTILATION IN KITCHEN, BATHROOMS AND WATER HEATER ROOM PER CURRENT CALIFORNIA BUILDING CODE EDITION.

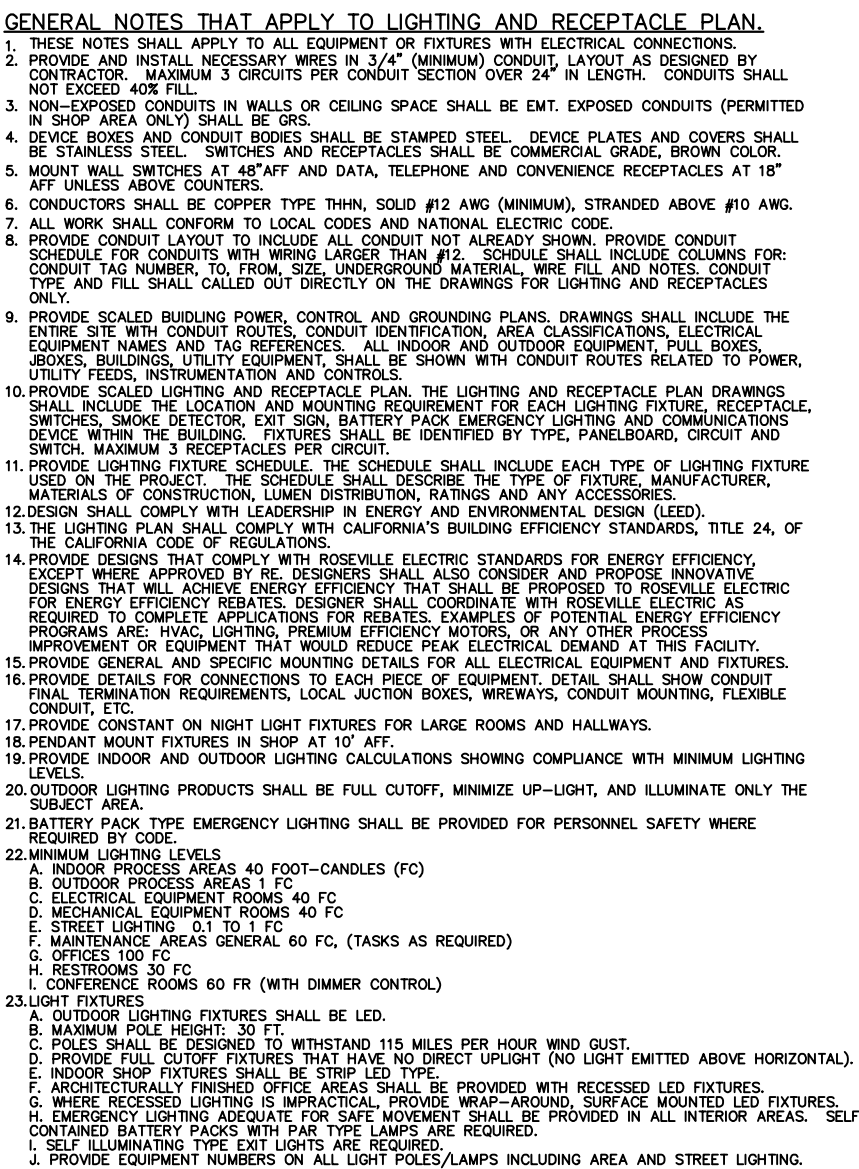
- SHOP HVAC REQUIREMENTS
- PROVIDE FOUR HEATERS, ONE IN EACH CORNER OF THE SHOP
 - PROVIDE APPROPRIATELY SIZED BUILDING VENTILATION

PLAN
3/16" = 1'-0"



PRELIMINARY
NOT FOR
CONSTRUCTION

DESIGNED S KADER	DRAWN J MARTIN	CHECKED S KADER	APPROVED M FISHER
CITY OF ROSEVILLE ROSEVILLE, CALIFORNIA			
WATERWORKS ENGINEERS 2260 Douglas Blvd, Suite 105 • Roseville, CA 95661 • 916-795-2888			
CITY OF ROSEVILLE WEST SIDE TANK AND PUMP STATION OPERATIONS CREW FACILITY ROSEVILLE, CALIFORNIA			
ARCHITECTURAL/STRUCTURAL OPERATIONS CREW FACILITY HVAC PLAN			
DATE JANUARY 2021		PROJECT NUMBER 17-083	
DRAWING NUMBER AS-05		SHEET NUMBER 8	



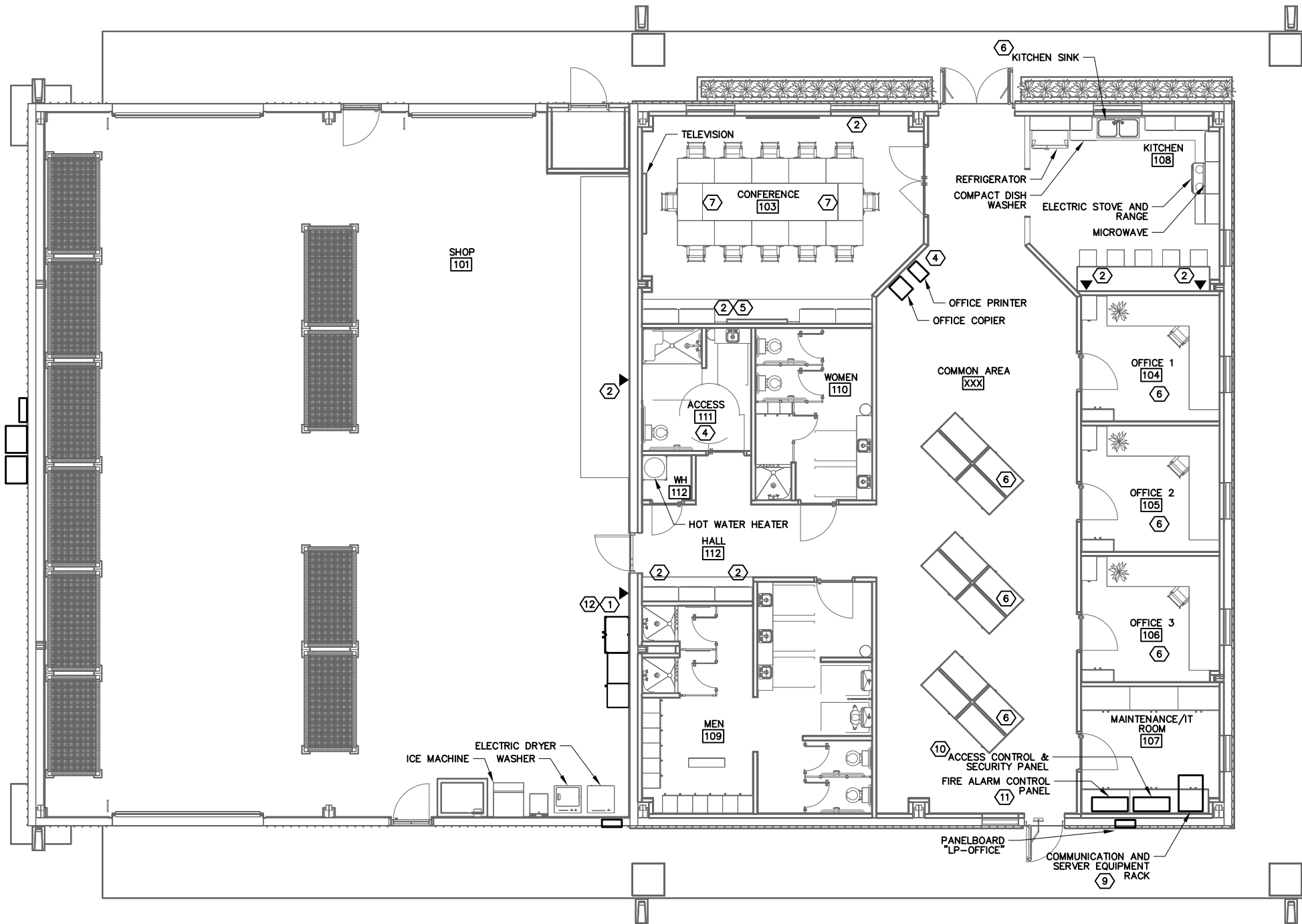
SCALE: 3/16" = 1'

1. PROVIDE PANEL LOAD CALCULATIONS AND PANELBOARD SCHEDULE. PANELBOARD LOAD CALCULATION SHALL INCLUDE: PANEL DESIGNATION, PANEL LOCATION AND MOUNTING, VOLTAGE, NUMBER OF WIRES, NUMBER OF PHASES, BUS AMPERAGE, MAIN INTERRUPTION DEVICE RATING, NUMBER OF POLES, DESCRIPTION OF BRANCH CIRCUIT LOAD, TOTAL LOAD PER PHASE, TOTAL LOAD AND CURRENT PER PHASE AT A MINIMUM. INCLUDE SPECIAL REQUIREMENTS SUCH AS GFI BREAKERS, HACR, PADLOCKING ATTACHMENTS AND NEMA RATING.
2. COMBINE RECEPTACLE CIRCUITS IN A SINGLE CONDUIT TO MINIMIZE LENGTH OF CONDUCTORS AND CONDUIT. CIRCUITS COMBINED INTO A SINGLE CONDUIT SHALL BE SIZED FOR NEC DERATING REQUIREMENTS. MAXIMUM 3 CIRCUITS PER CONDUIT SECTION OVER 24" IN LENGTH. CONDUIT SHALL NOT EXCEED 40% FILL.
3. PROVIDE RECEPTACLES FOR UNDER COUNTER LIGHTS IN KITCHEN AREA.
4. INSTALL GFCI RECEPTACLES 6" ABOVE RESTROOM SINKS.
5. PROVIDE DEDICATED RECEPTACLE FOR REFRIGERATOR.
6. PROVIDE DEDICATED GFCI RECEPTACLE FOR GARBAGE DISPOSAL INSTALLED UNDER SINK. GARBAGE DISPOSAL TO BE CONTROLLED BY MOTOR RATED SWITCH MOUNTED 6" ABOVE COUNTER TOP NEXT TO SINK.
7. PROVIDE DEDICATED RECEPTACLE FOR ICE MACHINE.
8. PROVIDE RECEPTACLE FOR OFFICE PRINTER AND COPIER.
9. TRANSFORMER SHALL BE FREESTANDING NEMA 3R, VENTILATED DRY TYPE 480V-120/240V, 1-PHASE. THE KVA RATING SHALL BE DETERMINED BY THE CONTRACTOR TO SUPPORT CURRENT AND FUTURE LOADS. THE TRANSFORMER SHALL CARRY FULL LOAD CONTINUOUSLY AT RATED VOLTAGE AND FREQUENCY WITHOUT EXCEEDING THE AVERAGE TEMPERATURE RISE OF 15°C ABOVE AN AMBIENT TEMPERATURE OF 40°C. INSULATION SHALL BE RATED FOR 220°C (UL CLASS 220°C). THE TRANSFORMER SHALL BE MOUNTED OUTDOORS.

- 10 PROVIDE RECEPTACLES IN CABINET FOR AV/MULTIMEDIA EQUIPMENT.
- 11 PROVIDE RED HANDLE CIRCUIT BREAKER WITH LOCK ON DEVICE FOR FACP.
- 12 ALL CIRCUITS ARE FED FROM PANEL LP—CREW UNLESS OTHERWISE SPECIFIED.
- 13 ALL INDOOR AREAS SHALL BE PROVIDED WITH SWITCHABLE CIRCUITS WITH A MINIMUM NUMBER OF NONSWITCHED LIGHTING FIXTURES FOR PERSONNEL SEATING IN INDOOR AREAS WHERE THERE IS A CONCENTRATION OF PROCESS EQUIPMENT. REQUIRE ROUTINE INSPECTION, MAINTENANCE OR ADJUSTMENT, SUPPLEMENTARY TASK LIGHTING ACTIVATED BY TIMERS AND/OR MOTION DETECTORS IS REQUIRED.
- 14 INDOOR NON—PROCESS OR OTHER INFREQUENTLY VISITED AREAS SUCH AS BATHROOMS AND STORAGE ROOMS TO THE EXTENT THAT IT IS SUITABLE FOR THE PHYSICAL AND ENVIRONMENTAL CONDITIONS OF THE AREA SHALL HAVE OCCUPANCY SENSOR ACTIVATED PRIMARY LIGHTING.
- 15 OUTDOOR LIGHTS SHALL HAVE AUTOMATIC LIGHTING CONTROLS BASED ON PHOTOCELL AND TIME OF DAY CLOCK.
- 16 PROVIDE RECEPTACLE FOR CHARGING PORTABLE RADIOS.
- 17 ALL ELECTRICAL EQUIPMENT SHALL HAVE EQUIPMENT TAG. COORDINATE WITH ENGINEER/OWNER TO GENERATE EQUIPMENT TAG NUMBERS.
- 18 PANELBOARD SHALL BE NEMA 3R RATED, 42 CIRCUIT, 200A, 120/240V, 1 PHASE AND 22 KAIC SHORT CIRCUIT RATINGS MINIMUM. MINIMUM SIZE MINIMUM AMPERE FRAME CIRCUIT BREAKERS 100 AMPERE MINIMUM. MINIMUM TRIP SIZE SHALL TAKE UP THE SAME POLE SPACING. PROVIDED 25% SPARE BREAKERS MINIMUM. PANELBOARDS SHALL BE LABELED WITH A UL SHORT CIRCUIT RATING. PANELBOARD SHALL BE INSTALLED OUTDOORS.

- (19) PANELBOARD SHALL BE NEMA 3R RATED, 42 CIRCUIT, 400A, 480V, 3 PHASE AND 42 KAIC SHORT CIRCUIT RATINGS MINIMUM. BREAKERS SHALL BE MOLDED CASE AND MINIMUM OF 225 AMPERE FRAME AND BREAKERS 15 THROUGH 225 AMPERES TRIP SIZE SHALL TAKE UP THE SAME POLE SPACING. PROVIDED 25% SPARE BREAKERS MINIMUM. PANELBOARD SHALL BE LABELED WITH A UL SHORT CIRCUIT RATING. PANELBOARD SHALL BE INSTALLED OUTDOORS.
- (19) PROVIDE DEDICATED RECEPTACLE FOR ELECTRIC DRYER.
- (20) DESIGN-BUILD CONTRACTOR SHALL FOLLOW ALL CITY OF ROSEVILLE ENVIRONMENTAL UTILITIES (EU) PROCESS CONTROL STANDARDS (PCS). ALL DEVIATIONS FROM THE STANDARDS MUST BE SUBMITTED IN A VARIANCE REQUEST FORM AND APPROVED BY CITY OF ROSEVILLE.

NOT FOR CONSTRUCTION



DATA PLAN 3 11 12 13
SCALE: 3/16" = 1'

DRAWING REFERENCED NOTES:

- 1. INSTALL COMMUNICATION OUTLET 48" ABOVE FINISH FLOOR FOR WALL MOUNTED TELEPHONE.
- 2. DATA RECEPTACLE WITH 4 CAT 6 (TA-568A) FEMALE RJ-45 RECEPTACLES EACH, TYP. (WHT, BLU, RED, BLK) IN 4"x4" GANG BOX RECESSED IN THE WALL. DATA RECEPTACLES SHALL BE MOUNTED AT 18" AFF OR 6" ABOVE COUNTERTOP UNLESS OTHERWISE NOTED. HOME RUN CABLES TO COMMUNICATION PANEL FROM EACH LOCATION. LABEL WIRING WITH ROOM NUMBER-RECEPT NUMBER. FLUSH FACEPLATE WITH BUILT-IN CABINETS WHERE APPLICABLE.
- 3. DATA RECEPTACLES SHALL INCLUDE CAT6 CABLES TO BE AS FOLLOWS:
 - a. 1 VOIP
 - b. 1 SCADA CABLE
 - c. 2 NETWORK CABLES
- 4. DATA RECEPTACLE FOR OFFICE PRINTER
- 5. INSTALL DATA RECEPTACLE IN CABINET FOR AV/MULTIMEDIA EQUIPMENT.
- 6. INSTALL DATA RECEPTACLE IN EACH OFFICE SPACE AND EACH CUBICLE. ALL OFFICE SPACES SHALL HAVE DATA RECEPTACLES ON AT LEAST 2 DIFFERENT WALLS
- 7. INSTALL DATA RECEPTACLE, DUPLEX RECEPTACLE AND OTHER DEVICES NECESSARY TO SUPPORT AV/MULTIMEDIA EQUIPMENT. ALL BOXES SHALL BE FLUSH WITH FLOOR.
- 8. LABEL ALL CABLES AND SWITCH PORTS WITH SOURCE LOCATION AND PORT NUMBER.
- 9. MOUNT NEW 19" STEEL VERTICAL WALL MOUNT EQUIPMENT RACK. THE RACK SHALL BE SIZED TO ACCOMMODATE THE FOLLOW EQUIPMENT MINIMUM WITH 25% SPACE FOR FUTURE EQUIPMENT.
 - a. 10/100/1000 BASE ETHERNET SWITCH.
 - b. RACK MOUNT FIBER OPTIC PATCH PANEL. INSTALL CAT5e JUMPERS FROM PATCH PANEL TO ETHERNET SWITCH.
 - c. NETWORK FIREWALL
 - d. 10/100 MANAGED SWITCH
- 10. PROVIDE ACCESS CONTROL AND SECURITY SYSTEM DESIGN. SYSTEMS SHALL INCLUDE PROX DOOR CARD READERS AND ELECTRIC DOOR STRIKES AT EACH MAN DOOR. SECURITY SYSTEM SHALL BE COMPATIBLE WITH EXISTING SECURITY SYSTEM AT THE WWTP.
- 11. PROVIDE A COMPLETE FIRE ALARM SYSTEM DESIGN FOR THE CREW BUILDING. THE SYSTEM SHALL BE DESIGNED, PERMITTED, AND INSTALLED BY NICET LEVEL IV AND STATE LICENSED C10 CONTRACTOR. SYSTEM SHALL INCLUDE CONTROL PANEL, ALARM-INITIATING DEVICES (SMOKE DETECTORS, DUCT SMOKE DETECTORS, FIRE/HEAT DETECTORS, AND PULL STATIONS), AND ALARM-INDICATING DEVICES (HORN/STROBE), INTERLOCK DEVICES (HVAC), IN COMPLIANCE WITH LOCAL CODES AND FOR OCCUPANCY DEFINED. SYSTEM SHALL PROVIDE 100 PERCENT BUILDING DETECTION COVERAGE. SYSTEM SHALL BE COMPLETE AND FUNCTIONAL AND INCLUDE ALL COMPONENTS, INSTALLATION, WIRING, CONDUIT, START-UP, PROGRAMMING, AND WARRANTY. SYSTEM SHALL BE A LOCAL, NON-CODED, PROTECTIVE SIGNALING SYSTEM AS DESCRIBED IN NFPA 72. ALL DEVICES SHALL BE ADDRESSABLE TYPE AND HARDWIRED. AN AUTOMATIC COMMUNICATIONS SYSTEM ACTUATED BY AN ALARM CONDITION SHALL BE PROVIDED.
- 12. INSTALL WALLMOUNTED JUNCTION BOX AT CEILING IN SHOP FOR FUTURE DATA CONNECTIONS. INSTALL 2" EMPTY CONDUIT WITH PULL ROPE TO JUNCTION BOX.
- 13. DESIGN-BUILD CONTRACTOR SHALL FOLLOW ALL CITY OF ROSEVILLE ENVIRONMENTAL UTILITIES (EU) PROCESS CONTROL STANDARDS (PCS). ALL DEVIATIONS FROM THE STANDARDS MUST BE SUBMITTED IN A VARIANCE REQUEST FORM AND APPROVED BY CITY OF ROSEVILLE.

NOT FOR CONSTRUCTION

DESIGN	T. FRISCH
DRAWN	M. YARBROUGH
CHECKED	M. FRISCH
APPROVED	M. FISHER

FRISCH ENGINEERING, INC.
13405 FOLESDEN BLVD., UNIT 600
FOLSOM, CA 95630
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DATE: DEC 30, 2020
TIME: 8:22:38AM

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ENGINEERS
2260 Douglas Blvd. Suite 105 • Roseville, CA 95678 • 916-790-2688

CITY OF ROSEVILLE
WEST SIDE TANK AND
PUMP STATION PROJECT
OPERATIONS CREW FACILITY
ROSEVILLE, CALIFORNIA

ELECTRICAL
OPERATIONS CREW FACILITY
DATA PLAN

DATE
JANUARY 2021
PROJECT NUMBER
17-083
DRAWING NUMBER
E-02
SHEET NUMBER 10