



SPECIFICATIONS
FOR

City of Marina
Glorya Jean Tate Park Improvements Phase 2 Project
CIP Project No. QLP 2119

Approved for Construction by:


Layne Long
City Manager

Technical Specifications by: Verde Design Inc.
and American Consulting Engineers Electrical Inc.
(Signature and Stamps, see Technical Specifications)

VIRTUAL and IN PERSON BID OPENING:
Thursday, December 19, 2024, at 2:00 PM
City Engineer's Office
Public Works Department
209 Cypress Avenue
Marina, California 93933

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PART A - LEGAL AND PROCEDURAL DOCUMENTS

Glorya Jean Tate Park Improvements Phase 2 Project

A1 NOTICE TO BIDDERS

Notice is hereby given that sealed proposals will be received by the City Engineer or City Manager of the City of Marina, located at 209 CYPRESS AVENUE, MARINA, CALIFORNIA, until 2:00 P.M. on Thursday, December 19, 2024 for furnishing all labor, equipment, materials, and other items necessary to execute the

Glorya Jean Tate Park Improvements Phase 2 Project

The Glorya Jean Tate Park Improvements Phase 2 Project is located at 3254 Abdy Way, Marina, California. This project is phase 2 of the park improvements project. This project includes but not limited to; construction of parking lot extension, walkways, lawn area, dog park, basketball and pickleball courts, playground area, picnic areas and fitness area. The project also includes installation of picnic pavilion, cornhole, storm drain system, security lighting and associated landscaping. Procurement and installation of play equipment, fitness equipment and ground surfacing for the playground and fitness areas will be by others and not included in this contract.

Time for Completion – Base bid work under this contract shall be completed before the expiration two hundred five (205) working days from the date of the Notice to Proceed.

If Contractor shall be delayed in the work by the acts or neglect of Owner, or its employees or those under it by contract or otherwise, or by changes ordered in the work, or by strikes, lockouts by others, fire, unusual delay in transportation, unavoidable casualties or any causes beyond the Contractor's control, or by delay authorized by the Owner, or by any cause which the Owner shall decide to justify the delay, then the time of completion shall be extended for such reasonable time as the Owner may decide.

Liquidated damages amount per working day shall be as specified in the Special Provisions. All Federal holidays and City holidays observed during construction shall not be included on the construction timeline specified. Time extension for weather and City delays will be granted accordingly.

At the time of the bid opening, the successful Bidder must be legally entitled to perform contracts requiring a **Class A General Contractor's license**. Any Bidder or contractor not so licensed shall be subject to all penalties imposed by law including, but not limited to, any appropriate disciplinary action by the Contractors' State License Board.

The bid proposal, which includes completed form A3 through A8, and copies of signed addenda acknowledgement, if any, must be submitted with the bid Envelopes and priority mail packages must be clearly marked on the outside as follows: "BID OPENING – Thursday, December 19, 2024 at 2:00 pm.

Bidding Documents are on file and public may download from the City website, <https://www.cityofmarina.org/bids.aspx>. To download bidding documents, you must contact the City Public Works Department (831-884-1212, or email elviac@wallacegroup.us) to be included in the plan-holder list. Hard copies can be obtained by calling (831) 884-1212, for a non-refundable sum of \$200.00 for each set of Plans and Specifications. An additional postage charge of \$20.00 for mailing.



Potential bidders, subcontractors and suppliers are responsible for reviewing the complete bidding documents, including all addenda, prior to submitting their bid. Proposals will be read aloud at the time of the opening of bids and will be available for inspection at that time. Bid proposals will be opened and read by the City Engineer or their designee via a live video feed. Bidders may join the bid opening in person or through an online video conferencing application. Virtual bid opening credentials will be sent out through an addendum. Bid results and inquiries may be obtained from the City of Marina at (831) 884-1212 or email Elvie Camacho at elviec@wallacegroup.us or Michaelle Mowery, mmowery@cityofmarina.org. Responses to all inquiries shall be sent out through email or if necessary, bids will be available for inspection by appointment only.

Potential bidders, subcontractors and suppliers are responsible for reviewing the complete bidding documents, including all addenda, examine the project site prior to submitting their bid.

This Contract will be subject to compliance monitoring and enforcement by the California Department of Industrial Relations, pursuant to Labor Code section 1771.4. Under California Labor Code section 1771.1, as amended by SB 854, a contractor may not bid, nor be listed as a subcontractor, for any bid proposal submitted for a public work unless the contractor and its subcontractors are registered and qualified to perform public work pursuant to section 1725.5 of the Labor Code. The Bidder and its Subcontractors must be registered and qualified to perform public work pursuant to section 1725.5 of the Labor Code, subject to limited legal exceptions under Labor Code section 1771.1.

Attention of bidders is called to the fact that effective January 1, 1977, the Director of the State Department of Industrial Relations is required to determine the general prevailing rate of minimum wages to be paid to the various craftsmen and laborers required to construct said improvements. The City Council is cognizant of the **prevailing rate of per diem rates** and the general prevailing rate for holiday and overtime work in the locality in which the public work is to be performed for each craft, classification or type of workman needed to execute this contract and has made this information a part of the Specifications and Contract for said work by reference thereto.

The City Council reserves the right to reject any or all bids and to determine which proposal is, in its judgement, the most responsive bid of a responsible bidder and which proposal should be accepted in the best interest of the City. The City Council also reserves the right to waive any informality in any proposal or bid.

Proposals received after the time announced for the opening will not be considered. No bidder may withdraw his bid after the time announced for the opening, or before the award and execution of the contract, unless the award is delayed for a period exceeding ninety (90) days. No telegraphic or emailed proposals will be accepted.

Award of contract, if any be made, shall be made to the Contractor with the lowest responsive responsible bid based on the Grand Total.

Published Date:

Name
City Manager



Glorya Jean Tate Park Improvements Phase 2 Project
A1 Notice to Bidders

A2 INFORMATION FOR BIDDERS

2.1 Inspection of Site of Work

Bidders are required to inspect the site of the work in order to satisfy themselves, by personal examination or by such other means, as they may prefer, of the location of the proposed work and as to the actual conditions of and at the site of work. If, during this examination, a bidder finds facts or conditions which appear confusing, application may be made to the Engineering Division for additional information and explanation before submitting the bid. However, no such supplemental information so requested or furnished shall vary the terms of the Specifications or the Contractor's sole responsibility to satisfy him/herself as to the conditions of the work to be performed.

The submission of a proposal by the bidder shall constitute the acknowledgment that, if awarded the contract, the bidder has relied and is relying on his/her own examination of (a) the site of the work, (b) the access to the site, and (c) all other data, matters, and things requisite to the fulfillment of the work and in his own knowledge of existing conditions on and in the vicinity of the site of work to be constructed under the contract, and not on any representation or warranty of the City Council. No claim for additional compensation will be allowed which is based upon a lack of knowledge of the above items.

2.2 Examination of Contract Documents

The contract documents shall consist of the following:

- a. Notice to Bidders & Information for Bidders
- b. Accepted Proposal (**A3**)
- c. Proposal Supplement Including an Experience Statement and List of Proposed Subcontractors (**A4-A5**);
- d. Proposal Guaranty Bond(**A6**);
- e. Non- Collusion Affidavit (**A7**);
- f. Local Hiring Requirements (**A8**);
- g. Contract Agreement (**A9**)
- h. Bond for Labor and Material (**A10**); (**only if bid amount exceeds \$25,000**)
- i. Performance Bond (**A11**); (**only if bid amount exceeds \$25,000**)
- j. Evidence of Insurance (Certificate of Insurance)
- k. Project Plans and Specifications
- l. Standard Plans and Specifications, Caltrans – 2023 Edition
- m. California Building Code and associated codes- recent edition adopted by the City (for Building Related projects)
- n. Any Addenda
- o. Any Construction Change Order
- p. Additional documents: _____

Each bidder shall thoroughly examine and be familiar with legal and procedural documents, General Provisions, Specifications, Drawings and Addenda (if any). The submission of a proposal shall constitute an acknowledgment upon which the City Council may rely that the bidder has thoroughly examined and is familiar with the contract documents. The failure or neglect of a bidder to receive or examine any of the contract documents shall in no way relieve him from any obligation with respect to his proposal or to the contract. No claim for additional compensation will be allowed which is based upon a lack of knowledge of any contract documents.



2.3 Interpretation of Contract Documents

No oral representations or interpretations will be made to any bidder as to the meaning of the contract documents. Requests for an interpretation shall be made in writing and delivered to the Engineering Division at least six (6) days before the time announced for opening the proposals. Interpretations by the Engineering Division will be in the form of an addendum to the contract documents and, when issued, will be sent as promptly as is practical to all parties to whom the bid documents have been issued. All such addenda shall become part of the contract. In special cases, there may be a pre-bid meeting explaining the bid and the project.

2.4 Proposal (Form A3)

Proposals shall be made on the blank forms prepared by the City and included herein. All proposals shall give prices proposed, both in writing and in figures, and shall be signed by the bidder or his authorized representatives with his address. If the proposal is made by an individual, his name, signature, and post office address must be shown; if made by a firm or partnership, the name and post office address of the firm or partnership and the signature of at least one of the general partners must be shown; if made by a corporation, the proposal shall show the name of the state under the laws of which the corporation is chartered, the name and post office address of the corporation, and the title of the person who signs on behalf of the corporation.

Each proposal shall be submitted with all other required documents described herein and shall be enclosed in a sealed envelope and labeled as specified. Bidders are warned against making erasures or alterations of any kind, and proposals, which contain omissions, erasures, or irregularities of any kind, may be rejected. No oral, telegraphic or telephonic proposals or modifications will be considered.

2.5 Addenda

Each proposal shall include specific acknowledgment in the space provided of receipt of all addenda issued during the bidding period. Failure to so acknowledge and submit all addenda may result in the proposal being rejected as not responsible.

2.6 Bid Price

The bid price shall include everything necessary for the completion of construction and fulfillment of the contract including, but not limited to, furnishing all materials, equipment, tools, plants and other facilities and all management, superintendence, labor, services and all permit fees, except as may be provided otherwise in the contract documents.

On all bid items for which bids are to be received on a unit price basis, the unit price for all items bid shall be shown as well as the extended price (unit price multiplied by the number of units shown on the proposal form) for each bid item bid. In the case of any discrepancy between the extended prices for any bid item bid, the unit price multiplied by the number of units shall prevail. In the event of any discrepancy between the total contract amount and the sum of the extended prices of all items, the sum of the extended prices of all items shall prevail.

2.7 Taxes

Bid prices shall include allowance for all federal, state and local taxes.



2.8 Qualification of Bidders (Form A4)

Each bidder shall be skilled and regularly engaged in the general class or type of work called for under the contract. A statement setting forth his experience shall be submitted by each bidder on the form provided herewith. In addition, a statement setting forth the experience, knowledge, and ability of the personnel available for employment in responsible charge of the work shall be submitted by each bidder on the form provided herewith.

It is the intention of the City Council to award a contract to a bidder who furnished satisfactory evidence that he has the requisite experience and ability and that he has sufficient capital, facilities, and plants to enable him to prosecute the work successfully and properly, and to complete it within the time named in the contract.

To determine the degree of responsibility to be credited to the bidder, the City will consider any evidence that the bidder has performed satisfactorily other contracts of like nature, magnitude and comparable difficulty and comparable rates of progress.

2.9 List of Subcontractors (Form A5)

Each proposal shall have listed on the form provided herewith the name and address of each subcontractor to whom the bidder proposed to sublet portions of the work in excess of one-half of one percent of the total amount of his proposal. For the purpose of this paragraph, a subcontractor is defined as one who contracts with a contractor to furnish materials and labor or labor only for the performance of work at the site of the work.

2.10 Proposal Guaranty (Form A6)

The proposal shall be accompanied by a proposal guaranty bond duly completed on the form provided herewith by a guaranty company authorized to carry on business in the State of California for payment to the City in the sum of at least ten percent (10%) of the total amount of the proposal, or alternatively by a certified or cashier's check, payable to the City in the sum of at least ten percent (10%) of the total amount of the proposal. The total amount of proposal shall be the lowest bid amount of the Alternate Bids. The amount payable to the City under the proposal guaranty bond, or the certified or cashier's check and the amount thereof, as the case may be, shall be paid to the City as liquidated damages in case of failure or neglect of the bidder to furnish, execute and deliver to the City the required performance bond, labor and materials bond, evidences of insurance, and to enter into, execute and deliver to the City the agreement on the form provided herewith, within ten (10) days after being notified in writing by the City that the award has been made and the agreement is ready for execution.

2.11 Modification or Withdrawal of Proposal

Modification or withdrawal of a proposal already received will be considered prior to the time announced for the opening of proposals. All withdrawal requests or modifications shall be made in writing, executed and submitted in the same form and manner as the original proposal.

2.12 Opening of Proposals

Proposals will be opened and read publicly at the time and place indicated in the Advertisement. Bidders or their authorized agents are invited to be present.



2.13 Postponement of Opening

The City reserves the right to postpone the date and time for opening of proposals at any time prior to the date and time announced in the Advertisement.

2.14 Disqualification of Bidder

If there is reason to believe that collusion exists among the bidders, none of the bids of the participants in such collusion will be considered and the City may likewise elect to reject all bids received.

2.15 Rejection of Proposals

The City reserves the right to reject any proposals which are incomplete, obscure or irregular; any proposals which omit a bid on any one or more items on which bids are required; any proposal in which unit prices are unbalanced in the opinion of the City; any proposals accompanied by insufficient or irregular bid security; and any proposals from bidders who have previously failed to perform properly or to complete on time, contracts of any nature.

2.16 Award of Contract

Within ninety (90) calendar days after the time of opening proposals, the City will act either to accept a proposal or to reject all proposals. The acceptance of a proposal will be evidenced by a notice of Award of Contract in writing, delivered in person or by certified mail to the bidder whose proposal is accepted. No other act of the City shall constitute City acceptance of a proposal. The Award of Contract shall obligate the bidder whose proposal is accepted to furnish a performance bond, labor and materials bond and evidence of insurance and execute the agreement set forth in the contract documents. The City reserves the right to waive any bid irregularities.

2.17 Return of Proposal Guaranties

Within forty-five (45) calendar days after the contract is awarded, the City will return the proposal guaranties accompanying the proposals, which are not to be considered in making the award. All other proposal guaranties will be held until the contract has been fully executed after which they will be returned to the respective bidders whose proposals they accompany.

2.18 Execution of Contract

The contract agreement shall be executed by the successful bidder and returned, together with the contract bonds and evidence of insurance, within 10 days from receipt of the notice of award of contract. After execution by the City, one copy shall be returned to the Contractor.



BID DOCUMENTS TO BE SUBMITTED (A3-A7)

A3 PROPOSAL FORM

To the City Council
City of Marina
211 Hillcrest Avenue
Marina, CA 93933

Name of Bidder _____

Business Address _____

Place of Residence _____

The undersigned as Bidder declares that he has carefully examined the location of the proposed work, the contract documents, and the Specifications therein referred to, and he proposes and agrees if this proposal is accepted that he will contract with the City Council to provide all necessary machinery, tool, apparatus, and other means of construction and do all the work specified in the contract in the manner and time therein set forth required for the construction of the project designed as:

Glorya Jean Tate Park Improvements Phase 2 Project

as said work is shown in the specifications. Construction shall be in strict conformity with the Specifications prepared therefore and which are referenced in the Notice to Bidders (Section A1) contained herein. By this reference, said Specifications are hereby made part thereof, as though stated in full.

The Bidder proposes and agrees to contract with the City to perform all the above work, including subsidiary obligations as defined in said specifications including Addenda Nos. _____, _____, _____, for the following price:

Construction improvements and associated work for sum of:

Total Bid: . _____ Dollars (Words)

\$ _____ (Figures)



BID SCHEDULE
Glorya Jean Tate Park Improvements Phase 2 Project

BASE BID					
Item No.	Description	Unit	Estimated Quantity	Contract Unit Price	Bid Amount
1	Mobilization and Demobilization	LS	1		
2	Construction Staking	LS	1		
3	Water Pollution Control Program And Environmental Protection	LS	1		
4	Clearing, Grubbing, Demolition and Disposal	LS	1		
5	Earthwork and Grading	LS	1		
6	Storm Drain and Appurtenances	LS	1		
7	Bioretention Structure and Appurtenances (Parking lot Extension)	LS	1		
8	Bioretention and appurtenances (other locations)	LS	1		
9	2" Domestic Water Line and appurtenances	LS	1		
10	2" Sanitary Sewer Line and appurtenances	LS	1		
11	CMU Retaining Wall and CMU Curb, height varies	SF	68		
12	CMU Retaining Wall – Parking Lot	SF	329		
13	Minor Concrete (Curb and Gutter) Parking Lot	LF	75		
14	Minor Concrete (4" thick Walkways)-Parking Lot and Park	SF	22,326		
15	Minor Concrete (Type B Vertical Curb – Parking lot)	LF	204		
16	Minor Concrete (6" thick with wire mesh and base rock)-Park and Parking Lot	SF	7785		
17	Minor Concrete (Concrete paving with thickened edge)-Dog Park	LF	161		
18	Minor Concrete (Curb Ramp and Ramps)	LS	1		

Glorya Jean Tate Park Improvements Phase 2 Project
A3 Proposal Form



19	Detectable Warning Surface	SF	91		
20	NOT USED				
21	Minor Concrete (6" wide, Edge band)- Height varies	SF	430		
22	Minor Concrete (6" wide, deep, Curb)- Height varies	SF	890		
23	Minor Concrete (6" wide, Curb)- 18" tall	LF	196		
24	Minor Concrete (12" wide conc. Edge band)	LF	188		
25	Minor concrete, 12" wide curb, (18" tall)	LF	183		
26	Minor concrete, 12" wide, deep curb (22" tall)	LF	320		
27	Concrete Retaining Wall, 12" wide, (height varies)- Park	SF	1090		
28	Minor Concrete (18" wide conc. seat wall- Park	LF	675		
29	Minor Concrete (stairs)	LS	1		
30	Minor Concrete (colored paving, Pavilions)	SF	1805		
31	Decomposed Granite Surfacing (Picnic and Corn hole Areas)	SF	5067		
32	Sand Surfacing (4" thick, Dog Park)	SF	6725		
33	Hot Mix Asphalt (HMA) Surfacing (3" HMA over 6" Agg. Base CL 2, Parking Lot Ext and Scout House Entry)	SF	7225		
34	Hot Mix Asphalt (HMA)Surfacing with acrylic coating (3" HMA over 4" Agg. Base CL 2, Pickleball and Basketball courts)	SF	6209		
35	Slurry Seal Surfacing	SF	11,142		
36	4' long Concrete Wheel Stops	EA	16		
37	Pavement Striping, Markings and ADA and Directional Signage, and Dog Park Signage	LS	1		
38	Guardrails and Handrails	LS	1		



39	Fence and Gates (Dog Park)	LS	1		
40	Fence, Gates, with Padding and Windscreen (Pickle Ball Court)	LS	1		
41	4' High Wood Split Rail Fence (Several locations)	LF	949		
42	6' High Chain link Fence Assembly	LF	56		
43	6' High Chain link Fence Fabric and Railings	LF	661		
44	42" High Chain link Fence Assembly (CMU Wall)	LF	266		
45	42" High Chain link Fence Fabric and Railings	LF	325		
46	Furnishings	LS	1		
47	Electrical Lights, Outlets, Pavilion Lights	LS	1		
48	New Main Switch Board and Power Distribution Panel	LS	1		
49	EV Chargers Infrastructure	LS	1		
50	Irrigation System	LS	1		
51	Landscaping	LS	1		
52	Landscaping Establishment Maintenance (3 months)	LS	1		
<u>TOTAL BASE BID (ITEMS 1 THROUGH 52) (In Words)</u> 					<u>(In Figures)</u> \$ _____
ADDITIVE ALTERNATE BID 1					
53	New EV Chargers	LS			



<u>TOTAL BASE BID PLUS ADDITIVE ALTERNATIVE BID 1 (ITEMS 1 THROUGH 53) (In Words)</u>					<u>(In Figures)</u>
_____					\$ _____

ADDITIVE ALTERNATE BID 2					
54	Landscaping Warranty Maintenance (12 months)	LS			
<u>TOTAL BASE BID PLUS ADDITIVE ALTERNATIVE BID 2 (ITEMS 1-52 plus 54) (In Words)</u>					<u>(In Figures)</u>
_____					\$ _____

<u>GRAND TOTAL: BASE BID PLUS ADDITIVE ALTERNATIVE BIDS 1&2 (ITEMS 1 THROUGH 54) (In Words)</u>					<u>(In Figures)</u>
_____					\$ _____

BID ITEM DESCRIPTIONS

This section covers details of individual items of the Bid Schedule to ensure that it is clear as to what is to be included in each item. The costs submitted with each item are to reflect the work to be completed under that bid item only. Payment of all the following items shall be for actual materials installed on the job and for actual work accomplished.

1. Mobilization and Demobilization

The contract lump sum price (LS) for "Mobilization" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in mobilization and demobilization complete in place, including preparatory and cleanup work, movement of construction personnel, equipment, supplies and incidentals to and from the project site, obtaining bonds, insurance policies, licenses, and permits required by the contract documents, project meetings, coordination and all related administrative costs for this Project, maintaining the project site, regular cleanup and final cleanup, temporary fencing and staging area, and all other work and operations, which must be incurred



prior to the beginning of and after the end of construction work, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. No additional compensation will be allowed therefore. Final payment will not be released until receipt of approved Record Drawings. Partial payment of this bid item shall be based on percent of this item completed and shall be contingent upon the Contractor's furnishing and the City's acceptance of: 1) the schedule of values, 2) the construction schedule, 3) Traffic Control Plans, 4) Quality Control Plan, 5) all submittals and shop drawings, 6) electrician certifications, 7) subcontractor's Certificate of Good Faith Effort to hire local, and 8) fringe benefit summary statement. Also included in this item is protection of existing improvements including art walls.

2. Construction Staking

The contract lump sum (LS) price for "Construction Staking" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, for doing all work necessary in establishing construction staking needed for construction, work includes but not limited to ; calculations to establish horizontal and vertical alignment, surveying to set points required by the contractor to build the project as shown on the plans, as specified in the Standard Specifications, in these Special Provisions. No additional compensation will be allowed, therefore. Construction staking shall be provided or supervised by a licensed Surveyor in California and a digital copy (dwg) of the plans will be provided as specified in the Technical Specifications.

3. Water Pollution Control Program and Environmental Protection

The contract lump sum (LS) price for " Water Pollution Control Program and Environmental Protection " shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in the implementation, and maintenance of best management practices (BMPs) for storm water pollution protection, tree protection and dust control during construction. Work includes installing storm water pollution prevention BMPs, proper maintenance and inspection of all BMPs installed for the project in accordance with the plans and SWPPP and as directed by the Engineer, removal of BMPs, clean up and proper disposal of any environmental pollutants due to construction related activities. Compliance with all applicable rules, regulations, ordinances, and statutes including tree protection and dust control as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Also included in this bid item is tree protection required in the attached Arborist Report. No additional compensation will be allowed, therefore.

4. Clearing, Grubbing, Demolition and Disposal

The contract lump sum (LS) price for "Clearing and Grubbing" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in clearing and grubbing, demolition and disposal of items shown for removal and other objectionable material necessary to construct the project. Work includes but not limited to; clearing and grubbing existing turf areas, removal of trees, demolition of existing irrigation system (partial), furnishings, wall and stairs, playground equipment, existing fences and other improvements as shown on the demolition plan. Also included in this bid item is the proper disposal or recycling of removed improvements and storing and protection of furnishing to be re used as shown on the plans and specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. No additional compensation will be allowed therefor.

5. Earthwork and Grading

The contract lump sum (LS) price for "Earthwork and Grading" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, for doing all the work involved in excavation, rough and fine grading to prepare subbase necessary for the park improvement including the playground and fitness area, underground utilities, paving, footings and foundations and import for



backfill material and disposal of excess soil necessary to complete the project as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer . No additional compensation will be allowed therefor.

6. Storm Drain System and Appurtenances

The contract lump sum (LS) price for "Storm Drain and Appurtenances" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, for doing all the work involved in installing storm drainpipes, dry wells, catch basins, junction boxes and connection to existing storm drain manhole complete in place necessary as shown on the plans, City Standard Details and as specified in the Standard Specifications, in the Special Provisions, and as directed by the engineer. Excavation and backfilling shall be paid under Bid item 5. No additional compensation will be allowed therefor.

7. Bioretention Structure and Appurtenances (Parking Lot)

The contract lump sum (LS) price for "Bioretention Structure and Appurtenance" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, for constructing bioretention pond, catch basin with overflow grate, and rock dissipater complete in place as shown on the plans, City Standard Details and as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Earthwork and Grading shall be paid under Bid item 5. No additional compensation will be allowed therefor.

8. Bioretention Structures and Appurtenances (Other locations)

The contract lump sum (LS) price for "Bioretention Structures and Appurtenance" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, for constructing bioretention pond, catch basin with overflow grate, complete in place as shown on the plans, City Standard Details and as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Earthwork and Grading shall be paid under Bid item 5. No additional compensation will be allowed therefor.

9. 2" Domestic Waterline and Appurtenances

The contract lump sum (LS) price for "2" Domestic Waterline and Appurtenances" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, for installation of 2" water line , gate valves, backflow preventer and necessary tie in to existing water meter complete in place as shown on the plans, City Standard Details and as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Earthwork and Grading shall be paid under Bid item 5. No additional compensation will be allowed therefor.

10. 2" Sanitary Sewer Line and Appurtenances

The contract lump sum (LS) price for "2" Sewer Line and Appurtenances" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, for installation of 2" sewer line , two drinking fountain dry wells and necessary tie in to new drinking fountains complete in place as shown on the plans, City Standard Details and as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Earthwork and Grading shall be paid under Bid item 5. No additional compensation will be allowed therefor.

11. CMU Retaining Wall and CMU Curb

The contract unit price paid per Square Foot (SF) CMU Retaining Wall and CMU Curb shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, in the construction of CMU Retaining wall and CMU Curb (refer to Notes 5 and 6 of L8.1) complete in place. Work includes construction of CMU retaining walls and curb necessary, footing, reinforcing bars, drainage system



behind walls as shown on the plans and Specifications, in these Special Provisions, and as directed by the engineer. Earthwork and Grading shall be paid under Bid item 5.

The bid unit Square Foot (SF) is calculated based on the area of the CMU stem wall or curb(top of wall to top of footing multiplied by the length of wall).

12. CMU Retaining Wall- Parking Lot

The contract unit price paid per Square Foot (SF) CMU Retaining Wall and CMU Curb shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, in the construction of CMU Retaining wall complete in place. Work includes construction of CMU retaining walls and curb necessary, footing, reinforcing bars, drainage system behind wall as shown on the plans and Specifications, in these Special Provisions, and as directed by the engineer. Earthwork and Grading shall be paid under Bid item 5.

The bid unit Square Foot (SF) is calculated based on the area of the CMU stem wall (top of wall to top of footing multiplied by the length of wall.

13. Minor Concrete (Curb and Gutter)-Parking Lot

The contract unit price paid per linear foot (LF) for "Minor Concrete (Curb and Gutter)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing Type C concrete curb and gutter, complete in place, including, forms, dowels, pouring, and curing concrete as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Earthwork and Grading shall be paid under Bid item 5.

14. Minor Concrete (4" Thick Walkways)-Parking Lot and Park

The contract unit price paid per square foot (SF) for "Minor Concrete (4" Thick Walkways)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing 4" thick concrete walkways complete in place. Work includes but not limited to; forms, dowels, pouring, and curing concrete as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Dowelling to existing and 2" sand base shall be included in this pay item. Earthwork and Grading shall be paid under Bid item 5.

15. Minor Concrete (Type B Vertical Curb)-Parking Lot

The contract unit price paid per linear foot (LF) for "Minor Concrete (Type B, Vert. Curb)- Parking Lot, shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing Type B Vertical Curb per City Std Detail ST-1, complete in place, including placement of Aggregate base CI II, forms, dowels, pouring, and curing concrete as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Dowelling to adjacent improvements shall be included in this pay item. Earthwork and Grading for this bid item shall be paid under Bid item 5

16. Minor Concrete (6" thick with wire mesh and base rock)- Park and Parking Lot

The contract unit price paid per square foot (SF) for "Minor Concrete (6" Thick with wire mesh and base rock)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing 6" thick concrete walkways with wire mesh and Agg Base Class II base complete in place. Work includes but not limited to; installation of base rock, wire mesh reinforcement, forms, dowels, pouring, and curing concrete as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Also included



in this bid item is the construction of concrete parking stalls driveway crossing. Dowelling to existing improvements shall be included in this pay item. Earthwork and Grading shall be paid under Bid item 5.

17. Minor Concrete (Concrete Paving with thickened edge)- Dog Park

The contract unit price paid per lineal foot (LF) for "Minor Concrete (Concrete Paving with thickened Edge) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the thicken edge portion of the concrete paving complete in place. Work includes but is not limited to; reinforcement, forms, dowels, pouring, and curing concrete as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Dowelling to existing improvements shall be included in this pay item. Concrete paving shall be included in bid item 16. Earthwork and Grading shall be paid under Bid item 5.

18. Minor Concrete (Curb Ramp)

The contract lump sum (LS) price for "Minor Concrete (Curb Ramp)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in construction of new concrete curb ramp and ramps complete in place. Work includes but is not limited to; reinforcement, forms, dowels, pouring, and curing concrete as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Earthwork and Grading shall be paid under Bid item 5.

Curb ramps shall include areas of the ramp, transition ramp, curb and gutter along the frontage of the ramp.

19. Detectable Warning Surface

The contract unit price paid per square foot (SF) for "Detectable Warning Surface" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing detectable warning surfaces, complete in place, including furnishing prefabricated wet-set type detectable warning surface in freshly poured concrete, as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. The concrete underlying the detectable warning surface is paid for separately under Minor Concrete (Curb Ramp and Ramps).

20. NOT USED

21. Minor Concrete (6" Wide Edge band)-Height Varies

The contract unit price paid per square foot (SF) for "Minor Concrete (6" wide Edge band) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing 6" wide concrete edge band (refer to Notes 1 and 2 of L8.1) complete in place, including, forms, dowels, pouring, and curing concrete as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Dowelling to adjacent improvements shall be included in this pay item. Earthwork and Grading for this bid item shall be paid under Bid item 5.

22. Minor Concrete (6" wide, deep curb)-Height Varies

The contract unit price paid per square foot (SF) for "Minor Concrete (6" wide, deep curb) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing 6" wide, deep concrete curb (refer to Notes 4 of L8.1) complete in place, including, forms, reinforcements, dowels, pouring, and curing concrete as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the



engineer. Dowelling to adjacent improvements shall be included in this pay item. Earthwork and Grading for this bid item shall be paid under Bid item 5.

23. Minor Concrete (6" wide Curb, 18" tall)

The contract unit price paid per lineal foot (LF) for "Minor Concrete (6" wide Curb, 18" tall) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing 6" wide concrete curb, (refer to Notes 3 of L8.1), complete in place. Work includes but is not limited to; installation reinforcement, forms, dowels, pouring, and curing concrete as shown on the plans as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Dowelling to adjacent improvements shall be included in this pay item. Earthwork and Grading shall be paid under Bid item 5.

24. Minor Concrete (12" Wide Concrete Edge band)

The contract unit price paid per linear foot (LF) for "Minor Concrete (12" Concrete Edge band) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing 12" wide concrete edge band, (refer to Notes 7 of L8.1), complete in place, including earthwork, forms, dowels, pouring, and curing concrete as shown on the plans (?), as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Dowelling to adjacent improvements shall be included in this pay item. Earthwork and Grading for this bid item shall be paid under Bid item 5.

25. Minor Concrete (12" wide curb, 18" tall)

The contract unit price paid per lineal foot (LF) for "Minor Concrete (12" wide curb, 18") shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing 12" wide concrete curb (refer to Notes 9 of L8.1)complete in place, including earthwork, forms, dowels, pouring, and curing concrete as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Dowelling to adjacent improvements shall be included in this pay item. Earthwork and Grading for this bid item shall be paid under Bid item 5.

26. Minor Concrete (12" wide, deep curb, 22" tall)

The contract unit price paid per lineal foot (LF) for "Minor Concrete (12" wide Curb, 18" tall) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing 12" wide concrete curb, (refer to Notes 10 of L8.1), complete in place. Work includes but is not limited to; installation reinforcement, forms, dowels, pouring, and curing concrete as shown on the plans as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Dowelling to adjacent improvements shall be included in this pay item. Earthwork and Grading shall be paid under Bid item 5.

27. Concrete Retaining Wall (12" Wide, height varies)

The contract unit price paid per square foot (SF) for "Concrete Retaining Wall (12" Wide) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing 12" wide concrete walls (refer to Notes 11 of L8.1), complete in place. Work includes but is not limited to; installation drainage system behind walls, reinforcement, forms, dowels, pouring, and curing concrete as shown on the plans (ramp areas, south and north end), as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Dowelling to adjacent improvements shall be included in this pay item. Earthwork and Grading shall be paid under Bid item 5.



28. Minor Concrete (18" Wide Concrete Seat Wall)

The contract unit price paid per linear foot (LF) for "Minor Concrete (18" Wide Concrete Seat Wall) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing 12" wide concrete seat wall, (refer to Notes 12 of L8.1), complete in place. Work includes but is not limited to; installation reinforcement, forms, dowels, pouring, and curing concrete as shown on the plans (various locations), as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Dowelling to adjacent improvements shall be included in this pay item. Earthwork and Grading for this bid item shall be paid under Bid item 5.

29. Minor Concrete (Stairs)

The contract lump sum (LS) price for "Minor Concrete (Stairs) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing concrete stairs complete in place. Work includes but is not limited to; installation reinforcement, forms, dowels, pouring, and curing concrete as shown on the plans (various locations), as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Dowelling to adjacent improvements shall be included in this pay item. Earthwork and Grading for this bid item shall be paid under Bid item 5. No additional compensation will be allowed therefor.

30. Minor Concrete (colored paving, Pavilion Areas)

The contract unit price paid per square foot (SF) for " Minor Concrete (colored paving, Pavilions Areas) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing colored concrete paving compete in place. Work includes but is not limited to; installation reinforcement, forms, dowels, pouring, and curing concrete as shown on the plans and as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Dowelling to adjacent improvements shall be included in this pay item. Earthwork and Grading shall be paid under Bid item 5.

31. Decomposed Granite Surfacing (Picnic and Corn hole Areas)

The contract unit price paid per square foot (SF) for " Decomposed Granite (Picnic and Corn hole Areas)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing decomposed granite surfacing in picnic and cornhole areas compete in place. Work includes but is not limited to; installation of decomposed granite paving and finishing as shown on the plans and as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Earthwork and Grading shall be paid under Bid item 5.

32. Sand Surfacing (4" thick, Dog Park)

The contract unit price paid per square foot (SF) for "Sand Surfacing (4" thick, Dog Park)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing 4" thick sand surfacing in the dog park area compete in place. Work includes but is not limited to; installation of geotextile filter fabric and sand surfacing as shown on the plans and as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Earthwork and Grading shall be paid under Bid item 5.



33. Hot Mix Asphalt (HMA) Surfacing (3" HMA over 6" Agg. Base CL 2, Parking Lot Ext. and Scout House)

The contract unit price paid per square foot (SF) for " Hot Mix Asphalt (HMA), Surfacing (3" HMA over 6" Aggregate base CL 2 over, Parking Lot Ext and Scout House.)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, for doing all the work involved in placing HMA surfacing complete in place. Work includes but is not limited to; furnishing, placing, and compacting 3" of hot mix asphalt over 6" thick aggregate base CL 2 as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Earthwork and Grading shall be paid under Bid item 5.

34. Hot Mix Asphalt (HMA) Surfacing with acrylic coating (3" HMA over 4" Agg. Base CL 2 , Pickleball and Basketball courts)

The contract unit price paid per square foot (SF) for " Hot Mix Asphalt (HMA) Surfacing with acrylic coating (3" HMA, Pickleball and Basketball courts over 4" Agg. Base CL 2 .)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, for doing all the work involved in placing HMA surfacing with acrylic coating complete in place. Work includes but is not limited to; furnishing, placing, and compacting 3" of hot mix asphalt over 4" Aggregate Base CL 2 and application of acrylic coating as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Earthwork and Grading shall be paid under Bid item 5.

35. Slurry Seal Surfacing

The contract unit price paid per square foot (SF) for "Slurry " shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in sealing the project area, including preparing the surface, furnishing, mixing, and spreading the slurry seal coat, as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer.

36. 4' long Concrete Wheel/Curb Stops

The contract unit price paid per lineal foot (LF) for "4' long Concrete Wheel/ Stops." shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing wheel/curb stops. Work includes but is not limited to; furnishing and installing 4' long concrete wheel/curb stop complete in place as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer.

37. Pavement Striping, Markings and ADA and Path of Travel signage

The contract lump sum (LS) price for " Striping, Pavement Markings and ADA and Path of Travel signage" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in pavement striping and markings at the parking lots and parking Tees and striping on Cardoza Ave (See sheet TO.2) and installation of ADA and Path of Travel sign along Cardoza Avenue (See sheet TO.2) signage complete in place. Work includes but is not limited to; furnishing materials, application of pavement striping and markings and installation of parking ADA compliant signage. as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer.
No additional compensation will be allowed therefor.



38. Guardrails and Handrails

The contract lump sum (LS) price for " Guardrail and Handrails "shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing guardrails and handrails complete in place. Work includes but is not limited to; furnishing shop drawings and materials, and installation of guardrails and handrails as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. No additional compensation will be allowed therefor.

39. Fence and Gates (Dog Park)

The contract lump sum (LS) price for " Fencing and Gate (Dog Park) "shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing wood split rail with wire mesh fence and gates complete in place. Work includes but is not limited to; furnishing materials, and installation of fence and gates at the dog park area as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Concrete footing shall be included in this bid item and excavation and backfill shall be included in Bid 5. No additional compensation will be allowed therefor.

40. Fences and Gates, with (Pickle Ball Court)

The contract lump sum (LS) price for " Fencing and Gate (Dog Park) "shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing chain-link fences and gates complete in place. Work includes but is not limited to; furnishing materials, and installation of 10' high chain link-fence with windscreen, 4' tall chain-link fence with padding and gates at the pickle ball area as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Concrete footing shall be included in this bid item and excavation and backfill shall be included in Bid 5. No additional compensation will be allowed therefor.

41. 4' High Wood Split Rail Fence (Several locations)

The contract unit price paid per linear foot (LF) for "4' High Wood Split Rail Fence (Several locations)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing wood split rail fence, complete in place. Work includes but is not limited to; furnishing materials, installation of concrete footing and 4' high wood split rail fences on several locations at the park as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Concrete footing shall be included in this bid item and excavation and backfill shall be included in Bid 5

42. 6' High Chain link Fence Assembly

The contract unit price paid per linear foot (LF) for "6' High Fence Assembly)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing chain link fence complete in place. Work includes but is not limited to; furnishing materials, earthwork, and installation of concrete footing and 6' high chain link fence as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. Concrete footing shall be included in this bid item and excavation and backfill shall be included in Bid 5



43. 6' High Chain link Fence Fabric and Rails

The contract unit price paid per linear foot (LF) for "6' High Chain link Fence Fabric and Railings" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and doing all the work involved in replacing existing chain link fabric and rails complete in place. Work includes but is not limited to; protection to existing post, installation of new top, bottom and diagonal rails and 6' high new chain link fence fabric and necessary connections to existing post as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer.

44. 42" High Chain link Fence Assembly (CMU Wall)

The contract unit price paid per linear foot (LF) for "42" High Chain link Fence Assembly (CMU Wall)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing chain link fence assembly complete in place. Work includes but is not limited to; furnishing materials, installation of 42' high chain link fence assembly on top of CMU wall/curb as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer.

45. 42" High Chain link Fence Fabric and Rails

The contract unit price paid per linear foot (LF) for "42" High Chain link Fence Fabric and Railings" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and doing all the work involved in replacing existing chain link fabric and rails complete in place. Work includes but is not limited to; protection to existing post, installation of new top, bottom and diagonal rails and 42" high new chain link fence fabric and necessary connections to existing post as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer.

46. Furnishings

The contract lump sum price (LS) for "Furnishing" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in procuring and installing all park furnishing complete in place. Work includes but is not limited to; procuring and installation of new furnishing such as picnic tables, drinking fountain, benches, corn hole bases, trash and recycling receptacles, pet waste station, double sided basketball hoops, pickle ball post and netting, pickle ball paddle rack, north (Octagon 45') and south (20'x30') pavilions and re-installation of existing furnishing and rocks as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. No additional compensation will be allowed therefor.

47. Electrical Lights, Outlets and Pavilion Lights

The contract lump sum price (LS) for "Electrical" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing all electrical lights, outlets and pavilion lights complete in place. Work includes but is not limited to; procuring, installation of electrical wiring, conduits, security and pavilion lights, outlets and other miscellaneous work as shown on the plans for a complete operational system as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. No additional compensation will be allowed therefor.



48. New Main Switch Board and Power Distribution Panel

The contract lump sum price (LS) for " New Main Switch Board and Power Distribution Panel" " shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing new power distribution panel complete in place. Work includes but is not limited to; procuring, installation of new main switchboard and power distribution panel and miscellaneous work including necessary connection to the existing system for an operational system as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. No additional compensation will be allowed therefor.

49. Electric Vehicle (EV) Chargers Infrastructure

The contract lump sum price (LS) for "EV Chargers Infrastructure" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, installing all new EV infrastructure complete in place. Work includes but is not limited to; procuring, installation of electrical wiring, conduits, and other miscellaneous equipment and work as shown on the plans for a complete and operational system as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. No additional compensation will be allowed therefor.

50. Irrigation System

The lump sum price (LS) for " Irrigation System" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved installing irrigation system complete in place. Work includes but is not limited to; procuring, installation of new irrigation mainlines and associated appurtenances including fertigation system, relocation of controller, irrigation wiring, and miscellaneous equipment and work including necessary connection to the existing system for a complete and operational system as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. No additional compensation will be allowed therefor.

51. Landscaping

The lump sum price (LS) for " Landscaping" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved installing landscaping complete in place. Work includes but is not limited to; procuring, planting of natural grass (sod), trees, shrubs, ground cover soil amendment , installing weed barrier mat and bark mulch as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. No additional compensation will be allowed therefor.

52. Landscaping Establishment Maintenance (3 months)

The lump sum price (LS) for " Landscaping Establishment Maintenance (3 months) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all necessary to maintain newly landscaped areas for a period of three months. Work includes but is not limited to; mowing, fertilizing, pruning, weeding and all necessary maintenance work to ensure survival of the new landscaping as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. This bid item includes the replacement of dead trees and plants .No additional compensation will be allowed therefor.



53. New EV Chargers (Additive Bid 1)

The contract lump sum price (LS) for " New EV Charger" " shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in procurement and installation of new EV chargers complete in place. Work includes but is not limited to; procuring, installation of EV chargers (1 single and 1 double) and miscellaneous work including necessary connection to the existing electrical system for an operational system as shown on the plans, as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. No additional compensation will be allowed therefor.

54. Landscaping Warranty Period Maintenance (12 months) (Additive Bid 2)

The lump sum price (LS) for " Landscaping Warranty Period Maintenance (12 months)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all necessary to maintain newly and existing landscaped areas for a period of twelve months. Work includes but is not limited to; mowing, fertilizing, pruning, weeding, maintenance of irrigation system and all necessary maintenance work to ensure the survival of all landscaping within the park and preparation of landscaping maintenance management manual as specified in the Standard Specifications, in these Special Provisions, and as directed by the engineer. This bid item includes the replacement of dead trees and plants . No additional compensation will be allowed therefor. Progress payment for this item shall be monthly.

ANCILLARY ITEMS

Payment for any items that do not have instructions indicating where expenses for said items are to be accounted for are to be considered ancillary to the work and accounted for in every one of the lump sum or unit price items and no additional compensation will be allowed therefor.

BID CLARIFICATION

Award of contract, if any is made, shall be made to the Contractor with the lowest responsive responsible bid based on the Grand Total Bid (Items 1- through 54). The City reserves the right to award the base bid only and may award all or any of the additive alternate bids.

Pursuant to the provisions of the California Public Contract Code Section 20103.8, City reserves the option to award any or all the additive bid items in addition to the original contract after the lowest responsive responsible Bidder has been determined, should the City later obtain additional funding for additive alternatives not awarded with the original contract.

If Additive Bid 2 is awarded, it will be awarded as a separate contract and shall start the day after completion of the three-month establishment maintenance period . Additive Bid 2 may be awarded to the Prime Contractor or to the Landscaping sub-contractor as the City deemed necessary. The City will accept all work and will file a Notice of Completion of the initial contract. Contractor may submit a warranty bonds to replace the initial bonds.

The City reserves the right to reject any and all bids and to waive any and all irregularities and informalities in bids not involving price, time or changes in the work. The City reserves the right to reject any nonconforming, nonresponsive, incomplete, unbalanced, or conditional Bids.

All blanks in the bid schedule must be appropriately filled in. If a bid item amount is zero, enter zero. If a bid item is included elsewhere, enter "included". Do not enter "N/A" into the Bid Schedule.



In the case of discrepancy between the unit price and the bid amount (estimated quantity times unit price), the unit price shall prevail and, shall be utilized as the basis for determining the lowest responsive, responsible bidder. Discrepancies between bid amounts stated in words and in figures will be resolved in favor of the amount stated in words. Final payment shall be determined by the Engineer from measured quantities of work performed based upon the unit price.

The undersigned has carefully checked all the above figures and understands that the City Council shall not be responsible for any errors or omissions on the part of the undersigned in making up this bid.

If this proposal shall be accepted and the undersigned shall fail to contract as aforesaid and to furnish bonds as provided in said Specifications with sureties satisfactory to the Council within ten (10) working days after award of the contract, and the payment of such security accompanying this proposal shall operate and the same shall be the property of the City.

Enclosed find certified check, cashier's check or bidder's bond in the amount of _____ Dollars (\$_____) which is not less than ten percent (10%) of the lump sum bid, payable to the City and which is given as a guarantee that the undersigned will enter into the contract if awarded the work.

The undersigned hereby certifies that this bid is genuine, and not a sham or collusive, or made in the interest or in behalf of any person not herein named, and that the undersigned has not directly or indirectly induced or solicited any other bidder to put in a sham bid, or any other person, firm or corporation to refrain from bidding, and that the undersigned has not in any manner sought by collusion to secure for himself an advantage over any other bidder.

It is agreed that this bid may not be withdrawn for a period of ninety (90) days from the opening thereof.

The terms and conditions of the final contract when executed shall control and supersede anything herein to the contrary or inconsistent with such contract.

The undersigned hereby certifies that I (we) have read and will comply with the affirmative action required hereof.

The names of all person/s interested in the foregoing proposal as principal/s are as follows:

Licensed in accordance with an act providing for the regulations of contractors,

License No. _____, Expiration Date _____,

Glorya Jean Tate Park Improvements Phase 2 Project
A3 Proposal Form



License Classification _____,

DIR No. _____, Expiration Date _____

Signatures:

NOTE: If bidder is a corporation, the legal name of the corporation shall be set forth, together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation; if bidder is a co-partnership, the true name of the firm shall be set forth above, together with the signature of the partner or partners authorized to sign contracts on behalf of the co-partnership; and if bidder is an individual, his signature shall be placed above.

Business Address:

Place of Business:

Telephone Number: () -

Dated: , 20.



A4 EXPERIENCE STATEMENT

The following outline is a record of the Bidder's recent experience in construction of a type similar in magnitude and character to that contemplated under this contract:

PROJECT OWNER, LOCATION & PHONE	PROJECT	CONTRACT AMOUNT

BANK REFERENCES

Bank Name, Address & Phone	Type Account	Account Number



A5 DESIGNATION OF SUBCONTRACTORS

In compliance with the provisions of Sections 4100-4113 of the Public Contracts Code of the State of California, and any amendments thereof, the undersigned bidder has set forth below the name, license number/public works contractor registration number (i.e. DIR #), and the location of the place of business of each subcontractor who will perform work or labor or render service to the undersigned in or about the construction of the work to be performed under the Contract Documents to which the attached proposal is responsible, and the portion of the work which will be done by each subcontractor for each subcontract in excess of one-half of one percent (0.50 %) of the undersigned's total aggregate bid.

DIVISION OF WORK	SUBCONTRACTOR	DIR#	ADDRESS

By _____
Bidder's Signature



A6 PROPOSAL GUARANTEE BOND

(To Accompany Bid)

THAT we _____ as Principal, hereinafter called the Principal, and
_____, a corporation duly

organized under the laws of the State of _____ as Surety, hereinafter called the Surety, are jointly and severally held and firmly bound unto the City of Marina, whose address is 211 Hillcrest Avenue, Marina, California, hereinafter called the Obligee, each in the penal sum of ten percent (10%) of the total amount of the bid proposal of the Principal for the work, this sum not to exceed _____ Dollars of lawful money of the United States of America for the payment whereof unto the Obligee, the Principal and Surety jointly and severally bind themselves forever firmly by these presents.

WHEREAS, THE Principal is herewith submitting this offer for the fulfillment to the Obligee for:

Glorya Jean Tate Park Improvements Phase 2 Project

NOW, THEREFORE, the condition of this obligation is such if the Principal is awarded the contract, and if the Principal within the time specified in the proposal for such contract enters into, executes and delivers to the Obligee an agreement in the form provided herein and incorporated by this reference, complete with evidences of insurance, and if the Principal within the time specified in the proposal gives to the Obligee the performance bond for faithful performance of the contract and the labor and materials bond for the prompt payment of labor and materials on the forms provided herein, then this obligation shall be void; otherwise, the obligation to remain in full force and effect and Principal and Surety will pay unto the Obligee the difference in money between the total amount of the proposal of the Principal and the amount for which Obligee legally contracts with another party to fulfill the contract if the latter amount be in excess of the former, but in no event shall the Surety's liability exceed the total sum hereof.

AND IT IS HEREBY DECLARED AND AGREED that the Surety shall be liable under this obligation as Principal and that nothing of any kind or nature whatsoever that will not discharge the Principal shall operate as a discharge or a release of liability of the Surety.

IT IS HEREBY DECLARED AND AGREED that this obligation shall be binding upon and inure to the benefit of the Principal, the Surety and the Obligee and their respective heirs, administrators, successors and assigns.

[Signature page follows]



Signed this _____ day of _____, 20____.

Principal: _____

(
(
(Corporate Seal)
(
(
()

By: _____

Title: _____

Legal Address: _____

Attest: _____
(Corporate Secretary)

Surety: _____

(
(
(Corporate Seal)
(
(
()

By: _____

Title: _____

Legal Address: _____

Attest: _____
(Corporate Secretary)

[All signatures must be notarized]



**A7 NON-COLLUSION AFFIDAVIT TO BE EXECUTED BY EACH AWARDEE OF A
PRINCIPAL CONTRACT**

_____ ,
being duly sworn, deposes and says that he/she is:

Sole owner, Partner, President, Secretary, etc., of

the party making the foregoing bid, that such bid is not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization or corporation; that said bidder has not directly or indirectly induced or solicited any other bidder to put in a raise or sham bid, and has not directly or indirectly colluded, conspired, connived or agreed with any bidder, or anyone else, to put in a sham bid, or that anyone shall refrain from bidding; that said bidder has not in any manner, directly or indirectly, sought by agreement, communication or conference with anyone to fix the bid price of said bidder or of any other bidder, or to fix any overhead, profit or cost element of such bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract, or anyone interested in the proposed contract; that all statements contained in such bids are true; and further, that said bidder has not directly or indirectly submitted his bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid and will not pay any fee in connection therewith, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, or to any other individual, except to such person or persons as have a partnership or other financial interest with said bidder in his general business; that the Contractor has not accepted any bid from any subcontractor or materialman through any bid depository, the By-Laws, Rules or Regulations of which prohibit or prevent the Contractor from considering the bid from any subcontractor or materialman, which is not processed through said bid depository, or which prevent any subcontractor or materialman from bidding to any contractor who does not use the facilities of or accept bids from or through such bid depository.

Signed _____

By _____

Title _____

Subscribed and sworn to before me this
_____ day of _____, 20 .

Notary Public in and for the County of

State of California



CONTRACT DOCUMENTS TO BE SUBMITTED (A8-A11)

A8 LOCAL HIRING REQUIREMENT

LOCAL HIRING REQUIREMENT

Pursuant to Chapter 13.02 of the City of Marina Municipal Code, unless such provision would conflict with a state or federal law or regulation applicable to a particular contract for public works or improvement, all City contracts for public works or improvement subject to competitive bidding requirements shall contain provisions pursuant to which the contractor promises to make a good faith effort, to include but not limited to requesting the assistance of local labor union hiring halls or other community resources designated by the city, to hire qualified individuals who are residents of the Monterey Bay area in sufficient numbers so that no less than eighty percent (80%) of the contractor's total construction work force, including any subcontractor work force, measured in labor work hours, is composed of Monterey Bay area residents.

The contractor shall keep an accurate record on a standardized form showing the name, place of residence, type classification, hours employed, proof of journey person or apprenticeship status, per diem wages and benefits of each person employed by the contractor, and the contractor's subcontractors, on the specific public works project, including full-time, part-time, permanent and temporary employees and make such records available to the city, upon request, within five working days.

The contractor shall keep, and provide to the city, on forms acceptable to the city, an accurate record documenting compliance with this chapter. Such records shall include: a listing by name and business address of all local recruitment sources contacted by the contractor, the date of the local recruitment contact and the identity of the person contacted, the trade and classification and number of hire referrals requested, the number of local hires made as a result of the contact, the identity and business address of the person(s) hired pursuant to the contact.

The good-faith local hiring provisions of this chapter shall bind the contractor both with respect to persons hired directly by the contractor and to all persons hired by the contractor's subcontractors. The contractor shall be responsible for assuring that all subcontractors document such compliance by submitting the forms required.

The contractor shall include the following language and a copy of this chapter as may be amended from time-to-time in all contracts with contractor's subcontractors:

"This contract is for labor or materials for a City of Marina public works project. As a subcontractor on a City project, you are required to comply with all of the requirements of the Marina local hiring preference ordinance, Marina Municipal Code, Chapter 13.02, attached hereto and incorporated herein by reference. Failure to comply with the provisions of the local hiring preference ordinance may subject the contractor and/or subcontractor to criminal prosecution and shall subject the contractor and/or subcontractor to disqualification from eligibility for City of Marina contracts."

Every Bidder must complete and sign under penalty of perjury a Certification of Good-Faith effort to Hire Monterey Bay Area Residents, on the form provided, and submit said Certification with the sealed bid no later than the date and time of the bid opening. Bidder shall attach to the Certification documentary evidence supporting Bidder's promise to meet, or to make a good-faith effort to meet, the local hiring goal.



Bidders are responsible for familiarizing themselves with the City on Marina Local Hiring for Public Works, contents thereof before signing the certifications required below.

The local hiring requirement shall not apply under the following circumstances:

1. Whenever a state or federal law or regulation applicable to a particular contract prohibits the provision of a local hire requirement; or
2. Whenever the City, in accordance with the requirements of the Code or state law, determines that the contract is necessary to respond to an emergency which endangers the public health, safety, or welfare; or
3. Whenever the City determines that a suitable pool of people providing specialized skills does not exist locally for a specific public works project. Example: Slurry and Micro surfacing work



CERTIFICATION OF GOOD-FAITH EFFORT TO HIRE MONTEREY BAY AREA RESIDENTS

(Prime Contractor – To be Submitted with Bid)

I, _____, a licensed contractor, or responsible managing officer, of the company known as _____, do hereby certify, under penalty of perjury, that I have met, or made a good-faith effort to meet, the requirements set forth in the Marina Municipal Code chapter 13.02 "Local Hiring For Public Works". Further, I certify that during the performance of the contract, I shall keep an accurate record on a standardized form showing the name, place of residence, type classification, hours employed, proof of journey person or apprenticeship status, per diem wages and benefits of each person employed by the contractor, and the contractor's subcontractors, on the specific public works project, including full-time, part-time, permanent and temporary employees and make such records available to the city, upon request, within five working days. I shall keep, and provide to the city, on forms acceptable to the city, an accurate record documenting compliance with this chapter. Such records shall include: a listing by name and business address of all local recruitment sources contacted by the contractor, the date of the local recruitment contact and the identity of the person contacted, the trade and classification and number of hire referrals requested, the number of local hires made as a result of the contact, the identity and business address of the person(s) hired pursuant to the contact. I understand that I am responsible for insuring that any subcontractor working under my direction, complies with this ordinance, including submitting a Certification of Good Faith Effort to Hire Monterey Bay Residents, and to keeping accurate records as described above.

_____ Signature

_____ Printed Name and Title

_____ Date



CITY OF MARINA

(Subcontractor – To be Completed by Subcontractor After Bid is Awarded)

I, _____, a licensed contractor, or responsible managing officer, of the company known as _____, do hereby certify, under penalty of perjury, that I have met, or made a good-faith effort to meet, the requirements set forth in the Marina Municipal Code chapter 13.02 "Local Hiring For Public Works". Further, I certify that during the performance of the contract, I shall keep an accurate record on a standardized form showing the name, place of residence, type classification, hours employed, proof of journey person or apprenticeship status, per diem wages and benefits of each person employed by the contractor, and the contractor's subcontractors, on the specific public works project, including full-time, part-time, permanent and temporary employees and make such records available to the city, upon request, within five working days. I understand that I am responsible for insuring that any subcontractor working under my direction, complies with this ordinance, including submitting a Certification of Good Faith Effort to Hire Monterey Bay Residents, and to keeping accurate records as described above.

_____ Signature

_____ Printed Name and Title

_____ Date



CITY OF MARINA

STATEMENT OF GOOD FAITH EFFORT FOR LOCAL HIRE

(Prime Contractor – To be Submitted after Award of Contract and prior to issuance of Notice To Proceed)

In conformance with Subsection 13.02.020 B. of the Marina Municipal Code, each Contractor shall complete and submit this Statement of Good Faith Effort for Local Hire to the City following Award of the Contract and prior to issuance of the Notice to Proceed.

Project Title: _____ For Pay Period Ending: _____

Contractor _____ Lic.# _____

Address: _____ City: _____ State _____ Zip _____

Name & Address of Local Recruitment Source	Date of Recruitment	Person Contacted & Phone#	Trade & Classification	# Hire Referrals Requested	# of Local Hire(s) Made as Result of Contract	Name & Address of Local Hire(s) as a Result of Contact

(add additional sheets as necessary)

I, (name/ title) _____, declare under penalty of perjury that the information provided in this form and submitted herewith is true and correct to the best of my knowledge and that I, as an authorized agent of the Contractor referenced above, have authority to submit this information on the Contractor's behalf.

Name: _____ Date: _____

Print Name: _____



CITY OF MARINA

LOCAL HIRING RESIDENCY COMPLIANCE MONITORING FORM

(Prime Contractor and Sub Contractors– To be Submitted upon request within five working days)

In conformance with Subsection 13.02.020 A. of the Marina Municipal Code, each Contractor shall complete and submit this Statement of Local Hiring Residency Compliance to the City upon request, within five working days.

Project Title: _____ For Pay Period Ending: _____

Contractor: _____ Lic# _____

Address: _____ City: _____ State _____ Zip _____

Name & Address of Local Hire	Date of Hire	Trade & Classification	Estimated Work Hours on Job	# of Hours Worked on the Job	Last Day Worked	Per Diem Wages & Benefits	Journeyman or Apprentice

(add additional sheets as necessary)

I, (name/ title) _____, declare under penalty of perjury that the information provided in this form and submitted herewith is true and correct to the best of my knowledge and that I, as an authorized agent of the Contractor referenced above, have authority to submit this information on the Contractor's behalf.

Name: _____ Date: _____

Print Name: _____



A9 FORM OF CONTRACT

FOR

Glorya Jean Tate Park Improvements Phase 2 Project

THIS CONTRACT is made and entered into this 2024, by and between The City of Marina, a municipal corporation of the State of California, hereinafter called "City of Marina" or "City" and , hereinafter called "Contractor", for the work described herein.

- a. WITNESSETH, in this consideration of their covenants, the parties hereto agree as follows:
2. Contract Award. In response to the Notice to Bidders, Contractor submitted a Proposal to perform the work for the Glorya Jean Tate Park Improvements Phase 2 Project ("Project"). On date, the City awarded this Contract to Contractor.
3. Contract Documents. The Contract Documents for this Contract consist of the following, which comprise the entire agreement between the City and Contractor:
- a. Notice to Bidders & Information for Bidders
 - b. Accepted Proposal (**A3**)
 - c. Proposal Supplement Including an Experience Statement and List of Proposed Subcontractors (**A4-A5**);
 - d. Proposal Guaranty Bond(**A6**);
 - e. Non- Collusion Affidavit (**A7**);
 - f. Local Hiring Requirements (**A8**);
 - g. Contract Agreement (**A9**)
 - h. Bond for Labor and Material (**A10**); (**only if bid amount exceeds \$25,000**)
 - i. Performance Bond (**A11**); (**only if bid amount exceeds \$25,000**)
 - j. Evidence of Insurance (Certificate of Insurance)
 - k. Project Plans and Specifications
 - l. Standard Plans and Specifications, Caltrans – 2023 Edition
 - m. California Building Code and associated codes- recent edition adopted by the City (for Building Related projects)
 - n. Any Addenda
 - o. Any Construction Change Order
 - p. Additional documents: _____

These Contract Documents are incorporated into this Contract and made a part hereof as fully and completely as if set forth herein verbatim.

4. Contractor's Obligations. Contractor hereby covenants and agrees to furnish and provide all labor, materials, tools, appliances, equipment, plant and transportation, and all other things required or necessary to be furnished, provided or done, and build, erect, construct and complete the Project at the time and in the manner provided, and in strict accordance with the plans and specifications, therefore. Contractor must use its best efforts to complete the work in a professional and expeditious manner and to meet or exceed the performance standards required by the Contract Documents.



5. Payment. As full and complete compensation for Contractor's timely performance and completion of the work in strict accordance with the terms and conditions of the Contract Documents, the City will pay Contractor amount in words United States Dollars (\$amount in numerals) ("Contract Price") for all of Contractor's direct and indirect costs to perform the work, including all labor, materials, supplies, equipment, taxes, insurance, bonds, and all overhead costs, in accordance with the payment provisions in the Contract Documents.
6. Time for Completion. Contractor will fully complete the work on or before the expiration of the time specified in the Special Provisions after execution of the Contract on behalf of the City of Marina and the receipt from the City of Marina of a notice to proceed with the work.
7. Indemnification.
- a. The City and all officers, employees, and agents thereof connected with the work, shall not be answerable or accountable in any manner for any loss or damage that may happen to the work or any part thereof; for any loss or damage to any of the materials or other things used or employed in performing the work; for injury to or death of any person; or for damage to property from any cause except losses due to sole or active negligence, or sole willful misconduct, of the City's officers or employees.
 - b. To the fullest extent permitted by law, the Contractor will indemnify, defend (with counsel approved by the City), and hold harmless the City, its officials, officers, employees, agents, volunteers, and consultants ("indemnified parties") from and against any or all loss, liability, expense, claims, penalties, costs (including costs, attorneys' fees and expert fees of defense), suits, and damages of every kind, nature, and description directly or indirectly arising from or in any way connected to the performance of the work ("Claims"), regardless of Contractor's fault or negligence, including any of the same resulting from the alleged or actual negligent act or omission of an indemnified party; except that said indemnity shall not be applicable to Claims arising from the sole negligence, active negligence, or sole willful misconduct of an indemnified party. In instances where the active negligence of an indemnified party accounts for only a percentage of the liability involved, the obligation of Contractor will be for that entire portion of the percentage of liability not attributable to the active negligence of the indemnified party.
 - c. The Contractor will indemnify, defend, and hold harmless the City, the City's officials, officers, employees, volunteers, agents, and the Construction Manager and Engineer/Architect for all liability on account of any patent rights, copyrights, trade names, or other intellectual property rights that may apply to the Contractor's performance of the work. The Contractor will pay all royalties or other charges as a result of intellectual property rights that may apply to methods, types of construction, processes, materials, or equipment used in the performance of the work, and will furnish written assurance satisfactory to the City that any such charges have been paid.
 - d. Approval of the Contractor's certificates of insurance and/or endorsements does not relieve the Contractor of liability under this Section 6. The Contractor will defend, with legal counsel reasonably acceptable to the City, any action or actions filed in connection with any Claims and will pay all related costs and expenses, including attorneys' fees incurred. The Contractor will
 - e. promptly pay any judgment rendered against the City, its officials, officers, employees, agents, volunteers, or consultants for any Claims. In the event the City, its officials, officers,



employees, agents, volunteers, or consultants is made a party to any action or proceeding filed or prosecuted against Contractor for any Claims, Contractor agrees to pay the City, its officials, officers, employees, agents, volunteers, and consultants any and all costs and expenses incurred in such action or proceeding, including but not limited to, reasonable attorneys' fees.

- f. In accordance with Civil Code § 2782(a), nothing in the Contract will be construed to indemnify the City for defects in design furnished by the City.
 - g. This indemnification and duty to defend shall extend to Claims asserted after termination of this Contract for whatever reason.
 - h. The City and Contractor shall timely notify each other of the receipt of any third-party claim relating to the contract. The City shall be entitled to recover its reasonable costs incurred in providing such notification.
8. Guarantee. The Contractor agrees to immediately repair and replace all defective material and workmanship discovered within one year after acceptance of final payment by Contractor and to indemnify City of Marina against all loss and damage occasioned by any such defect, discovered within that year, even though the damage or loss may not be ascertained until after the expiration thereof. Provided, however, that if such failure of the Contractor to perform should not, by reasonable diligence, be discoverable or discovered within that one year, then the obligation of the Contractor to repair and replace that defective material or workmanship shall continue until one year after the actual discovery thereof.
9. Workers' Compensation Certification. Pursuant to Labor Code § 1861, by signing this Contract, Contractor certifies as follows: "I am aware of the provisions of Labor Code § 3700 which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the Work on this Contract."
10. Independent Contractor.
- a. Contractor is and shall at all times remain as to City a wholly independent contractor. The personnel performing the work under this Contract on behalf of Contractor shall at all times be under Contractor's exclusive direction and control. Neither City nor any of its officers, employees, or agents shall have control over the conduct of Contractor or any of Contractor's officers, employees, or agents, except as set forth in the Contract Documents. Contractor shall not at any time or in any manner represent that it or any of its officers, employees, or agents are in any manner officers, employees, or agents of the City. Contractor shall not incur or have the power to incur any debt, obligation, or liability whatever against City, or bind City in any manner. Contractor's employees in no circumstances shall be entitled to part of any pension plan, insurance, bonus or any similar benefits which City provides its own employees.
 - b. Any and all claims that may arise under the Workers' Compensation Act on behalf of Contractor's employees or sub-contractors, while so engaged in the work, and all claims made by a third party as a consequence of any negligent act or omission on the part of the Contractor employees or sub-contractors, while so engaged in any of the work provided for or rendered herein shall not be City's obligation.
11. Conflicts of Interest. Contractor, its employees, subcontractors and agents, may not have, maintain or acquire a conflict of interest in relation to this Contract in violation of any City ordinance or



requirement, or in violation of any California law, including Government Code § 1090 et seq., or the Political Reform Act, as set forth in Government Code § 81000 et seq. and its accompanying regulations. Any violation of this Section constitutes a material breach of the Contract.

12. Bonds and Insurance. Concurrently with the execution of this Contract, Contractor shall file with the City of Marina the bonds and evidence of insurance specified in the Contract Documents and subject to adjustment provided therein. The Contractor agrees at all times during the progress of the work to carry with insurance carriers approved by the City of Marina full coverage workmen's compensation and public liability insurance in the form and to the extent called for in Section 7-1.06 of the Standard Specifications, State of California, 2023 Edition. Such insurance policy shall contain an endorsement that the same shall not be canceled nor the amount of coverage be reduced until at least 30 days after receipt by the City of Marina by certified or registered mail of a written notice of such cancellation or reduction in coverage.
13. Audit, and Examination and Ownership of Records.
- a. Contractor shall maintain complete and accurate records with that relate to the performance of work under this Contract in sufficient detail to permit an evaluation of work. All such records shall be maintained in accordance with generally accepted accounting principles and shall be clearly identified and readily accessible.
 - b. The City may examine and audit at no additional cost to the City all books, estimates, records, contracts, documents, bid documents, bid cost data, subcontract job cost reports and other Project-related data of the Contractor, subcontractors engaged in performance of the work, and suppliers providing supplies, equipment and other materials required for the work, including computations and projections related to bidding, negotiating, pricing or performing the work or contract modifications and other materials concerning the work, including, but not limited to, Contractor daily logs, in order to evaluate the accuracy, completeness, and currency of cost, pricing, scheduling and any other project related data.
 - c. The Contractor will make available all such Project related data at all reasonable times for examination, audit, or reproduction at the Contractor's business office at or near the work site, and at any other location where such Project related data may be kept until three (3) years after final payment under the Contract.
 - d. Pursuant to California Government Code section 8546.7, if the amount of public funds to be expended is in excess of \$10,000, this Contract shall be subject to the examination and audit of the State Auditor, at the request of the City, or as part of any audit of the City, for a period of three (3) years after final payment under the Contract.
 - e. No portion of the Contract Documents may be used for any purpose other than construction of the Project, without prior written consent from City. Contractor is deemed to have conveyed the copyright in any designs, drawings, specifications, shop drawings, or other documents (in paper or electronic form) developed by Contractor for the Project, and City will retain all rights to such works, including the right to possession.
 - f. This Section 12 shall survive termination of this Contract.
14. Notice. All notices, requests, and approvals must be in writing and may be given either by (i) personal service, (ii) delivery by a reputable document delivery service, such as but not limited to, Federal



15. Express, which provides a receipt showing date and time of delivery, or (iii) mailing in the United States Mail, by first class mail, addressed to the address of the party as set forth below or at any other address as that party may later designate by notice:

To the City:

[insert City employee]
City of Marina
[insert address]
[insert email]

To the Contractor:

Contractor Name
Contractor Address
Contractor Email

Notice is effective on the date of personal service; the date of delivery confirmed by a reputable overnight delivery service; or 5 days following deposit in a United States mailbox, or date of postmark. The parties may agree to notice by email.

16. Attorney's Fees. In the event of any controversy, claim or dispute relating to this Contract or the breach thereof, the prevailing party shall be entitled to recover from the losing party reasonable expenses, attorney's fees and costs.
17. Third-Party Beneficiaries. There are no intended third-party beneficiaries to this Contract except as expressly provided in the Contract Documents.
18. Governing Law and Venue. This Contract will be governed by California law and venue will be in the Superior Court of Monterey County, or the federal district court with jurisdiction over the City, and no other place.
19. Amendment. No amendment or modification of this Contract will be binding unless it is in a writing duly authorized and signed by the parties to this Contract.
20. Integration. This Contract and the Contract Documents incorporated herein, including authorized amendments or Change Orders thereto, constitute the final, complete, and exclusive terms of the agreement between the City and Contractor.
21. Waiver. Neither the acceptance of work or payment for work pursuant to this Contract shall constitute a waiver of any rights or obligations arising under this Contract. The failure by the City to enforce any of Contractor's obligations or to exercise City's rights shall in no event be deemed a waiver of the right to do so thereafter.
22. Severability. If any provision of the Contract Documents is determined to be illegal, invalid, or unenforceable, in whole or in part, the remaining provisions of the Contract Documents will remain in full force and effect.
23. Authorization. Each individual signing below warrants that they are authorized to do so by the party that they represent, and that this Contract is legally binding on that party. If Contractor is a



corporation, signatures from two officers of the corporation are required pursuant to California Corporation Code section 313.

24. Compliance with Provisions of Law.

- a. The City is subject to laws relating to public agencies which are part of this contract as though fully set forth herein.
- b. Contractor agrees to comply with all applicable federal, state and municipal laws and regulations, including but not limited to California Labor Code Division 2, Part 7, Chapter 1 regarding Public Works and Public Agencies.
- c. Contractor shall comply with City of Marina Municipal Code Chapter 13.02 Local Hiring for Public Works.
- d. Contractor shall comply with laws relating to the work.

IN WITNESS WHEREOF, the parties to these presents have hereunto set their hands the year and date first above written.

CONTRACTOR

CITY OF MARINA

By: _____

By: _____
Layne P. Long, City Manager

Print Name: _____

Date: _____

Address: _____

Date: _____

APPROVED AS TO FROM:

By: _____
City Attorney

By: _____

Date: _____

Date: _____

ATTESTED:

By: _____
Anita Shepherd-Sharp
Deputy City Clerk

Date: _____

Resolution No. 2024-_____



IN WITNESS WHEREOF, the parties to these presents have hereunto set their hands the year and date first above written.

CONTRACTOR CITY OF MARINA

By: _____ By: Layne P. Long, City Manager
Print Name: _____ Date: _____
Address: _____

Date: _____

APPROVED AS TO FROM:
By: _____ By: _____
City Attorney
Date: _____ Date: _____

ATTESTED:
By: _____
Anita Shepherd-Sharp
Deputy City Clerk
Date: _____ Resolution No. 2024-_____

A10 PAYMENT BOND
(LABOR AND MATERIAL BOND)
(100% of Contract Amount)

Bond No.: _____
Premium: _____

WHEREAS, The City of Marina ("CITY") has awarded to _____ designated as "PRINCIPAL" herein, a contract for the work described as the **Glorya Jean Tate Park Improvements Phase 2 Project**; and

WHEREAS, on or about _____, 20____, the PRINCIPAL entered into a Contract with the CITY for the construction of the work of improvement, which Contract and all Contract Documents set forth therein are incorporated herein and made a part hereof by this reference; and

WHEREAS, By the terms of the Contract, as well as California Civil Code Section 9550, the PRINCIPAL is required to furnish a bond guaranteeing payment of claims.

NOW, THEREFORE, PRINCIPAL and _____ ("SURETY"), a duly admitted surety insurer in the State of California as defined by California Code of Civil Procedure section 995.120, are held and firmly bound to the CITY for payment of the penal sum of _____ Dollars (\$_____) (the "Bonded Sum") in lawful money of the United States, for the payment of which sum PRINCIPAL and SURETY jointly and severally bind themselves and their heirs, executors, administrators, successors, and assigns.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT IF PRINCIPAL, his, her or its heirs, executors, administrators, successors or assigns or subcontractors shall fail to pay any of the persons referred to in California Civil Code Section 9100, amounts due under the Unemployment Insurance Code with respect to work or labor performed by any such claimant, or amount due the Franchise Tax Board as provided in California Civil Code Section 9554, that SURETY or sureties herein shall pay for the same, in amount not exceeding the Bonded Sum; otherwise this obligation shall be void.

The following terms and conditions shall apply with respect to this Bond:

- a) In case suit is brought upon this Bond the said SURETY will pay reasonable attorney's fees and costs incurred by the CITY to be fixed by the Court in addition to the Bonded Sum;
- b) No alternation, modification or supplement to the Contract Documents or the nature of the work to be performed thereunder, including without limitation any extension of time for performance, alteration, or addition to the terms of the contract, or to the specifications accompanying the same, shall in any way affect the obligations of SURETY under this Bond, SURETY hereby waives notice of any alteration, modification, supplement or extension of time.
- c) No settlement between the CITY and the PRINCIPAL shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.
- d) Correspondence or claims relating to this Bond should be sent to the SURETY at the following address:



-
- e) This Bond shall inure to the benefit of any persona named in California Civil Code Sections 8520, 8530, 9100 as to give a right of action to such persons or their assigns in any suit brought upon this Bond. Any such right of action shall be subject to the provisions of California Civil Code Section 8608 or 9566.

IN WITNESS WHEREOF, three (3) identical counterparts of this instrument, each of which shall for all purposes be deemed to be an original hereof, have been duly executed by PRINCIPAL and SURETY on the date set forth before the name of each corporate party being hereto affixed and these presents duly signed by its undersigned representative(s) pursuant to authority of its governing body. PRINCIPAL and SURETY has caused this Bond to be duly executed and delivered this _____ day of _____ 20____.

Date: _____, 20_____.

PRINCIPAL: _____

Name: _____

Title: _____

Legal Address: _____

()
()
(Corporate)
(Seal)
()
()
()

Attest: _____
(Corporate Secretary)



Date: _____, 20____.

SURETY: _____

Name: _____

Title: _____

Legal Address: _____

(
(
(Corporate
(Seal
(
(
(

Attach Attorney-In-Fact Certificate, Corporate Seal and Surety Seal

APPROVED AS TO SURETY AND PRINCIPAL AMOUNT:

City Engineer

APPROVED AS TO FROM:

City Attorney

Note this Bond must be executed in triplicate and dated, all signatures on behalf of PRINCIPAL and SURETY must be notarized, and evidence of the authority of any person signing as attorney-in-fact must be attached.



A11 PERFORMANCE BOND
(100% of Contract Amount)

Bond No.: _____
Premium: _____

WHEREAS, THE City of Marina ("CITY") has awarded to _____, designated as the "PRINCIPAL" herein, a contract hereto annexed for the work described as follows: **Glorya Jean Tate Park Improvements Phase 2 Project**; and

WHEREAS, on or about _____, 20____, the PRINCIPAL entered into a Contract with the CITY for the construction of the work or improvement, which Contract and all Contract Documents set forth therein are incorporated herein and made a part hereof by this reference; and

WHEREAS, the PRINCIPAL is required to furnish a bond guaranteeing the faithful performance of its obligations under the Contract Documents concurrently with delivery to the City of the executed Contract.

NOW. THEREFORE, PRINCIPAL and _____ ("SURETY"), a duly admitted surety insurer in the State of California as defined by California Code of Civil Procedure section 995.120, are held and firmly bound to the CITY for payment of the penal sum of _____ Dollars (\$_____) (the "Bonded Sum") in lawful money of the United States, for the payment of which sum PRINCIPAL and SURETY jointly and severally bind themselves and their heirs, executors, administrators, successors and assigns.

THE CONDITON OF THIS OBLIGATION IS SUCH THAT IF PRINCIPAL shall promptly and faithfully perform all of its obligations under the Contract Documents, including any and all amendments and supplements thereto, and shall furnish all tools, equipment, apparatus, facilities, transportation, labor and materials, other than materials to be furnished by the CITY, necessary to perform and complete, and to perform and complete in a good workmanlike manner in strict conformation with the terms and set forth in the Contract annexed hereto, and to guarantee acceptable performance of the work for a period of one year following the acceptance of the project; then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The following terms and conditions shall apply with respect to this Bond:

1. This bond specifically guarantees the performance of each of every obligation of the PRINCIPAL under the Contract Documents, as they may be amended and supplemented, including but not limit to its liability for liquidated damages and warranties as specified in the Contract Documents, up to but not exceeding the Bonded Sum.
2. The guarantees contained herein shall survive the final completion of the construction called for in the Contract Documents with respect to those obligations of PRINCIPAL which survive such final completion.
3. No alteration, modification, or supplement to the Contract Documents or the nature of the Work performed thereunder, including without limitation any extension of time for performance shall in any way affect the obligations of SURETY under this Bond. Surety hereby waives any notice of alterations, modification, supplement, or extension of time.



4. Whenever the PRINCIPAL shall be, and is declared by CITY to be, in default under the Contract Documents, provided that CITY is not then in material default thereunder, SURETY shall promptly: (a) remedy such default; (b) complete the Project in accordance with the terms and conditions of the Contract Documents then in effect; or (c) select a contractor(s) to complete all work for which a Notice to Proceed has been issued in accordance with the terms and conditions of the Contract Documents then in effect, use a procurement methodology approved by the CITY, arrange for a contract between such contractor(s) and CITY, and make available as work progresses sufficient funds to pay the cost of completion including other costs and damages for which the SURETY is liable hereunder, up to but not exceeding the Bonded Sum.
5. Correspondence or claims relating to the Bond shall be sent to the SURETY at the following address:

6. No right of action shall accrue on this Bond to or for the use of any entity other than CITY or its successors and assigns.
7. In the event any suit, action, or proceeding is instituted to recover on this Bond, said SURETY will pay, and does hereby agree to pay, CITY's reasonable attorney's fees and costs incurred, with or without suit, in addition to the Bonded Sum.

IN WITNESS WHEREOF, three (3) identical counterparts of this instrument, each of which shall for all purposes be deemed to be an original hereof, have been duly executed by PRINCIPAL and SURETY on the date set forth before the name of each corporate party being hereto affixed and these presents duly signed by its undersigned representative(s) pursuant to authority of its governing body. PRINCIPAL and SURETY has caused this Bond to be duly executed and delivered this _____ day of _____ 20____.

[Signature page follows.]



Date: _____, 20____.

PRINCIPAL:

Name: _____

Title: _____

Legal Address: _____

(
(
(Corporate
(Seal
(
(
(

Attest: _____

(Corporate Secretary)

Date: _____, 20____.

SURETY:

Name: _____

Title: _____

Legal Address: _____

(
(
(Corporate
(Seal
(
(
(

Attach Attorney-In-Fact Certificate, Corporate Seal and Surety Seal

APPROVED AS TO SURETY AND PRINCIPAL AMOUNT:

City Engineer

APPROVED AS TO FROM:

City Attorney

Note this Bond must be executed in triplicate and dated, all signatures on behalf of PRINCIPAL and SURETY must be notarized, and evidence of the authority of any person signing as attorney-in-fact must be attached.



A12 City of Marina Contractor Off-Road Regulations Assurances

The City of Marina requires that all work done on City property or otherwise on behalf of the City is performed in accordance with the State's environmental health and safety laws, codes and regulations. To this end, please check the appropriate boxes and provide information as required below related to compliance with California Air Resources Board (CARB) Off-Road Diesel-Fueled Fleets Regulations. The City will not approve this contract until this form has been completed. The A12 form must be updated annually or anytime changes occur. The contractor agrees to provide the City with any documents referenced below within one business day of the request. Information on these Regulations is available here: <https://ww2.arb.ca.gov/our-work/programs/use-road-diesel-fueled-fleets-regulation>

A12 – City of Marina Contractor Off-Road Regulations Assurances

Glorya Jean Tate Park Improvements Phase 2 Project
A11 Performance Bond



Contractor Name: _____

In the performance of this contract, does Contractor propose to use vehicles subject to 13 CCR 2449, the In-Use Off-Road Diesel-Fueled Fleets Regulation? **YES** ☐ **NO** ☐

If the answer in above is **NO**, Contractor does not need to check any boxes for items 1, 2, and 3 below and no further information is required.

If the answer above is **YES**:

- A. Contractor must check YES or N/A, as applicable, for items 1, 2, and 3 below.
- B. If no exemption from these Regulation requirements applies, Contractor must provide to the City: (1) a valid Certificate of Reported Compliance for its fleet, and (2) valid Certificates of Reported Compliance for fleets of any subcontractors.
- C. If an exemption from these Regulation requirements does apply, Contractor must provide the City with detailed documentation identifying the exemption and supporting the applicability of the exemption.
- D. If Contractor asserts that the emergency operations exemption applies, Contractor must provide: (1) a description of the emergency, (2) the address or description of the specific location where Contractor performed work to address the emergency, (3) the dates on which the emergency work was performed, and (4) an attestation by the Contractor that the vehicles operated on the project were only used to carry out emergency work.

Please respond YES or N/A for each item below.

YES

N/A

- | | | | |
|--|--------------------------|--------------------------|---|
| 1. Contractor has provided the City with a copy of a valid Certificate of Reported Compliance for Contractor's own fleet. | ☐ | ☐ | (check N/A if exemption applies) |
| 2. Contractor has provided the City with a copy of a valid Certificate of Reported Compliance for any subcontractors' fleet. | ☐ | ☐ | (check N/A if exemption applies or there are no subcontractors) |
| 3. Contractor has provided the City with documentation supporting a claimed exemption to the Off-Road Regulation. | ☐ | ☐ | (check N/A if no exemption applies) |



PART B - GENERAL PROVISIONS

B1 DEFINITION OF TERMS

Whenever in these Specifications or in any documents or instruments in connection where these Specifications govern, the following terms or pronouns in place of them are used, and intent and meaning shall be interpreted as follows:

1.1 City of Marina, City, or Owner

The incorporated City of Marina, Monterey County, California.

1.2 City Council or Council

The City Council of the City of Marina, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

1.3 Director of Public Works/City Engineer or Engineer

The Director of Public Works of the City of Marina, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

1.4 Contractor

The person or persons, co-partnership or corporation, private or municipal, who have entered into a contract with the City of Marina as party or parties of the second part, or his or their legal representatives. Any reference of a masculine nature shall imply either gender and is not intended to be discriminatory.

1.5 Specifications

The term specifications refer to the City Standard Specifications and the California Department of Transportation Standard Specifications for the Construction of Local Streets and Roads, 2018 Edition. In the occasion that there is a conflict, the City Standard Specifications take precedence.



B2 SCOPE OF WORK

2.1 Intent of Specifications

The intent of these Specifications is to describe the details for the construction and completion of the work, which the Contractor undertakes to perform in accordance with the terms of the Contract. Where these Specifications describe portions of the work in general terms, but not in complete detail, it is understood that only the best general practice is to prevail and that only materials and workmanship of the first quality are to be used. Unless otherwise specified, the Contractor shall furnish all labor, materials, tools, equipment and incidentals, and do all the work involved in completing the contract in a satisfactory and workmanlike manner.

2.2 Final Clean Up

Before final inspection of the work, the Contractor shall clean the street, material sites and all ground occupied by him in connection with the work, of all rubbish, excess materials, false work, temporary structures and equipment. All parts of the work shall be left in a neat and presentable condition. Full compensation for final cleaning up will be considered as included in the prices paid for the various contract items of work, and no separate payment will be made therefore.

Nothing herein, however, shall require the Contractor to remove warning and directional signs prior to final acceptance by the City.

2.3 Changes

The City reserves the right to make such alterations, deviations, additions to, or omissions from these Plans and Specifications, including the right to increase or decrease the quantity of any item or portion of the work or to omit any item or portion of the work as may be deemed by the Engineer to be required for the proper completion or construction of the work. A contract change order will not become effective until approved either by the City Manager (if the amount of the change order is less than ten (10) percent of the contract amount) or by the City Council (if the amount of the change order is greater than ten (10) percent of the contract amount).

Any such changes will be set forth in a contract change order which will specify, in addition to the work to be done in connection with the change made, adjustment of contract time, if any, and the basis of compensation for such work. A contract change order will not become effective until approved by the City Council.

The provisions of California Standard Specification (CSS) Section 9-1.06B (increased quantities) and 9-1.06C (decreased quantities) shall not be applicable to any contract items increased or decreased over 25 percent.

Upon receipt of an approved contract change order, the Contractor shall proceed with the ordered work. If ordered in writing by the Engineer, the Contractor shall proceed with the work so ordered prior to actual receipt of an approved contract change order therefore.

a. Procedure and Protest

A contract change order approved by the Engineer may be issued to the Contractor at any time. Should the Contractor disagree with any terms or conditions set forth in an approved contract change order, which he has not executed, he shall submit a written protest to the Engineer within fifteen (15)



days after the receipt of such approved contract change order. The protest shall state the point of disagreement, contract specification references, and if possible, the quantities and the costs involved. If a written protest is not submitted, payment will be made as set forth in the approved contract change order, and such payment shall constitute thereby. Such unprotested approved contract change orders will be considered as executed contract change orders.

Where protest concerning an approved contract change order relates to compensation, the compensation payable as specified or required by said contract change order to which such protest relates, will be determined by the Engineer in the same manner as if the work were to be paid for on a force account basis as provided in the paragraphs titled "Measurement and Payment" in these General Provisions; or such adjustment will be as agreed to by the Contractor and the Engineer. The Contractor shall keep full and complete records of the cost of such work and shall permit the Engineer to have such access thereto as necessary to assist in the determination of the compensation payable for such work.

Where protest concerning an approved contract change order relates to the adjustment of contract time for the completion of the work, the time to be allowed therefore will be determined as provided in paragraphs titled "Prosecution and Progress" in these General Provisions.

Proposed contract change orders may be presented to the Contractor for his consideration prior to approval by the Engineer. If the Contractor signifies his acceptance of the terms and conditions of such proposed contract change order by executing such document, and if such change order is approved by the Engineer and issued to the Contractor, payment in accordance with the provisions as to compensation therein set forth shall constitute full compensation for all work included therein or required thereby. A contract change order executed by the Contractor and approved by the Engineer is an executed contract change order. An approved contract change order shall supersede a proposed, but unapproved change order covering the same work.

b. Contract Items to be Omitted

If acceptable material is ordered by the Contractor for the omitted item prior to the date of notification of such omission by the Engineer and if orders for such material cannot be canceled, it will be paid for at the actual cost to the Contractor, excluding overhead and profit. In such case, the material paid for shall become the property of the City and the cost of any further handling will be paid for as extra work as provided in this Section. If the material is returnable to the vendor and if the Engineer so directs, the material shall be returned, and the Contractor will be paid for charges made by the vendor for returning such materials. The cost of handling returned material will be paid for as extra work as provided in this Section.

c. Extra Work

New and unforeseen work will be classed as extra work when determined by the Engineer that such work is not covered by any of the various items for which there is a bid price or by combinations of such items. In the event portions of such are determined by the Engineer to be covered by some of the various items for which there is a bid price or combinations of such items, the remaining portion of such work will be classed as extra work. Extra work also includes work specifically designated as extra work in these Plans and Specifications.

The Contractor shall do such extra work and furnish material and equipment therefore upon receipt of an approved contract change order or other written order by the Engineer, and in the absence of such approved contract change order or other written order of the Engineer, he shall not be entitled to payment for such extra work. Where such extra work is ordered by a written order other than an



approved contract change order, the Engineer will, as soon as practicable, issue an approved contract change order. The provisions in the paragraph titled "Procedure and Protest" in this Section shall be fully applicable to such subsequently issued contract change order.

Payment for extra work required to be performed pursuant to the provisions of this Article in the absence of an executed contract change order, will be made by force account and provided in the paragraph titled "Measurement and Payment" in these General Provisions or as agreed to by the Contractor and the Engineer.

2.4 Detours

The Contractor shall construct, maintain and remove detours for the use of public traffic as provided in the Special Provisions or as shown on the Plans or as directed by the Engineer. Payment for such work shall be in accordance with Section 7.01 of these Specifications and no additional compensation will be made therefore.

2.5 Use of Materials Found on the Work

The Contractor, with the approval of the Engineer, may use in the proposed construction such stone, gravel, sand, or other material suitable, in the opinion of the Engineer, as may be found in the excavation.



B3 CONTROL OF WORK

3.1 Authority of Engineer

The Engineer shall decide all questions which may arise as to the quality or acceptability of materials furnished and work performed and as to the manner of performance and rate of progress of work, all questions which arise as to the interpretation of these Plans and Specifications, all questions as to the acceptable fulfillment of the contract on the part of the Contractor and all questions as to compensation. His decision shall be final and he shall have authority to enforce and make effective such decisions and orders which the Contractor fails to carry out promptly.

3.2 Shop Drawings

Wherever called for in these Specifications or on the Drawings, or where required by the Engineer, the Contractor shall furnish to the Engineer for review, five (5) prints of each shop drawing. The term "shop drawing" as used herein shall be understood to include detail design calculations, fabrication and installation drawings, lists, graphs, operation instructions, etc. Unless otherwise required, said drawings shall be submitted at a time sufficiently early to allow review of same by the Engineer, and to accommodate the rate of construction progress under the contract.

All shop drawing submittals shall be accompanied by the Engineer's standard shop drawing transmittal form. A sample of the form will be provided following award of the contract. Any shop drawing submittal not accompanied by such a form, or where all applicable items on the form are not completed, will be returned for re-submittal. The ultimate responsibility for the accuracy and completeness of the information contained in the submittal shall remain with the Contractor.

Normally, a separate transmittal form shall be used for each specific item or class of material or equipment for which a submittal is required. Transmittal of shop drawings on various items using a single transmittal form will be permitted only when the items taken together constitute a manufacturer's "package" or are so functionally related that expediency indicates review of the group or package as a whole.

Within ten (10) working days after receipt of said prints, the Engineer will return prints of each drawing to the Contractor with his comments noted thereon. It is considered reasonable that the Contractor shall make a complete and acceptable submittal to the Engineer by the second submission of drawings. The Owner reserves the right to withhold monies due the Contractor to cover additional costs of the Engineer's review beyond the second submission.

If three prints of the drawing are returned to the Contractor marked "NO EXCEPTIONS TAKEN," formal revision of said drawings will not be required.

If one print of the drawing is returned to the Contractor marked "REVISE AND RESUBMIT," the Contractor shall revise said drawing and shall resubmit five (5) copies of said revised drawing to the Engineer.

Fabrication of an item shall not commence before the Engineer has reviewed the pertinent shop drawings and returned copies to the Contractor marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED." Revisions indicated on shop drawings shall be considered as changes necessary to meet the requirements of the contract Drawings and Specifications and shall not be taken as the basis of claims for extra work. The Contractor shall have no claim for damages or extension of



time due to any delay resulting from the Contractor's having to make the required revisions to shop drawings unless review by the Engineer of said drawings is delayed beyond a reasonable period of time and unless the Contractor can establish that the Engineer's delay in review of said drawings by the Engineer will be limited to checking for general agreement with the Specifications and Drawings, and shall in no way relieve the Contractor of responsibility for errors or omissions contained therein nor shall such review operate to waive or modify any provision contained in the Specifications or Contract Drawings. Fabricating dimensions, quantities or material, applicable code requirements, and other contract requirements shall be the Contractor's responsibility.

3.3 Conformity with Plans and Allowable Deviations

Finish surfaces in all cases shall conform with the lines, grades, cross-sections, and dimensions shown on the Plans. Deviations, other than specified tolerances from the Plans and working drawings as may be required by the exigencies of construction, will in all cases be determined by the Engineer.

3.4 Coordination and Interpretation of General Provisions and Plans

These General Provisions, Special Provisions, Plans, Contract Change Orders and all supplementary documents are essential parts of the contract and a requirement occurring in all. They are intended to be cooperative and to describe and provide for a complete work. Plans shall govern over General Provisions; Special Provisions shall govern over both General Provisions and Plans. Technical Provisions shall govern over General Provisions, Special Provisions and Plans.

Should it appear that the work to be done or any of the matters relative thereto are not sufficiently detailed or explained in these Plans and Specifications, the Contractor shall apply to the Engineer for such further explanations as may be necessary and shall conform to them as part of the contract. In the event of any doubt or question arising respecting the true meaning of these Plans and Specifications, references shall be made to the City Council, whose decisions thereon shall be final. In the event of any discrepancy between any drawing and the figures written thereon, the figures shall be taken as correct. Detail drawings shall prevail over general drawings.

3.5 Order of Work

When required by the Special Provisions or Plans, the Contractor shall follow the sequence of operations as set forth therein.

Full compensation for conforming to such requirements will be considered as included in the prices paid for the various contract items of work, and no additional compensation will be allowed therefore.

3.6 Superintendence

The Contractor shall designate, before starting work, an authorized representative who shall have complete authority to represent and to act for the Contractor. Said authorized representative shall be present at the site of the work at all times while work is actually in progress on the contract and during periods when work is suspended, arrangements acceptable to the Engineer shall be made for any emergency work which may be required.

When the Contractor is comprised of two (2) or more persons, firms, partnerships or corporations; functioning on a joint venture basis, said Contractor shall designate to the Engineer the name of their authorized representative who shall have supreme authority to direct the work and to whom orders will be given by the Engineer, to be received and obeyed by the Contractor.



Whenever the Contractor or his authorized representative is not present on any particular part of the work where it may be desired to give direction, orders will be given by the Engineer, which shall be received and obeyed by the Superintendent or foreman who may have charge of the particular work in reference to which the orders are given.

3.7 Inspection

The Engineer shall at all times have access to the work during its construction and shall be furnished with every reasonable facility for ascertaining that the materials and the workmanship are in accordance with the requirements and intentions of these Plans and Specifications. All work done and all materials furnished shall be subject to his inspection and approval.

Whenever the Contractor varies the period during which work is carried on each day, he shall give due notice to the Engineer so that proper inspection may be provided. Any work done in the absence of the Engineer will be subject to rejection.

Projects financed in whole or in part with State funds shall be subject to inspection at all times by the State Director of Public Works or his agents.

3.8 Samples and Tests

Materials furnished by the Contractor may be tested by the City of Marina or its authorized representative in accordance with commonly recognized standards of national organizations or such special methods and tests as are in use at the Laboratory of the Department of Transportation of the State of California. Field tests of materials will be made by the Engineer when deemed necessary and these tests shall be made in accordance with standard practices.

The Contractor shall furnish, without charge, such samples of all materials as are requested by the Engineer. No material shall be used until it has been approved by the Engineer. Samples will be secured and tested whenever necessary to determine the quality of the material.

Samples for testing local sources of material shall be taken by or in the presence of the Engineer. Otherwise, the same shall not be considered.

Promptly after the approval of the contract, the Contractor shall notify the Engineer of the proposed sources of supply of all materials to be furnished.

Whenever reference is made in these Specifications to standard specification or standard tests or requirements of the Laboratory of the Department of Transportation, the American Society for Testing Materials, the American Railway Engineering Association, the American Association of State Highway Officials, or other nationally recognized organizations, the reference shall be construed to mean the standards that are in effect at the date of these Specifications with subsequent amendment changes or additions as thereafter adopted and published by the organization referred to.

Whenever the Specifications permit the substitution of a similar or equivalent material or article, no tests or action relating to the approval of such substitute material will be made unless the request for approval is made in writing by the Contractor, accompanied by complete data or information demonstrating the equality of the material or article offered. Such requests shall be made in ample time to permit investigation without delaying the work.

Materials from local deposits, which have not been investigated and tested previously and approved for use, will be investigated and tested upon request of the Contractor in writing. Such tests shall be in



accordance with standard methods. The cost of any such investigation and tests made as a result of the Contractor's request shall be at his expense and deductions will be made from estimates due him, sufficient to cover the cost of such tests.

3.9 Removal of Rejected and Unauthorized Work

All work, which has been rejected, shall be remedied or removed and replaced by the Contractor in an acceptable manner and no compensation will be allowed him for such removal, replacement or remedial work. Any work done beyond the lines and grades shown on the Plans or established by the Engineer or any extra work done without written authority will be considered as unauthorized work and will not be paid for.

Upon order of the Engineer, unauthorized work shall be remedied, removed, or replaced at the Contractor's expense. Upon failure of the Contractor to comply promptly with any order of the Engineer made under the provisions of this article, the Engineer may cause rejected or unauthorized work to be remedied, removed, or replaced and to deduct the costs from any monies due or to become due the Contractor.

3.10 Equipment and Plants

Only equipment and plants suitable to produce the quality of work and materials required will be permitted to operate in connection with the work.

The Contractor shall provide adequate and suitable equipment to meet the above requirements, and when ordered by the Engineer, shall remove unsuitable equipment from the work.

All diesel equipment needs to be 2003 or newer model or some mitigation measures must be taken to reduce diesel emissions. The following are some mitigation measures that are to be implemented for all diesel equipment older than 2003:

1. The use of a diesel oxidation catalyst;
2. The substitution of biodegradable fuels; or
3. Other methods approved by the Monterey Bay Unified Pollution Control District.

Each machine or unit of equipment shall be operated by a person experienced in handling that particular make of machine or unit of equipment in use, at a speed or rate of production not to exceed that recommended by the manufacturer.

All vehicles used to haul materials over existing streets and highways shall be equipped with pneumatic tires.

3.11 Character and Competence of Workers

If any subcontractor or person employed by the Contractor shall fail or refuse to carry out the directions of the Engineer or shall appear to the Engineer to be incompetent or to act in a disorderly or improper manner, he/she will be discharged immediately on the requisition of the Engineer and such person shall not again be employed in the work.



Any subcontractor or person employed by the Contractor who will be doing any intrusive work on the site needs to attend Munitions and Explosives of Concern (MEC) recognition and safety training as offered by the Army. The link for registering for this training can be found at www.fortordcleanup.com.

3.12 Final Inspection

When the work contemplated by the contract has been completed, the Engineer will make a final inspection on the ground, accompanied by the Contractor or his representative.

3.13 As Built Drawings

Corrections and changes made during the progress of the work shall be recorded on a set of red- line prints of the contract drawings, which shall finally show all work as actually installed. Two sets of prints showing this information shall be furnished by the Contractor to the City at completion. Prints for this purpose will be furnished by the City upon request and at the cost of reproduction.



B4 CONTROL OF MATERIALS

4.1 City Furnished Material

The Contractor shall furnish all materials required to complete the work, except those specified in the Special Provisions to be furnished by the City.

Material furnished by the City will be delivered to the Contractor at the point specified in the Special Provisions. They shall be unloaded and hauled to the site of the work by the Contractor at his expense. The cost of handling and placing all materials after they are delivered to the Contractor shall be considered as included in the contract price for the item in connection with which they are used.

The Contractor will be held responsible for all material delivered to him and deductions will be made from any monies due him to make good any shortages and deficiencies from any cause whatsoever which may occur after such delivery, or for any demurrage charges due to delinquency in unloading.

4.2 Source of Supply and Quality of Materials

The materials furnished and used shall be new and unused, except as specifically provided elsewhere in these Plans and Specifications.

At the option of the Engineer, the source of supply of the materials shall be approved by him before delivery is started and before such material is used in the work. Representative preliminary samples of the character and quality prescribed shall be submitted by the Contractor or producer of all materials to be used in the work for testing or examination as desired by the Engineer.

All tests of materials furnished by the Contractor shall be made in accordance with commonly recognized standards of National organizations designated by the Engineer and such special methods and tests as are prescribed in these Plans and Specifications. The Contractor shall furnish such samples of materials as are requested by the Engineer, without charge. No material shall be used until it has been approved by the Engineer. It is understood that such approval in no way shall be considered as a guaranty of any materials, which may be delivered later for incorporation in the work. Samples will be secured and tested whenever necessary to determine the quality of material.

4.3 Defective Materials

All materials not conforming to the requirements of these Plans and Specifications, whether in place or not, shall be rejected. They shall be removed immediately from the site of the work unless otherwise permitted by the Engineer. No rejected material, the defects of which have been subsequently corrected, shall be used in the work until approved in writing by the Engineer.

Upon failure of the Contractor to comply promptly with an order of the Engineer made under the provisions of this Article, the Engineer shall have the authority to cause the removal and replacement of rejected material and to deduct the cost thereof from any monies to become due the Contractor.

4.4 Storage of Materials

Materials shall be stored in such a manner as to insure the preservation of their quality and fitness for the work. When considered necessary by the Engineer, materials shall be placed on platforms or other hard, clean surfaces and covered when directed. Stored materials shall be so located as to facilitate prompt inspection.



4.5 Trade Names and Alternatives

For convenience of designation in these Plans and Specifications, certain equipment or articles or materials to be used or incorporated in the work may be designated under a trade name or the name of a manufacturer and his catalog information. The use of alternative equipment or an article of material which is of equal or better quality and of the required characteristics for the purpose intended will be permitted, subject to the following requirements:

The burden of proof as to the quality and suitability of alternative equipment, articles or materials shall be upon the Contractor, and he shall furnish at his own expense all information necessary or related thereto as required by the Engineer. The Engineer shall be the sole judge as to the comparative quality and suitability of alternative equipment; articles or materials and his decision shall be final.

The Contractor will be allowed THIRTY FIVE (35) calendar days from the date of execution of the contract to provide proof that substitute equipment, articles or materials conform to the requirements of equipment, articles or materials specified.

4.6 Delivery of Materials

The Contractor shall furnish the Engineer with a duplicate delivery ticket of all materials to be used in the work at the time of delivery, unless otherwise waived by the Engineer. The tickets shall show the quantity and type of materials to be used in the work.



B5 LEGAL RELATIONS AND RESPONSIBILITY

5.1 Laws to be Observed

The Contractor shall keep himself fully informed of all existing and future State and National laws and County and Municipal ordinances and regulations which in any manner affect those engaged or employed in the work, or the materials used in the work, or which in any way affect the conduct of the work, and of all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the same. He shall at all times observe and comply with, and shall cause all his agents and employees to observe and comply with all such existing and future laws, ordinances, regulations, orders and decrees or bodies or tribunals having any jurisdiction or authority over the work; and shall protect and indemnify the City and all of its officers and agents and servants against any claim or liability arising from or based on the violation or any such law, ordinance, regulation, order or decree, whether by himself or his employees. If any discrepancy or inconsistency is discovered in these Plans and Specifications for the work in relation to any such law, ordinance, regulation, order or decree, the Contractor shall forthwith report the same to the Engineer in writing.

5.2 Hours of Labor

The Contractor shall forfeit, as penalty to the City, fifty dollars (\$50) for each workman employed in the execution of this contract by him or by any subcontractor under him for each working day during which such workman is permitted or required to labor more than eight (8) hours and is not paid overtime rates in accordance with the provisions of the Labor Code, and in particular, Section 1815 thereof, inclusive.

5.3 Labor Discrimination

Attention is directed to Section 1735 of the Labor Code, which reads as follows:

"No discrimination shall be made in the employment of persons upon public works because of the race, religious creed, color, national origin, ancestry, physical disability, medical condition, marital status, or gender of such persons, and every Contractor for public works violating this Section is subject to all the penalties imposed for a violation of this Chapter."

5.4 Prevailing Wages

The Contractor shall forfeit, as penalty to the City, fifty dollars (\$50) for each working day or portion thereof, for each workman paid less than the stipulated prevailing rates for any work done under the contract by him or by any subcontractor under him, in violation of the provisions of the Labor Code, and in particular, Section 1770 to Section 1780 thereof, inclusive.

The City will not recognize any claim for additional compensation because of the payment by the Contractor of any wage rate in excess of the prevailing wage rate adopted by the City Council of the City of Marina. The possibility of wage increases is one of the elements to be considered by the Contractor in determining his bid and will not under any circumstances be considered as a basis of a claim against the City.

5.5 Registration of Contractors

Before submitting bids, Contractors shall be licensed in accordance with the provisions of the State Contractors' License Law, Business and Professions Code 7000 et seq. as amended. Pursuant to



California Labor Code section 1771.4, the project that is the subject and purpose of this contract is subject to prevailing wage compliance monitoring by the California Department of Industrial Relations.

Pursuant to California Labor Code section 1771.1, by execution below, the Bidder and its Subcontractors certify that they are registered and qualified to perform public work pursuant to section 1725.5 of the California Labor Code, subject to limited legal exceptions.

The Contractors License required for this project is specified in Section A1 "Notice to Bidders" of this document and must be valid at the time of bid submittal.

Bids are prohibited from debarred contractors required by Labor Code 1777.7.

5.6 Apprentices

In accordance with the provisions of Section 1777.5 of the Labor Code, and in accordance with the regulations of the California Apprenticeship Council, properly indentured apprentices may be employed in the prosecution of the work.

Information relative to number of apprentices, identification, wages, hours of employment and standards of working conditions, shall be obtained from the Director of the Industrial Relations of the State of California.

Contractor shall comply with the requirements of Labor Code Section 1777.5 concerning employment of registered apprentices. Prior to commencement of work, contractor shall certify to owner in written form approved by attorney for owner, that contractor has complied with the requirements of Section 1777.5 or demonstrate why contractor is not subject to compliance with these requirements.

5.7 Fair Labor Standards Act

The attention of bidders is invited to the fact that the City has been advised by the Wage and Hour Division, U.S. Department of Labor, that contractors engaged in roadway construction work are required to meet the provisions of the Fair Labor Standards Act of 1938 and as amended (52 Stat. 1060).

5.8 Payment of Taxes

The contract prices paid for the work shall include full compensation for all taxes which the Contractor is required to pay, whether imposed by Federal, State, or local government, including, without being limited to, Federal excise tax. No tax exemption certificate, nor any document designed to exempt the Contractor from payment of any tax, will be furnished to the Contractor by the City as to any tax on labor, services, materials, transportation, or any other items furnished pursuant to this contract.

5.9 Permits & Licenses

The Contractor shall procure all permits and licenses, including a City of Marina business license, pay all charges and fees, and give all notice necessary and incident to the due and lawful prosecution of the work.

5.10 Patents

The Contractor shall assume all costs arising from the use of patented materials, equipment, devices or processes used on or incorporated in the work and agrees to indemnify and hold harmless the City of Marina, the City Council, the RDA, the City Manager, the Director of Public Works, and their duly



authorized representatives, from all suits at law or actions of every nature, for or on account of the use of any patented materials, equipment, devices or processes.

5.11 Safety Provisions

The Contractor shall conform to the rules and regulations pertaining to safety as established by the California Division of Industrial Safety.

5.12 Sanitary Provisions

The Contractor shall conform to the rules and regulations pertaining to safety as established by the California Division of Industrial Safety.

5.13 Public Convenience and Safety

The Contractor shall so conduct his operations as to cause the least possible obstruction and inconvenience to public traffic. Unless otherwise provided in the Special Provisions, all public traffic shall be permitted to pass through the work. The Contractor shall furnish, erect and maintain such fences, barriers, lights, signs and other devices as are necessary to give adequate warning to the public at all times that the road or street is under construction in conformance with the California Manual on Uniform Traffic Control Devices (CAMUTCD). The Contractor shall also erect and maintain such warning and directional signs in accordance with State law and Caltrans, whichever is more restrictive.

5.14 Use of Explosives

When the use of explosives is necessary for the prosecution of the work, the Contractor shall use the utmost care not to endanger life or property. All explosives shall be used and stored in accordance with the applicable laws of the City, County, State and Federal governments.

5.15 Preservation of Property

Due care shall be exercised to avoid injury to existing street improvements or facilities, utility facilities, adjacent property, fences, signs, survey markers and monuments, buildings and structures and roadside shrubbery and trees that are not to be removed. If ordered by the Engineer, the Contractor shall provide and install suitable safeguards approved by the Engineer, to protect such objects from injury or damage. If such objects are injured or damaged by reason of the Contractor's operations, they shall be replaced or restored at the Contractor's expense, to a condition as good as when the Contractor entered upon the work and in compliance with Business and Professions Code section 8771 for survey markers and monuments.

The Engineer may make or cause to be made such temporary repairs as are necessary to restore to service any damages roadway or utility facility. The cost of such repairs shall be borne by the Contractor and may be deducted from any monies due or to become due to the Contractor under the contract.

The fact that any underground facility is not shown upon the Plans or is not properly shown, shall not relieve the Contractor of his responsibility to ascertain the existence of any under- ground improvements or facilities, which may be subject to damage by reason of his operations.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals, and doing all work involved in protecting property as above specified, shall be considered as included in the price paid for the various contract items of work, and no additional compensation will be made therefore.



5.16 Responsibility for Damage

The City Council, the City Manager, the Director of Public Works, City Engineer, and all officers and employees of the City shall not be answerable in any manner for any loss or damage that may happen to the work or any part thereof, or for any material or equipment used in performing the work, or for injury or damage to any person or persons, either workers or the public, for damage adjoining property from any cause whatsoever during the progress of the work or at any time before final acceptance.

The Contractor shall indemnify and hold harmless the City, City Council, the City Manager, the Director of Public Works, City Engineer, City Employees and agents, and their duly authorized representatives from all suits, claims or actions of every name, kind and description, brought by any person or persons for or on account of, any injuries or damages sustained or arising in the construction of the work or in money due the Contractor as shall be considered necessary until disposition has been made of such suits or claims (per Public Contract Code 20104 et seq.) for damages as aforesaid.

5.17 Disposal of Materials Outside the Street Right-of-Way

Unless otherwise specified in the Special Provisions, the Contractor shall make his own arrangements for disposing of materials outside the street right-of-way and he shall pay all costs involved.

When any material is to be disposed of outside the street right-of-way, the Contractor shall first obtain a written release from the property owner absolving the City from any and all responsibility in connection with the disposal of material on said property. Before any material is disposed of on said property, the Contractor shall obtain permission from the Engineer to dispose of the material at the location designated in said permit.

Unless otherwise provided in the Special Provisions, full compensation for all costs of hauling shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be made therefore.

5.18 Cooperation

Should construction be under way by other forces or by other contractors within or adjacent to the limits of the work specified or should work of any other nature be under way by other forces within or adjacent to said limits, the Contractor shall cooperate with all such other Contractors or other forces to the end that any delay or hindrance to their work will be avoided. The right is reserved to perform other or additional work at or near the site (included designated material sources) at any time, by the use of other forces.

5.19 Contractor's Responsibility for the Work and Materials

Until the formal acceptance of the contract by the City, the Contractor shall have the charge and care of the work and of the materials to be used therein and shall bear the risk of injury, loss or damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution or non-execution of the work.

The Contractor shall rebuild, repair, restore, and make good all injuries, losses or damages to any portion of the work or materials occasioned by any cause before final acceptance and shall bear the expense thereof, except such injuries, losses or damages, as are directly and approximately caused by the acts of the Federal government or the public enemy.

In case of suspension of work from any cause whatever, the Contractor shall be responsible for the work and materials as specified above. Where necessary to protect the work or materials from damage, the



Contractor shall, at his own expense, provide erosion control for drainage of the project and erect such temporary structures as is necessary to protect the work and materials from damage.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals, and doing all work involved in protecting the improvements prior to final acceptance of the work shall be included in the price paid for the various contract items of work and no additional compensation will be made therefore.

If ordered by the Engineer, the Contractor shall, at his own expense, properly store materials, which have been furnished by the City. Such storage by the Contractor shall be on behalf of the City, and the City shall at all times be entitled to the possession of such materials, and the Contractor shall promptly return the same to the site of the work when requested.

The Contractor shall not dispose of any of the materials so stored except on the authorization from the Engineer.

The Contractor shall provide twenty-four (24) hour emergency service for all maintenance and operations of the work herein specified and shall supply the City of Marina Police and Fire Departments with the name and telephone number of the responsible person. Emergency service shall be within thirty (30) minutes from the time of notification. If the Contractor fails to provide this service, the City shall perform such emergency service and the cost thereof shall be deducted from the next progress payment due to the Contractor.

5.20 Acceptance of Contract

When the Engineer has made the final inspection and determines that the contract has been completed in all respects in accordance with these Plans and Specifications, he will recommend that the City Council formally accept the contract, and immediately upon and after such acceptance, the Contractor will be relieved of the duty of maintaining and protecting the work as a whole, and he will not be required to perform any further work thereon, with the exception of work covered under warranty. The Contractor shall also be relieved of his responsibility for injury to persons or property or damage to the work, which occurs after the formal acceptance.

The City shall release the five percent (5%) retention on the contract amount after 35 days following recordation of the Notice of Completion by the City. The contractor shall provide the City with a maintenance bond amounting to fifty percent (50%) of the contract amount, upon completion of the work.

5.21 Property Rights in Materials

Nothing in the contract shall be construed as vesting in the Contractor any right of property in the materials used after they have been attached or affixed to the work or the soil, or after payment has been made for fifty percent (50%) of the value of materials delivered to the site of work or stored subject to or under the control of the City, whether or not they have been so attached or affixed. All such materials shall become property of the City upon being so attached or affixed, or upon payment of such fifty percent (50%) of the value of materials delivered to the site of work stored subject to or under the control of the City.

5.22 Personal Liability

Neither the City Council, the City Manager, Public Works Department, City Engineer, nor any other officer, employee or authorized assistant or agent, shall be personally responsible for any liability arising under the contract.



B6 PROSECUTION AND PROGRESS

6.1 Subcontracting

The Contractor shall give his personal attention to the fulfillment of the contract and shall keep the work under his control.

The City prefers local hiring for subcontractors per the Municipal Code 13.02.

No subcontractor will be recognized as such and all persons engaged in the work of construction will be considered as employees of the Contractor, and he will be held responsible for their work, which shall be subject to the provisions of these Plans and Specifications.

When a portion of the work, which has been subcontracted by the Contractor, is not being prosecuted in a manner satisfactory to the City, the subcontractor shall be removed immediately on the requisition of the Engineer and shall not again be employed on the work.

6.2 Assignment

The performance of the contract may not be assigned, except upon the written consent of the City. Consent will not be given to any proposed assignment, which would relieve the original, Contractor or his surety of their responsibilities under the contract nor will the City consent to any assignment of part of the work under the contract.

The Contractor may assign monies due or to become due him under the contract and such assignment will be recognized by the City to the extent permitted by law if given proper set-offs in favor of the City and to all deductions provided for in the contract, and particularly, all money withheld, whether assigned or not, shall be subject to being used by the City for the completion of the work in the event that the Contractor should be in default therein.

6.3 Time of Beginning and Completion of the Work

The Contractor shall begin work within ten (10) days after receiving notice from the City to proceed and shall diligently prosecute the same to completion within the time limit provided in Part C of the Special Provisions.

6.4 Progress Schedule

If required by the Special Provisions or requested by the Engineer, the Contractor shall, prior to beginning the work, submit to the Engineer a practical schedule showing the order in which the Contractor proposes to carry out the work, the dates on which he will start the several salient features of the work (including the procurement of materials, plant and equipment) and the contemplated dates for completing the said salient features. The progress schedule submitted shall be consistent in all respects with the time requirements of the contract.

6.5 Temporary Suspension of Work

The Engineer shall have the authority to suspend the work, wholly or in part, for each period as he may deem necessary due to unsuitable weather or to such other conditions as are considered unfavorable for the suitable prosecution of the work, or for such time as he may deem necessary due to the failure on the part of the Contractor to carry out orders given or to perform the work in accordance with these Plans and Specifications. The Contractor shall immediately comply with the written order of the Engineer to



suspend the work wholly or in part. The suspended work shall be resumed when conditions are favorable, and methods are corrected as ordered or approved in writing by the Engineer.

In the event of a suspension of work under any of the conditions above set forth, such suspension of work shall not relieve the Contractor of his responsibilities as set forth under the subsection titled "Legal Relations and Responsibility" in these General Provisions.

6.6 Liquidated Damages

It is agreed by the parties to the contract that in case all the work called for under the contract, in all parts and requirements, is not finished or completed before or upon the expiration of the time limit set forth in these Plans and Specifications, damage will be sustained by the City and that it is and will be impracticable and extremely difficult to ascertain and determine the actual damage which the City will sustain in the event or by reason of such delay. It is therefore agreed that the Contractor will pay to the City the sum set forth in these Specifications for each and every calendar day's delay beyond the time prescribed to complete the work and the Contractor agrees to pay said liquidated damages as herein provided; and further agrees that the City may deduct the amount thereof from any monies due or that may become due the Contractor under the contract.

It is further agreed that in case the work called for under the contract is not finished and completed in all parts and requirements within the time specified, the City shall have the right to extend the time for completion or not, as may seem best to serve the interest of the City and if the City decides to extend the time limit for the completion of the contract, it shall further have the right to charge the Contractor, his heirs or assigns, all or any part as it may deem proper, of the actual cost of engineering, inspection, superintendence and other overhead expenses which are directly chargeable to the contract and which accrue during the period of such extension, except that the cost of final surveys and preparation of the final estimate shall not be included in such charges.

The Contractor will be granted an extension of time and will not be assessed liquidated damages or the cost of engineering and inspection for any portion of the delay in completion of the work caused by Acts of God or of the public enemy, acts of the City, fire, floods, epidemics, quarantine restrictions, strikes, shortage of materials and freight embargoes, provided that the Contractor shall notify the Engineer in writing of the causes of delay within TEN (10) DAYS from the beginning of such a delay. The Engineer shall ascertain the facts and the extent of the delay and his findings thereon shall be final and conclusive.

If the Contractor is delayed by reason of alterations made under the paragraphs entitled "Scope of Work" in these General Provisions, or by act of the Engineer or the City, and such alterations or acts were not contemplated by the contract, the time of completion of the work shall be extended to cover the delay so caused. In the case of such delay, the Contractor shall be relieved from any claim for liquidated damages or engineering and inspection charges or penalties for the period covered by such extension of time. The Engineer shall ascertain the facts and the extent of the delay and shall be relieved from any claim of liquidation damages or engineering overhead and inspection charges for the period covered by such extension of time.

6.7 Termination of Contract

Failure to supply an adequate working force or material of proper quality, or in any other aspect to prosecute the work with the diligence and force specified in the contract, is grounds for termination of the Contractor's control over the work and for taking over the work by the City as provided in the Public Contracts Code.



6.8 Right-of-Way

The right-of-way for the work to be constructed will be provided by the City. The Contractor shall make his own arrangements and pay all expenses for additional area required by him outside the limits of the right-of-way, unless otherwise provided in these Plans and Specifications.

6.9 Utility and Other Facilities

Attention is directed to those paragraphs entitled "Legal Relations and Responsibility" of these General Provisions. The Contractor shall protect from damage utility and other facilities that are to remain in place, be installed, relocated, or otherwise rearranged.

It is anticipated that some or all of the utilities and other facilities, both above ground and below ground, that are required to be rearranged (as used herein, rearrangement includes installation, relocation, alteration, or removal) as a part of the improvement, will be rearranged in advance of construction operations. Where it is not anticipated that such rearrangements will be performed prior to construction or where the rearrangement must be coordinated with the Contractor's construction operations, the existing facilities that are to be rearranged will be indicated on the Plans or in the Special Provisions, the Contractor will have no liability for the costs of performing the work involved in such rearrangement.

The right is reserved to the City and the owners of facilities of their authorized agents, to enter upon the street right-of-way for the purpose of making such changes as are necessary for the rearrangement of their facilities or for making necessary connections or repairs to their properties. The Contractor shall cooperate with forces engaged in such work and shall conduct his operations in such a manner as to avoid any unnecessary delay or hindrance to the work being performed by such other forces. Wherever necessary, the work of the Contractor shall be coordinated with the rearrangement of utilities or other facilities and the Contractor shall make arrangements with the owner of such facilities for the coordination of the work.

When ordered by the Engineer in writing, the Contractor shall rearrange any utility or other facility necessary to be rearranged as part of the improvement and such work will be paid for as extra work as provided in the paragraphs entitled "Measurement and Payment" in these General Provisions.

Should the Contractor desire to have rearrangement made in any utility, facility, or other improvement for his convenience in order to facilitate his construction operations if such rearrangement is in addition to or different from the rearrangements indicated on the Plans or in the Special Provisions, he shall make whatever arrangements are necessary with the City or owners of such utility or other facility for such rearrangement and bear all expense in connection therewith.

Attention is directed to the possible existence of underground facilities not known to the City or in a location different from that, which is shown on the Plans, or in the Special Provisions. The Contractor shall take steps to ascertain the exact location of all underground facilities prior to doing work that may damage such facilities or interfere with their service.

Where it is determined by the Engineer that the rearrangement of an underground facility, the existence of which is not shown on the Plans or in the Special Provisions, is essential in order to accommodate the improvement, the Engineer will provide for the rearrangement of such facility by other forces, otherwise such rearrangement shall be performed by the Contractor, and will be paid for as "extra work" as provided in Article B-203(c) "Extra Work" in these General Provisions. The Engineer will decide who shall perform such rearrangement.



B7 MEASUREMENT AND PAYMENT

7.1 Scope of Payment

The Contractor shall accept the compensation as herein provided as full payment for furnishing all labor, materials, tools, equipment and incidentals necessary to complete the work and for performing all work contemplated and embraced under the contract; also for loss or damage arising from the nature of the work or from the action of the elements or from any unforeseen difficulties which may be encountered during the prosecution of the work until the acceptance by the City and for all risks of every description in connection with the prosecution of the work; also for all expenses incurred in consequence of the suspension or discontinuance of the work as herein specified and for completing the work according to these Plans and Specifications. Neither the payment of any estimate nor of any retained percentage shall relieve the Contractor of any obligation to make good any defective work or material.

No compensation will be made in any case for loss of anticipated profits. Increased or decreased work involving supplemental agreements will be paid for as provided in such agreement.

7.2 Force Account Payment

Extra work, when ordered and accepted, shall be paid for under a written work order in accordance with the terms therein provided. Payment for extra work will be made at the unit prices or lump sum previously agreed upon by the Contractor and the Engineer or by force account. The basis for establishing costs shall be per Section 9-1.04 and all subsections of 9-1.04 of the California State Standard Specifications.

7.3 Progress Payments

The Contractor shall, at the end of each month, cause an estimate in writing to be submitted to the City for the total amount of work done and the acceptable materials furnished and delivered by the Contractor on the ground and the value thereof, said materials being those not used at the time of such estimate. **In addition to submitting a detailed invoice, the following "Contract Balance Form" must be submitted with each request for payment.** The City shall retain five percent (5%) of the total amount of work done and fifty percent (50%) of the value of the materials so estimated to have been furnished and delivered and unused as aforesaid, as part security for the fulfillment of the contract by the Contractor and shall pay monthly to the Contractor while he is carrying on the work, the balance not retained as aforesaid, after deducting therefrom all previous payments and all sums to be kept or retained under the provisions of the contract. No such estimate or payment shall be required to be made, when in the judgment of the Engineer, the work is not proceeding in accordance with the provisions of the contract or when in his judgment, the total value of the work done since the last estimate or payment shall be construed to be an acceptance of any defective work or improper material.



Glorya Jean Tate Park Improvements Phase 2 Project
CONTRACT BALANCE FORM

A Detailed Invoice MUST be Attached

=====

CONTRACTOR NAME: _____

MAILING ADDRESS: _____

TELEPHONE NO.: _____

FAX NO.: _____

DATE: _____

INVOICE NO.: _____

=====

=====

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the work covered by this application for payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for work for which previous Certificates for Payment were issued and payments received from the City, and the current payment shown here-in is now due

By: _____ Date: _____

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Construction Manager and Inspector of Record certify to the City that to the best of their knowledge, information and belief the work has progressed as indicated, the quality of the work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the Amount Certified below (Line 8).

By: _____ Date: _____

- a. ORIGINAL CONTRACT AMOUNT: \$ _____
- b. APPROVED CHANGE ORDERS TOTAL: \$ _____
- c. REVISED CONTRACT AMOUNT: (1+2) \$ _____
- d. PREVIOUS BALANCE PAID: \$ _____
- e. REMAINING BALANCE: (3-4) \$ _____
- f. CURRENT PROGRESS PAYMENT DUE: \$ _____
(before retention)
- g. 5% RETENTION FROM WORK DONE: (-)\$ _____
- h. CURRENT BALANCE DUE: (6-7) \$ _____
- i. REMAINING BALANCE OF REVISED CONTRACT AMOUNT: (5-8) \$ _____
(including retention)

APPROVED BY: _____ Date: _____
City of Marina



7.4 Final Payment

The Engineer shall, after the completion of the contract, determine the amount of work done thereunder and the value of such work and the City shall pay the entire sum so found to be due after deducting therefrom all previous payments and all amounts to be retained under the provisions of the contract. All prior progress estimates and payments shall be subject to correction in the final payment. After project completion, the Contractor shall provide a final invoice, which includes retention amount due. Contractor shall post securities in lieu of retention (Public Contract Code 22300) of for release of claims for undisputed payment (Civil Code 3262). The amount retained shall not be due and payable until the expiration of THIRTY-FIVE (35) DAYS from the date that the Notice of Completion is recorded by the City, said Notice of Completion to be recorded within TEN (10) DAYS after formal acceptance of the work by the City Council.

It is mutually agreed between the parties to the contract that no certificate given or payment made under the contract, except the final certificate of final payment shall be conclusive evidence of the performance of the contract, whether wholly or in part, against any claim of the City, and no payment shall be construed to be an acceptance of any defective work or improper materials.

The Contractor will be required to correct defective work or materials at any time before acceptance of final payment and within one (1) year thereafter regardless of any failure of the Engineer to condemn defective work or material at the time of construction.

The Contractor shall take out and maintain, upon completion of the work, a maintenance bond, amount of which must be fifty percent (50%) of the final contract and shall remain in effect for one (1) year after the City files its Notice of Completion of work.

The Contractor further agrees that the payment of the final amount due under the contract and the adjustment and payment for any work done in accordance with any alterations of the same, shall release the City of Marina, the City Council, the City Manager, the Director of Public Works, City Engineer, or other authorized representatives from any and all claims or liability on account of work performed under the contract or any alteration thereof.

7.5 Notice of Potential Claim

The provisions of Section 5-1.43 "Potential Claims and Dispute Resolution" of the California State Standard Specifications shall be incorporated into this contract.

7.6 Stop Notices

The City of Marina, by and through the Public Works Department or other appropriate department or agency of the State, may, at its option and at any time, retain out of any amounts due the Contractor, sums sufficient to cover claims, filed pursuant to Section 9500 et seq, of the Civil Code.

7.7 Payroll Records

The Contractor and subcontractor's attention is directed to the provisions of Section 1776 of the California Labor Code and to the requirements therein pertaining to the keeping, availability, and filing of accurate payroll records of all journeymen, apprentices, and other workers performing work under this Contract. The Contractor agrees to comply with the requirements of said section.

Prior to each monthly progress payment, the Contractor shall deliver to the Engineer copies of certified payrolls of its and all subcontractors' forces performing work at the job site (or sites established primarily



for the work) for labor compliance purposes and extra/force account considerations. Such records shall be kept current on an effective day or period basis and in a form acceptable to the Engineer. At a minimum, the form shall include the following information:

1. Employee identification by name
2. Employee's address and social security number
3. Employee's craft and classification (in accordance with Director of Industrial Relations' wage determinations)
4. Employee's actual per diem wages (in compliance with Part I, Notice to Contractors, and this Section GC-20, Laws and Regulations)
5. Employee's subsistence and travel allowance (as applicable)
6. Employee's straight time and overtime hours worked each day and week
7. Itemized deductions made from employee's wages
8. Apprentices and ratio of apprentices to journeymen
9. Contractor's or subcontractor's firm or company name, date or period for which applicable wage rates and allowances are effective, and the employer's signature.

The certified payroll records shall be kept on forms provided by the Division of Labor Standards Enforcement or shall contain the same information as the forms provided by the Division in addition to the above-listed information.

For all projects awarded on or after April 1, 2015, in addition to submitting the certified payrolls to the Engineer, the Contractor shall furnish the records specified in California Labor Code section 1776, including but not limited to the certified payrolls, directly to the Labor Commissioner. The Contractor shall furnish the records specified in California Labor Code section 1776 to the Labor Commissioner for all projects, whether such project is a new project awarded on or after, or an ongoing project awarded prior to, January 1, 2016.

Each payroll record shall contain or be verified by a written declaration that is made under penalty of perjury stating: (1) The information contained in the payroll is true and correct; and (2) The employer has complied with the requirements of California Labor Code Sections 1771, 1811, and 1815 for any work performed by its employees on the Project.

The Contractor shall inform the City of the location of the above payroll records, including the street address, city and county, and shall, within five (5) working days, provide a notice of change of location and address.

The contractor or subcontractor has 10 days in which to comply subsequent to receipt of a written notice requesting certified payroll records. In the event that the contractor or subcontractor fails to comply within the 10-day period, he or she shall, as a penalty to the District, forfeit one hundred dollars (\$100) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Labor Standards Enforcement, these penalties shall be withheld from progress



payments then due. The Contractor is not subject to a penalty assessment pursuant to this section due to the failure of a subcontractor to comply with this section.

Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the District shall be marked or obliterated in accordance with California Labor Code section 1776.

Compliance with the above provisions, and California Labor Code, Section 1776, shall be the responsibility of the Contractor or subcontractor. Pursuant to Labor Code Section 1771.4, Contractor is required to post all job site notices prescribed by law or regulation that include, but are not limited to, payment of prevailing wages.



PART C - SPECIAL PROVISIONS

Glorya Jean Tate Park Improvements Phase 2 Project

C1 SPECIAL PROVISIONS

1.1 Description of Work

The Glorya Jean Tate Park Improvements Phase 2 Project is located at 3254 Abdy Way, Marina, California. This project is phase 2 of the park improvements project. This project includes but not limited to; construction of parking lot extension, walkways, lawn area, dog park, basketball and pickleball courts, and picnic areas and installation of picnic pavilion, cornhole, storm drain system, security lighting and associated landscaping. Also included in this contract is the construction of concrete improvements and preparation of a subbase for the playground and fitness areas.

Procurement and installation of play equipment, fitness equipment and ground surfacing for the playground and fitness area will be by Kompan and its subcontractor and not included in this contract. The contractor shall coordinate the construction timeline and allow Kompan and its subcontractor to enter the jobsite for the installation of the play and fitness equipment and surfacing.

Certificate of Insurance shall include Kompan and its subcontractor as an additional insured. Kompan's Certificate of Insurance shall include the contractor as additional insured.

1.2 Time of Completion

The Contractor shall promptly acquire necessary documents such as Payment and Performance Bonds and Certificate of insurance immediately after the award of contract and submit to the City the signed agreement and required documents 10 working days after the receipt of the Notice of Award.

All work , Base Bid only, under this contract shall be completed before the expiration of **two hundred five (205) working days** from the date of the Effective Date of Notice To Proceed .

Playground and Fitness Areas shall be ready on or before July 7, 2025, for the installation of play equipment, fitness equipment and ground surfacing by Kompan and its subcontractor.

A Working Day is as any day, except as follows:

1. Saturdays unless prior approval is received from the City Engineer, Sundays, or City Legal Holidays; or
2. Days on which the Contractor is prevented by inclement weather or conditions resulting immediately there from adverse to the current controlling operation or operations as determined by the Engineer, from proceeding with at least 75 percent of the normal labor and equipment force engaged on that operation or operations for at least 60 percent of the total daily time being currently spent on the controlling operation or operations.

Construction activities, as defined in Chapter 15.04.055 of the Marina Municipal Code, are prohibited other than between the hours of 7am and 7pm, Monday through Saturday and between the hours of 10am and 7pm on Sunday and Holidays.



A Construction Schedule, conforming to Section B6.04, shall be submitted at the pre- construction conference. The Construction Schedule shall include the following; Play equipment installation; 20 working days, Fitness Equipment installation; 10 working days and surfacing installation; 25 working days.

1.3 Liquidated Damages

Liquidated damages as set forth in the general Provisions shall be in the amount of **One Thousand four hundred dollars (\$1,400.00)** per workday.

1.4 Liability Insurance, Indemnification and Hold Harmless

General – Contractor shall procure and maintain for the duration of the contract, and for one year thereafter, insurance against claims for injuries to person or damages to property which may arise from or in connection with the performance of the work hereunder by Contractor, his agents, representatives, employees, or subcontractor. Without limiting the responsibility of the Contractor for damages, the Contractor shall obtain all insurance required under this Article, and such insurance shall be approved by the City. Contractor shall allow not any subcontractor to commence work on any subcontract until all insurance required of Contractor has been likewise obtained by the subcontractor, and such insurance is approved by the Contractor. Approval of the subcontractor insurance shall not relieve or decrease the liability of Contractor hereunder.

Type of Coverage - Without limiting any of the other obligations or liability of Contractor, Contractor shall provide and maintain, until the work is completed and accepted by the City. Following minimum insurance coverage, unless otherwise specified:

Type of Coverage	
Commercial General Liability (CGL) The Contractor shall carry Commercial General Liability Insurance per project. Insurance Service Office (ISO) Form CG 0001 covering CGL on an “occurrence” basis, including products and completed operations, property damage, bodily injury, and personal & advertising injury. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location (ISO CG 25 03 or 25 04) or the general aggregate limit shall be twice the required occurrence limit.	a) Limits no less than \$5,000,000 per occurrence.
Automobile Liability Insurance The contractor shall carry Automobile Liability Insurance. Insurance Service Office Form CA 0001 covering Code 1 (any auto).	a) Limits no less than \$5,000,000 per accident for bodily injury and property damage
Contractor’s Pollution Legal Liability and/or Asbestos Legal Liability and/or Errors and Omissions	a) Limits with no less than \$1,000,000 per occurrence or claim b) \$2,000,000 policy aggregate



Worker's Compensation and Employer's Liability Insurance as required by the State of California with Statutory Limits, and Employers' Liability Insurance.	a) \$1,000,000 per accident for bodily injury or disease.
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If the contractor maintains broader coverage and/or higher limits than the minimums shown above, the City requires and shall be entitled to the broader coverage and/or higher limits maintained by the contractor. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the City.

A lower individual Liability Insurance coverage can be supplemented by an Umbrella/ Excess Liability Insurance for a minimum total coverage equal to what is required above. Acceptance of supplemental Umbrella/Excess Liability Insurance policy shall include the following provisions and shall be included in the Certificate of Insurance:

1. The Umbrella or Excess Liability policy shall not contain a controlling exception to the requirement that the contractor's insurance be in all respects primary coverage and the city's insurance not be required to contribute prior to the excess liability coverage. (I.e., the order of payment/recovery which exceeds the limits of the primary policy should be: (1) contractor's primary policy, (2) contractor's excess policy, and potentially (3) any coverage maintained by the City as additional insured; and not (1) contractor's primary policy, (2) any coverage maintained by the City as an additional insured, and (3) contractor's excess policy.
2. The Umbrella/ Excess Liability shall include the duty and cost to defend and not just a reservation of the right to defend.
3. The Umbrella/ Excess Liability coverage shall follow form as to the project specific coverage provided by the primary policy. (In other words, the general aggregate in the excess policy cannot be reduced by claims incurred on other projects).
4. The Umbrella/ Excess Liability policy shall be written on or follow form without exception to the primary project specific coverages.
5. The Umbrella/ Excess Liability policy shall not affect the additional insured status of the City as to the excess coverage.
6. The Umbrella/ Excess Liability policy shall not any transfer of rights provision which differs from the primary policy's waiver of subrogation as to the City.

Self-Insured Retentions - Self-insured retentions must be declared to and approved by the City. At the option of the City, the City may require the Contractor to purchase coverage with a lower retention or provide proof of ability to pay losses and related investigations, claim administration, and defense expenses within the retention. **The policy language shall provide, or be endorsed to provide, that the self-insured retention may be satisfied by either the named insured or City.**

Other Insurance Provisions - The insurance policies are to contain, or be endorsed to contain, the following provisions:

1. The **City, its officers, officials, employees, volunteers and consultants for the project are to be covered as additional insureds** on the CGL policy with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts, or equipment furnished in connection with such work or operations and automobiles owned, leased, hired, or borrowed by or on behalf of the Contractor. General liability coverage can be provided in the form of



an endorsement to the Contractor's insurance (at least as broad as ISO Form CG 20 10, CG 11 85 or both CG 20 10, CG 20 26, CG 20 33, or CG 20 38; and CG 20 37 forms if later revisions used).

2. For any claims related to this project, the Contractor's insurance coverage shall be primary insurance coverage at least as broad as ISO CG 20 01 04 13 as respects the City, its officers, officials, employees, and volunteers. Any insurance or self- insurance maintained by the Entity, its officers, officials, employees, or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.
3. Each insurance policy required by this clause shall provide that coverage shall not be canceled, except with notice to the City.

Acceptability of Insurers - Insurance is to be placed with insurers with a current A.M. Best rating of no less than A: VII, unless otherwise acceptable to the City.

Waiver of Subrogation- Contractor hereby agrees to waive rights of subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss. Contractor agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation. The **Workers' Compensation policy shall be endorsed with a waiver of subrogation** in favor of the City for all work performed by the Contractor, its employees, agents, and subcontractors.

Verification of Coverage - Contractor shall furnish the City with original Certificates of Insurance including all required amendatory endorsements (or copies of the applicable policy language effecting coverage required by this clause) and a copy of the Declarations and Endorsement Page of the CGL policy listing all policy endorsements to the City before work begins. However, failure to obtain the required documents prior to the work beginning shall not waive the Contractor's obligation to provide them. The City reserves the right to require complete, certified copies of all required insurance policies, including endorsements, required by these specifications, at any time.

Subcontractors - Contractor shall require and verify that all subcontractors maintain insurance meeting all requirements stated herein, and Contractor shall ensure that the City is an additional insured on insurance required from subcontractors. For CGL coverage, subcontractors shall provide coverage with a form at least as broad as CG 20 38 04 13.

Special Risks or Circumstances – The City reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other circumstances.

INDEMNIFICATION AND HOLD HARMLESS

To the fullest extent permitted by law, Contractor agrees to indemnify, investigate, defend (at Contractor's sole cost and expense and with legal counsel reasonably approved by City), protect and hold harmless, the City of Marina, its officials, officers, employees, agents, and representatives from and against any and all claims [including, without limitation, claims for bodily injury or death (including but not limited to Contractor, persons employed by Contractor, persons acting on behalf of Contractor, and third parties) or damage to property], demands, obligations, losses, damages, actions, causes of action, suits, judgments, fines, penalties, liabilities, defense costs, and expenses (including, without limitation, reasonable attorneys' fees, disbursements, and court costs, and all other professional, expert, or Contractors' fees and costs) of every kind or nature arising out of or in connection with or relating to any work or activities of Contractor (or Contractor's contractors or subcontractors, if any) conducted under this Agreement or arising out of the failure on Contractor's part to perform their obligations under this agreement. Except as provided by law, the indemnification provisions stated above shall apply regardless of the existence or degree of fault of the City, except for those claims which arise out of the active negligence, sole negligence, or willful misconduct of the City of Marina.



Notwithstanding the provisions of the above paragraph, Contractor agrees to assume all risk and to indemnify and hold harmless the City from and against any and all claims, demands, defense costs, liability, expense, or damages of any kind or nature arising out of or in connection with damage to or loss of any property belonging to Contractor or Contractor's employees, contractors, representatives, patrons, guests, or invitees.

Contractor further agrees to indemnify City for damage to or loss of City property arising out of or in connection with Contractor's work associated with this Agreement or arising out of any act or omission of Contractor or any of Contractor's employees, agents, contractors, representatives, patrons, guests, or invitees, excepting such damage or loss arising out of the negligence of the City.

1.5 Trade Names and Alternatives

For convenience in designation on the Drawings or in the Specifications, certain equipment or materials to be incorporated in the work may be designated under a trade name or the name of a manufacturer and catalog information. The use of alternative equipment or material, which is of equal quality and of the required characteristics for the purpose intended, will be permitted, subject to the following requirements.

The burden of proof as to the comparative quality and suitability of alternative equipment or materials shall be upon the Contractor who shall furnish, at the Contractor's own expense, six copies of complete description, information, and performance data showing the equality of the material or equipment offered to those specified, and such other necessary or related information as may be required by the Engineer. The Engineer will be sole judge as to the comparative quality and suitability of alternative equipment or materials and such decision shall be final.

The Contractor, pursuant to Public Contracts Code, Section 3400, shall have at least thirty-five (35) days after award of the contract for submission of data substantiating a request for substitution of "an equal" item.

1.6 Access to Work

The Contractor shall at all times provide proper facilities for access and inspection of the work by authorized representatives of local, state or federal governments.

1.7 Lands and Fences

The City will provide certain lands and rights-of-ways as shown on the Drawings and determined by the Engineer in connection with work under the contract, without cost to the Contractor. The Contractor shall limit his operations to the areas and lands provided.

Before final acceptance of the work, the Contractor shall obtain a written statement of release indicating the City acceptance of the site conditions as restored by the Contractor.

1.8 Preservation of Property

The Contractor shall exercise due care in the performance of the work to avoid injury, damage, or loss to existing improvements, utility facilities, and other property of any nature on or near the site of the work. The Contractor shall be responsible as follows for any injury, damage, or loss to property arising out of the work, irrespective of fault or negligence, excepting only such injury, damage, or loss to property as is caused by the negligence or willful misconduct of the City or its officers or employees.

1. The Contractor shall repair, replace or otherwise restore the property to a condition as good as it was when he commenced work, or as good as required by the Specifications, if applicable. In addition, the Contractor shall perform such temporary repairs of any facility, necessary to restore



it to service, as are ordered by the Engineer. At the request of the property Owner, or upon the failure of the Contractor to perform promptly, the Engineer may cause such repair, replacement, restoration, or temporary repair to be performed by the City or its designee, in which case the costs shall be borne by the Contractor and may be deducted, in whole or in part, from any money due or to become due him under the contract.

2. The Contractor shall indemnify and hold harmless the City and, at the request of the City, defend all officers and employees of the City connected with the work from all claims, suits, or actions of any nature brought for or on account of any such injury, damage, or loss.
3. The Contractor shall exercise due care to locate any underground improvements for facilities which may be affected by his operations. Contractor shall call Underground Service Alert 48 hours before the start of his construction and shall be responsible for injury, damage, or loss thereto as provided in this article, whether or not such improvements or facilities are shown on the Drawings. If improvements or facilities not shown on the Drawings are encountered within the City furnished right-of-way, any removal, replacement, alteration, or relocation thereof necessary for performance of the work to be performed by the Contractor may be ordered by the Engineer as items of Extra Work.
4. Except as otherwise expressly provided, the Contractor shall comply with all terms and conditions of any instrument granting the City or the Contractor the right to enter upon property which pertain to the time, method, or manner of performing the work. The Contractor shall indemnify and hold harmless the City and all officers and employees of the City connected with the work from all claims, suits or actions of any nature brought for on account of the violation of any such terms and conditions by the Contractor or his subcontractors, suppliers, agents, or employees.

1.9 Restoration of Structures and Surfaces

All existing facilities that are broken or damaged by the installation of work shall be of the same kind of material with the same finish and in not less than the same dimensions as the original work. All work shall match the appearance of the existing improvements as nearly as possible.

1.10 Lines and Grades

The Contractor shall provide all construction surveying, stakes and marks necessary to establish the lines and grades required for the completion of the work specified in these General Provisions, Special Provisions, on the plans and in the Technical Provisions.

All construction surveying herein required shall be performed by a Licensed Surveyor or Registered Civil Engineer currently licensed by the State of California to perform such surveys.

Full compensation for furnishing such surveys, stakes, and marks as herein required shall be considered as included in the price paid for the various contract items of work to which such surveys and measurements, stakes, and marks relate, and no additional compensation will be allowed therefor.

1.11 Environmental Storm Water Pollution Control

The Contractor shall not pollute any drainage course or its tributary inlets with fuels, oils, bitumen's, acids, insecticides, herbicides, or other harmful materials. The Contractor shall comply with all applicable Federal, State, County and Municipal laws concerning pollution of waterways.



1.12 Safety

The Contractor shall execute and maintain his work so as to avoid injury or damage to any person or property. The Contractor shall comply with the requirements of CAL-OSHA and all applicable laws and the specifications relating to safety measures applicable in particular operations or kinds of work.

1.13 Clean-Up

The Contractor shall not allow the site of the work to become littered with trash and waste material but shall maintain the site in its normal neat and orderly condition throughout the construction period. On or before the completion of the work, the Contractor shall tear down and remove all temporary structures built by him and shall remove rubbish of all kinds from any of the grounds which he has occupied and leave them in first-class condition to the satisfaction of the Engineer.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing the work required to maintain the construction site and clean-up of the site at the completion of the work shall be included in the bid price.

1.14 Reference to Standard Specifications

Whenever reference is made to "Standard Specifications", "State Specifications" or "CSS" it shall be interpreted to mean the 2018 edition of the Standard Specifications of the State of California, Department of Transportation and the following shall apply:

- a. In case of conflict between the Standard Specifications and these Special Provisions, these Special Provisions shall govern.
- b. Where the term "Engineer" is used in the Standard Specifications, it shall be understood to mean the person or persons designated by the City to act as its duly authorized agent or agents.
- c. Where the term "Special Provisions" is used in the Standard Specifications, it shall be understood to mean these Specifications.
- d. Where the term "State" is used in the Standard Specifications, it shall be understood to mean "City".

1.15 Site Security

The Contractor shall make all provisions to maintain the security of the work site to prevent accidental injury to the general public or vandalism.

1.16 Notifications

If the closing or opening lanes (either partial or full) of a street or alley within the City of Marina is approved by the Engineer, the Contractor shall notify the following City Departments at least seventy-two (72) hours prior to the scheduled closing or opening. Contractor shall be required to send confirmation to the City that each agency was contacted appropriately for coordination.

MARINA POLICE DEPARTMENT

Notify Police Department Dispatcher's Office: 831-384-7575 (Marina Dispatch)

MARINA FIRE DEPARTMENT

Notify Fire Department Dispatcher's Office: 831-384-7575 (Marina Dispatch)



MARINA EMERGENCY RESPONSE SERVICES

Notify American Medical Response (AMR): 831-384-7575 (Marina Dispatch)

MARINA PUBLIC WORKS DEPARTMENT

Notify Public Works Director: 831-884-1212, publicworksengineeringdept@cityofmarina.org

MARINA POST OFFICE

Notify Postmaster: 831-384-8472

MARINA WASTE SERVICES

Notify Greenwaste: 831-920-6707

MARINA UNIFIED SCHOOL DISTRICT

Notify District Superintendent: 831-645-1200

MONTEREY-SALINAS TRANSIT (MST)

Notify Transportation Manager: 831-264-5874, commctr@mst.org

TRANSPORTATION AGENCY FOR MONTEREY COUNTY (TAMC)

Notify Cone Zone Community Outreach: 831-775-4411, Theresa@tamcmonterey.org

1.17 Not Used

1.18 Traffic Control System

The Contractor shall supply and install traffic control devices including, but not limited to, warning, regulatory, and guide signs, equipment, pavement delineation, and flaggers in accordance with Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications.

a. Submittals:

- a. Traffic Control/Staging/Detour Plans
- b. Proposed Truck Route/Haul Route

b. Public Convenience and Safety:

The Contractor shall conduct his operations to cause the least possible obstruction and inconvenience and maximum safety to both vehicular and pedestrian traffic.

The Contractor shall bear full responsibility for maintaining all traffic control include, but not limited to, signage, equipment and devices and maintaining traffic circulation at all times during the Work.

It is imperative that field traffic control be handled in such a manner as to adequately and safely direct all traffic movements in the construction area. The Contractor shall not be allowed to proceed with construction at any time when traffic control measures are inadequate to the field conditions, in the opinion of the Engineer. Additional traffic control measures may be required according to field conditions at the Contractor's expense.



At their own expense, whenever the Contractor's operations create a condition potentially hazardous to the public or traffic, the Contractor shall furnish additional traffic control measures and devices by any means necessary to provide adequate warning to the public of any dangerous conditions to be encountered.

Public streets and sidewalks shall be immediately vacated and returned to public use when the use thereof is no longer necessary for construction work.

Existing traffic signals and roadway lighting shall be kept in operation for the benefit of the traveling public during progress of the work. The Contractor will not be allowed any compensation due to any delay, hindrance, or inconvenience to his operations caused by public traffic.

c. Traffic Control/Stage/Detour Plan:

The Contractor shall submit site-specific Traffic Control/Stage/Detour Plan(s) signed and dated by a registered Civil Engineer for City's review and approval prior to issuance of Notice to Proceed. Plans shall be submitted to the Engineer a minimum of three (3) full Working Days prior to the Preconstruction Meeting.

The Plan(s) shall consist of a scaled aerial view drawing(s) in accordance with the latest version of the State of California Department of Transportation "Manual of Traffic Controls for Maintenance and Construction Work Zones." Copies or modified copies of the Manual of Traffic Controls for Maintenance and Construction Work Zones or the Work Area Traffic Control Handbook or any other type of copied standardized traffic control plans shall not be acceptable.

The Plan(s) shall show all traffic control measures and devices on the actual street(s) as it relates to the site conditions and to the safe movement of traffic for, but not limited to, lane closures, detours, no parking areas, signing program for construction, access to private property and business establishments, pedestrian traffic, railroad crossings, transit routes, loading areas, the proposed routing of the construction vehicles, hours required for access and the safe guards and procedures necessary to carry out the Work. The Plan(s) shall also indicate, but not be limited to, placement, spacing and type of warning signs, delineators, temporary lighting, devices, flaggers persons, construction vehicles and equipment staging, work hours and schedule.

d. Lane Closure Restrictions:

For any lane closure, the Contractor shall submit Traffic Control and Detour Plan for City's review and approval. The Plan(s) shall provide for the orderly and predictable movement of all traffic and pedestrians and for such guidance and warning as needed to ensure the safe and informed operation of individual elements of the traffic stream. The contractor shall not detour traffic or close lanes until the traffic control plan has been approved by the Engineer.

The Contractor shall keep a minimum of one 11-foot-wide lane of traffic open in each direction during working hours. Attention is directed to these Contract Documents regarding specific traffic lane closure restrictions. Under no circumstance shall an entire intersection be closed except upon direct approval from the Engineer.

Additional lane closure restrictions may be imposed if there is evidence that excessive inconvenience to the public is observed during construction.



For all lane closures or when an entire segment of roadway is closed, flashing arrow boards, detour signs, and flaggers are required to direct traffic.

The contractor shall provide safe passage to residents' property along the road or street affected by lane closure at all times. Temporary crossings shall be provided and maintained in good condition.

e. Sidewalks, ADA Ramps, and Bus Stops:

The Contractor shall maintain pedestrian, vehicular, and bus stop access at all times.

Sidewalk & Curb Ramp Construction/Closures:

Where sidewalk and curb ramps are closed for construction, the Contractor shall provide a continuous, safe, and ADA complaint pedestrian path of travel at all time. The path of travel shall be within the immediate location of the Work.

Sidewalk/Curb Ramp closures will be permitted on one side of a street at a time from intersection to intersection with appropriate detour signage. At street intersections, the Contractor shall maintain an ADA compliant path of travel through and around the intersection.

Where immediate alternate pedestrian path of travel cannot be provided, the Contractor shall provide ADA compliant pedestrian detour(s). It shall be clearly planned, marked, constructed and approved by the Engineer. Appropriate signs and barricades must be installed at the limits of construction and in advance of the closure (or detour) in order to divert pedestrians to the appropriate walkway or detour. Contractor shall submit Sidewalk Closure and Detour Plan to the Engineer for review and approval. Plan(s) shall show, but not be limited to, closures, pedestrian routing, and signage.

Bus Stop(s):

The Contractor shall coordinate with Monterey – Salinas Transit (MST) when the Work is at or near a Bus Stop. The work shall not impede or close a bus stop unless coordinated first with MST with proof of closure approval provided to the Engineer. The Work shall not cause unsafe conditions for bus riders or cause buses to release riders in the street or within the construction zone.

f. Flagging:

The Contractor shall comply with flagging, traffic handling equipment, and device requirements of Section 12, "Temporary Traffic Control," of the State Standard Specifications with the exception of Section 12-1.04, "Payment".

The Contractor shall provide radio-equipped flag persons during all one-lane operations.

Flag persons shall be properly equipped and trained in accordance with "Instructions to Flagmen," published by the California Department of Transportation.

Flaggers and all personnel working near traffic shall wear hardhats, orange/red, or State approved fluorescent green vests or shirts.



Flaggers are required to have a flagger certification.

Flaggers shall guide traffic with an appropriate stop/slow sign.

g. Signage:

All construction signs and other warning devices shall be provided by the Contractor and shall become the Contractor's property after completion of the Contract. The Contractor shall refer to the current "Manual of Warning Signs, Lights and Devices for use in the Performance of Work Upon Highways" and the "Uniform Sign Chart" issued by the Department of Transportation, Division of Operations.

Signage shall not block any driveway or access to private/public properties owners at any time, unless instructed by the Engineer.

If the Contractor fails to provide, is neglectful of or negligent in furnishing and maintaining warning and protective facilities and personnel as herein provided within eight (8) hours of being notified by the Engineer of the need for such, the City may furnish and maintain such facilities and personnel. In this event, the City may charge the Contractor therefore by deducting the cost of such facilities and personnel from progress payments due to the Contractor as such costs are incurred by the City.

The City shall supply two (2) project signs designating the funding sources for the project. The Contractor shall place the signs on Type III Barricades at the entrances to the project site.

h. Operation of Construction Vehicles and Equipment:

Construction Traffic and Vehicles: All inbound and outbound construction related traffic to and from the Site is restricted to public street(s) immediately adjacent to the Site.

Construction Parking: Construction vehicles and equipment parking is restricted to areas within the Site and other areas as determined by the City.

A Truck Route/Haul Route Plan approved by the City is required for use of overweight equipment within the City.

The Contractor is advised that ALL Vehicle Code regulations apply to construction equipment in operation on this project, and the City will enforce all Vehicle Code regulations with respect to use of construction equipment operating on City Streets and Public Rights of Way.

Extralegal Loads - Equipment over 8'6" wide, 14' tall, and 80,000 pounds gross or over on axle weights. A Permit is required for extralegal loads (oversize and overweight). It contains a specific route of travel for that single load. A Haul Route would be for major on-haul/off-hauls of material that bring in a large number of trucks at one time. The Permit shall have been issued and shall be in possession when operating such vehicles within the City. Drivers shall maintain strict adherence to the routes specified on the City approved Haul Route.

Special Equipment (SE) Plates & Slow-Moving Vehicle Emblems - Refer to the Vehicle Code for more information. All non-street legal construction equipment operating on a City



Street or right-of-way shall display a Special Equipment (SE) plate when operating outside of the work zone, or traffic control cone zone.

Load Regulations - Contractors are cautioned to ensure proper loading and on-haul/off-haul procedures are followed.

Vehicles shall not be loaded to overweight.

Off-haul loads for disposal or recycling shall be covered.

All loads shall be properly secured with the correct number of tie-downs or chains.

All vehicles leaving the construction site shall be clean. No material or debris shall be on the vehicle body or stuck to its tires.

i. Temporary Pavement Delineation:

Temporary pavement delineation shall be furnished, placed, maintained, and removed in accordance with the provisions in Section 12-3, "Temporary Traffic Control Devices," of the State Standard Specifications and these Technical Provisions. Nothing in these Technical Provisions shall be construed as to reduce the minimum standards specified in the Manual of Traffic Controls published by the Department of Transportation.

Whenever the work causes obliteration of any or all of the pavement delineation, temporary or permanent delineation shall be in place prior to opening the traveled way to public traffic. Lane line or centerline and limit line (e.g., stop bars or crosswalks) pavement delineation shall be provided at all times for traveled ways open to public traffic.

All work necessary, including any required lines or marks, to establish the alignment of temporary pavement delineation shall be performed by the Contractor. Surfaces to receive temporary pavement delineation shall be dry and free of dirt or loose material. Temporary pavement delineation shall not be applied over existing pavement delineation or other temporary pavement delineation. Temporary pavement delineation shall be maintained until replaced with a new pattern of temporary pavement delineation or permanent pavement delineation.

Temporary pavement markers and removable traffic type tape which conflicts with a new traffic pattern or which is applied to the final layer of surfacing or existing pavement to remain in place shall be removed when no longer required for the direction of public traffic, as determined by the Engineer.

Whenever lane lines and centerlines are obliterated, the minimum lane line and centerline delineation to be provided shall be temporary reflective raised pavement markers placed at longitudinal intervals of not more than 24 feet. The temporary reflective raised pavement markers shall be the same color as the lane line or centerline markers replaced.

Temporary reflective raised pavement markers shall be placed in accordance with the manufacturer's instructions and shall be cemented to the surfacing with the adhesive recommended by the manufacturer, except epoxy adhesive shall not be used to place pavement markers in areas where removal of the markers will be required.



1.19 Environmental/Air Pollution Prevention Requirements

The Contractor shall comply with all air pollution and environmental control rules, regulations, ordinances and statutes that apply to the project and any work performed pursuant to the contract.

Contractor shall comply applicable regulations of the Monterey Bay Air Resources District (MBARD).

1.20 Tree Protection Requirements

The City of Marina Municipal code Chapter 17.51 Tree Removal, Preservation and Protection establishes requirements for tree protection, preservation, and tree removal. Contractor shall be responsible to execute required mitigation measures to protect trees on the jobsite.



Glorya Jean Tate Park Improvements Phase 2 Project

C2 TECHNICAL SPECIFICATIONS



TECHNICAL SPECIFICATIONS

Bid Submittal

November 8, 2024

PREPARED BY:



Project No. 2207300



DOCUMENT 00 01 10

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SECTION 01 11 00

SUMMARY OF WORK

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work of this Contract consists of the Gloria Jean Tate Park phase 2 improvements including, but not necessarily limited to, the following:
 - 1. New all-inclusive playground.
 - 2. Dog park.
 - 3. Basketball and pickleball courts.
 - 4. Pavilions and picnic areas.
 - 5. Exercise area.
 - 6. Cornhole.
 - 7. Informal lawn area.
 - 8. Extension of the existing parking lot.
 - 9. Reservation Rd./Cadoza Ave. entry plaza.
 - 10. New site paving, fencing, site furnishing improvements, and utility upgrades.
 - 11. Landscape and irrigation.
- B. The Work specifically includes all work as represented by the Drawings and Specifications issued for construction and subsequent approved revisions and addenda.
- C. If certain features are not fully shown or called for on the Drawings, their construction shall be of the same character, quality and level of performance as for similar conditions that are shown, called for, or reasonably inferred.

1.02 RELATED REQUIREMENTS

- A. Section 01 42 00 - References.

1.03 PROJECT LOCATION

- A. Gloria Jean Tate Park – 3254 Abdy Way, Marina CA 93933.
- B. The general nature and extent of the work and the appurtenant facilities are shown on the Drawings under the title: Gloria Jean Tate Park Full Development.
- C. Perform work within the Limit of Work line indicated on the Drawings and per the discretion of the Owner.

1.04 SPECIFICATIONS AND DRAWINGS

- A. The General Conditions, Supplementary Conditions, and Division 01 - General Requirements apply to the Work of all Sections.
- B. Drawings, such as irrigation plans, utility plans, and other utility Drawings, are diagrammatic. Actual runs indicated on the Drawings shall be followed as closely as coordination with the work of other trades will permit. The exact routing of such improvements and locations of equipment shall be governed by site conditions, obstructions, and locations of other utilities as acceptable to the Owner.
- C. In the event that discrepancies arise over dimensions, product references, omissions, or written statements, these conflicts shall be immediately brought to the Owner's attention by the Contractor. If available, this

may be accomplished with the use of a "Request for Information" (RFI) form. While awaiting direction or clarification from the Owner, the Contractor shall re-direct work as necessary so as not to cause delay to the project.

- D. If discrepancies arise between the Drawings and Specifications, the order of descending precedence shall be:
 - 1. Specifications.
 - 2. Details on the Drawings.
 - 3. Plans on the Drawings.
- E. Products, materials, labor, etc., installed or performed without proper clarification, or prior to Owner acceptance shall be the Contractor's sole responsibility and shall be removed, repaired, replaced, and/or reinstalled per the Owner's direction at no additional cost to the Owner or its agents.

1.05 CONTRACTOR'S DUTIES

- A. Provide and pay for:
 - 1. Labor, materials, equipment, tools, construction equipment machinery, and other facilities and services necessary for proper execution and completion of the Contract.
 - 2. Water and temporary utilities required for construction excluding any metering and connection fees or charges.
 - 3. Subject to the discretion of the Owners Representative as verified by the Contractor, utilities which are in place and/or are in use by the Owner at the site, excluding telephone, may be utilized by the Contractor, to the extent available, at no cost.
 - 4. Other facilities and services necessary for proper execution and completion of work to provide a facility capable of operation.
 - 5. Legally required sales, consumer, and use taxes.
- B. Permits:
 - 1. The Owner has applied for building permit and Contractor shall pull out the building permit at no cost.
 - 2. The Owner shall obtain and pay for utility cut-offs and hook-ups including, but not limited to: water, gas, and electrical meters, sanitary and storm sewer connection fees.
 - 3. The contractor shall obtain and pay for other permits required by Owner, County and other agencies, including but not limited to business licenses and hauling and dumping permits as applicable.
 - 4. Provisions of required permits and licenses, whether obtained by the Owner's Representative or the contractor, shall become a part of the Contract Documents and shall be adhered to by the contractor.
- C. Comply with latest adopted edition of the governing building code and other codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on performance of the work. Nothing in the Drawings or Specifications shall be construed to permit work not conforming to these applicable laws, ordinances, rules, and regulations. In case of conflicts between code requirements, the most restrictive shall apply; except that where the requirements of these Specifications exceed code requirements, the Specifications shall govern.
- D. Attend pre-scheduled on-site job conference meetings and/or any special meetings as may be required by the Owner's Representative.
- E. Promptly submit written notice to the Owner's Representative of any observed variance in Contract Documents from legal requirements. Appropriate modifications to Contract Documents will be performed by the Owner's Representative to incorporate such necessary modifications.
 - 1. Contractor shall assume responsibility for work performed and known to be contrary to such requirements. Correcting non-conformance work shall be borne by the contractor and no additional compensation thereof.

- F. Enforce strict discipline and good order among the contractor's or sub-contractor's employees per the discretion of the Owner's Representative. Contractor shall coordinate work and share work area with Kompan and its sub-contractor for the installation of playground and fitness equipment and pour in place (PIP) rubber surface and engineered wood fiber surface (EWF).
- G. The Contractor shall be held to have examined the site and to have compared it with the Drawings and Specifications, to have carefully examined all of the Contract Documents and to have satisfied itself as to the conditions under which the work is to be performed before entering in this Contract.
 - 1. No allowance shall subsequently be made on behalf of the Contractor on account of an error on its part or its negligence or failure to acquaint itself with the conditions of the site.
- H. Examine site and verify that site conditions are acceptable to begin any work. Verify that work specified elsewhere has been completed to an appropriate stage to begin any applicable work. This includes, but is not limited to, lines, grades and surfaces prepared by others. Notify the Owner's Representative in writing of any irregularities or unacceptable conditions. Submission of bid by Contractor shall indicate Contractor's acceptance of site conditions.
- I. Throughout the job the Contractor shall be responsible for the general safety of the public and shall take appropriate means at no extra cost to Owner to provide a safe and secure job site to the satisfaction of the Owner's Representative.
- J. Verify all measurements, materials and systems taken from the Drawings and Specifications. Contractor shall be responsible for all investigations, field measurements layouts, and coordination necessary to properly fit, install and complete the work required, including integration of new work into, and with existing.
- K. Contractor shall deliver, receive, store, protect, install and apply materials in accordance with manufacturer's and/or industry specifications and instructions unless specifically modified and shown otherwise in the Contract Documents. Installations shall be tight, smooth, level, straight, true to line, and secure.

1.06 PROTECTION OF PROPERTY, MATERIALS AND WORK

- A. Contractor shall be held responsible insofar as its operations are concerned for the care, protection, and preservation of the adjoining premises, buildings, trees, landscaping, utilities, walks, streets, and adjacent properties from damage resulting from or incidental to this Contract.
- B. Protect existing structures, planted areas and improvements not designated for removal. Damage to existing structures including asphalt paving, utilities, and fixtures shall be replaced to an "as was" or better condition, at Contractor's expense, to the satisfaction of the Owner's Representative.
- C. Materials and equipment, both before and after installation, shall be properly protected by the contractor from the weather and other hazards and kept in a clean and orderly manner.
- D. Utility piping and conduit stub-outs, and parts or equipment left unconnected shall be capped, plugged, or otherwise properly protected by the contractor to prevent damage or the intrusion of dirt or other foreign matter.
- E. Materials and equipment damaged or containing defects developed before acceptance of the work shall be replaced with new at the Contractor's expense.

1.07 WORK SEQUENCE AND SCHEDULE

- A. The sequence and scheduling of the work to be performed by the Contractor shall be subject to review and acceptance by the Owner's Representative. The Contractor shall submit a Submittal Progress Log

and Schedule in accordance with Section 01 33 00 - Submittal Procedures prior to starting work. Project schedules shall conform to Specification Section 01 33 00.

1.08 CONTRACTOR'S USE OF PREMISES

- A. Confine operations to areas immediately within the proposed project sites.
 - 1. Develop and utilize construction access and haul routes as per the rules and regulations pertaining to the locale in which the work is to be performed and in accordance with the discretion of the Owner's Representative.
 - 2. Do not encumber site with materials or equipment.
- B. Limit use of premises for work and construction operations to allow for work by other contractors.
 - 1. Conduct operations so as not to cause unnecessary delay or hindrance to other contractors.
 - 2. Conduct, adjust, correct, and coordinate work with others to prevent project discrepancies and/or delays.
- C. Assume full responsibility for protection and safekeeping of products stored on premises and work performed until Final Acceptance of the work.
- D. Move stored products under Contractor's control which interfere with operations of the Owner.
- E. Obtain and pay for use of additional storage or work areas needed for construction operations.

1.09 WORK HOURS AND WORK DURING ONGOING ACTIVITIES

- A. Carry on the work as quietly as possible to prevent possible annoyance to adjacent properties. Avoid unnecessary noise at all times. Comply with local noise regulations or requirements. No work, delivery of equipment or materials shall take place between the hours of 5:00 PM and 8:00 AM, or during non-working hours and days without written authorization by the Owner's Representative.
- B. When connecting new utilities to existing, and similar operations, the contractor shall time and coordinate with Owner's Representative, facility operators, and utility companies such operations to minimize interference with existing activities and operations.

1.10 MATERIALS

- A. Unless otherwise noted or scheduled, materials and equipment specified and used in the work of this Contract shall be new, in first class condition, and suited to the intended use.
- B. Materials shall be delivered to the site and stored in original containers sheltered from the elements, but readily accessible for inspection by the Owner's Representative until installed.
- C. Materials of the same general type shall be of the same make and quality throughout the work to provide uniform appearance, operation, and maintenance ease.
- D. Equipment specified by manufacturer's number shall include all controls and accessories listed in catalog as standard equipment. Furnish optional or additional accessories as specified.
- E. Where no specified make of material or equipment is specified, any product by a reputable manufacturer which conforms to the requirements of the Contract Documents may be used with the Owner's Representative's acceptance.
- F. Materials and equipment shall be current products by manufacturers regularly engaged in the production of such products.

- G. Equipment items shall be supported by service organizations, which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the Specified Warranty Period.

1.11 NUISANCE WATER

- A. The Contractor shall protect the work, at all times, from damage and shall take measures to prevent delays in the progress of the work caused by nuisance water, such as rainfall, irrigation water and groundwater.
- B. The Contractor shall dispose of nuisance water using appropriate mechanical means at their sole expense and without adverse effects upon the Owner's, or any other property.
- C. The Contractor shall comply with all applicable non-point source pollution regulations and the Storm Water Pollution Prevention permit.

1.12 REFERENCE POINTS

- A. The Contractor shall leave existing stakes and reference points in their existing locations unless directed or authorized otherwise by the Owner's Representative. The Contractor shall set additional stakes and reference points as necessary to properly establish horizontal and vertical controls required for the work.

1.13 COORDINATION

- A. The Contractor shall coordinate all items of its work to assure efficient and orderly sequence of installation of construction elements.
 - 1. The Contractor shall make provisions for accommodating items installed by the Owner or under separate contracts.
 - 2. The Contractor shall coordinate and cooperate fully with all other agencies, sub-contractors, or utility company personnel furnishing labor, materials, or services, so that the work, as a whole, shall be executed in the most efficient manner and without conflict or delay.
- B. The Contractor shall verify that characteristics of interrelated operating equipment are compatible and coordinate work having interdependent responsibilities for installing of mechanical, irrigation, or electrical work, which may be indicated diagrammatically on Drawings.
- C. The Contractor shall coordinate space requirements and installation of work, which is indicated diagrammatically on Drawings.
 - 1. Follow routing shown for pipes and conduits as closely as possible, run lines parallel with lines of construction edges whenever possible.
 - 2. Utilize spaces efficiently for other installations, for maintenance, and for repairs.
 - 3. Work out all conditions involving work of all trades in advance of installation. If necessary, and before work proceeds in areas with constricted clearances, prepare supplementary drawings for Owner's Representative review, showing all work in "tight" areas. Provide supplementary drawings and additional work necessary to overcome spatially constricted conditions.
- D. Differences or disputes concerning coordination, interference or extent of work between divisions shall be decided by the Owner's Representative.
- E. Access Doors and Panels: Coordinate access door and panel requirements with each trade installing work to which access must be available to the Owner's Representative from time to time.

1.14 CUTTING AND PATCHING

- A. Contractor shall be responsible for all cutting, fitting, or patching of work which may be required to make its several parts come together properly and fix it to receive or be received by work of other trades.
- B. Costs incurred by defective or poorly timed work shall be borne by the responsible party, as determined by the Owner's Representative. Contractor shall not endanger any work, persons or construction by cutting, digging, or otherwise, and shall not alter the work of any other contractor except as acceptable to the Owner's Representative.
- C. Patching of existing improvements for new installations resulting from the removal or relocation of an installation shall be done with material of the same type adjoining existing improvements and as acceptable to the Owner's Representative.

1.15 CLEANING DURING CONSTRUCTION

- A. Execute weekly cleaning operations to keep the work, site, streets, and adjacent properties free from accumulations of waste materials, rubbish, and windblown debris resulting from construction operations.
- B. Provide on-site containers for the collection of waste materials, debris and rubbish.
- C. Remove waste materials, debris, and rubbish from the site periodically and properly dispose of such materials at legal disposal areas.
 - 1. Location of legal disposal sites and all costs incurred from waste disposal and transportation shall be the responsibility of the contractor.
 - 2. Waste material or debris shall not be buried or burned on the site.
- D. The Owner's Representative may, at any time during construction, order general clean-up of the site at no additional cost to the Owner.

1.16 PROJECT COMPLETION

- A. Conform to Section 01 77 00 - Contract Closeout.
- B. The Contractor shall, at completion of the project, leave the installed work properly operating and in a thoroughly clean condition.
- C. Thoroughly instruct the Owner's Representative and any applicable operation and maintenance personnel in the contents of the "operations and maintenance manual." Refer to Section 01 33 00 – Submittal Procedures.

END OF SECTION

SECTION 01 25 00

SUBSTITUTION PROCEDURES

1.01 SUMMARY

- A. Section Includes: Specific requirements for submission and approval of products other than those specified or noted on the Drawings.
- B. Related Requirements:
 - 1. Section 01 33 00 – Submittal Procedures
 - 2. Other applicable Sections of the Specifications

1.02 DEFINITIONS

- A. Substitutions - General: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- B. Substitutions for Cause: Changes proposed by Contractor that are required due to changed project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
- C. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.03 INTENT OF SPECIFICATIONS – PRODUCT SELECTION

- A. When a material, article, or process is indicated or specified by trade, patent, proprietary name, or name of manufacturer, the Specification shall be deemed to be followed by the words "or equal, as accepted in writing by the Owner's Representative" and a request for substitution shall be submitted as specified in this Section. Provide only the named product or products where products are specified followed by the words "no substitution." Substitutions are not allowed.
- B. The naming of more than one manufacturer in a Section does not imply that all products produced by the listed manufacturers are acceptable for use on the project. Where more than one proprietary name, process, and product is specified, the Contractor may provide materials or equipment of any one of the manufacturers specified if it is in full compliance with the Contract Documents and is acceptable to the Owner's Representative.
- C. Costs incurred due to requests, changes or revisions resulting from substitutions requiring Drawings or services of the Owner's Representative or Project Consultants to facilitate purchase, installation or erection of any portion of the work shall be borne by the Contractor. A flat hourly rate, as agreed upon, shall be paid by the Contractor whether the change is accepted or not. This fee shall be deducted, and paid, from Contract moneys due to the Contractor as determined by the Owner's Representative.

1.04 ACTION SUBMITTALS

- A. Procedures: In accordance with Section 01 33 00 – Submittal Procedures.
- B. Substitution Requests:
 - 1. Include sufficient data, drawings, samples, literature, and other detailed information which demonstrates to the Owner's Representative that the proposed substitute is equal in quality, operating efficiency, and durability of the material specified.

2. Substitution Request Form: As mutually agreed upon by Architect and Contractor.
3. Documentation:
 - a. Submit a detailed side-by-side comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - b. Sufficient data, drawings, samples, literature, and other detailed information which demonstrates to the Owner's Representative that the proposed substitute is equal in quality, operating efficiency, and durability of the material specified.
 - c. Statement indicating why specified product, fabrication, or installation cannot be provided, if applicable or requested.
 - d. Samples for review, if applicable.
 - e. Certificates and qualification data.
 - f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - h. Research reports evidencing compliance with building code in effect for Project.
 - i. Cost information, including a proposal of change, if any, in the Contract Sum.
 - j. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - k. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

C. Submittal Timing:

1. Prior to Bidding:
 - a. A request for substitutions will be considered if received within 10 calendar days from the bid opening date.
 - b. Approval of substitutions shall be accepted or denied by the City at least 3 calendar days before bid opening.
 - c. If a decision on use of a substitute cannot be made within these time limits, the product specified shall be used.
2. Following Award of Contract:
 - a. Substitutions for Cause: Submit requests immediately on discovery of need for change, but not later than 15 working days prior to time required for preparation and review of related submittals.
 - b. Substitutions for Convenience: Submit within 20 days after the Notice of Award. Requests received after that time may be considered or rejected at discretion of Architect.

1.05 CONSIDERATION OF SUBSTITUTIONS

A. General:

1. Materials and equipment for the work shall be the standard product of a manufacturer regularly engaged in the production of such materials and equipment. Product options or substitutions shall not be the basis for any price increase above the original Contract Sum.
2. Substitutions which are equal in quality, efficiency, durability and utility to those specified will be permitted, subject to the following conditions.
3. The Owner's representative shall review such proposed substitutions and determine if a substitution is acceptable. If the following conditions are not satisfied, Owner's Representative will return requests without action, except to record noncompliance with these requirements.
4. Failure of the Contractor to submit proposed substitutions for review in the manner specified shall be sufficient cause for rejection by the Owner's Representative of any substitutions otherwise proposed.

5. Failure to place orders for specified equipment or material sufficiently in advance of the scheduled date of installation shall not be considered a valid reason upon which the Contractor may base a request for any substitutions or for any deviations from the Contract Documents.
- B. Substitutions for Cause: Owner's Representative will consider Contractor's request for substitution for cause when the following conditions are satisfied. If the following conditions are not satisfied, Owner's Representative will return requests without action, except to record noncompliance with these requirements:
1. Substitution request is fully documented and properly submitted.
 2. Requested substitution will not adversely affect the Project Construction Schedule.
 3. Requested substitution has received necessary approvals of authorities having jurisdiction, if applicable.
 4. Requested substitution provides specified warranty.
 5. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- C. Substitutions for Convenience: Owner's Representative will consider Contractor's request for substitution for convenience when, in addition to the conditions specified for a substitution for cause, under the following conditions.
1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 2. Requested substitution does not require extensive revisions to the Contract Documents.
 3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
- D. Action by Owner's Representative:
1. Substitutions shall be favorably reviewed and accepted by the Owner's representative in writing prior to implementation. Favorable review shall not relieve the Contractor from complying with the requirements of the Contract Documents, and the Contractor shall be responsible for all expenses for any changes resulting from acceptable substitutions which affect other parts of the work.
 2. If necessary, Owner's Representative will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution.
 3. Owner's Representative will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
 4. Forms of Acceptance: Change Order, Construction Change Directive, or Supplemental Instructions for minor changes in the Work.
- E. The first or only named manufacturer is the basis for the project design and the use of alternative-names, second-names, or unnamed manufacturer's products may require modifications in the project design and construction.
1. Costs incurred due to requests, changes or revisions resulting from substitutions requiring drawings or services of the Owner's representative or project consultants to facilitate purchase, installation or erection of any portion of the work, shall be borne by the contractor. A flat hourly rate, as agreed upon, shall be paid by the contractor whether the change is accepted or not. This fee shall be deducted, and paid, from Contract moneys due to the contractor as determined by the Owner's representative.
- F. Contractor shall furnish full information concerning the material or articles being proposed for substitution.
1. Testing of a proposed substitute material to assure compliance with the Specifications may be required by the Owner's representative at the contractor's expense.
 2. Samples shall be submitted for review as specified in Section 01 33 00 – Submittal Procedures.

3. Equipment, material, and articles installed or used by the contractor without required review, shall be at the contractor's risk.
- G. Substitutions shall comply with or exceed all requirements of size, function, structure, durability, and appearance without exception.
 1. Use of accepted substitutions shall in no way relieve the contractor from responsibility for compliance with the Contract Documents after installation.
 2. The contractor shall assume all extra costs caused using such substitutions where they affect other work or trades.

1.06 SUBSTITUTION REQUEST FORM

- A. For proposed substitutions, the Contractor shall complete the following Substitution Request Form, attach substantiating back-up literature, and submit to the Owner's representative within time limit specified.

(Remainder of this Page is Blank)

SUBSTITUTION REQUEST FORM

DATE: _____

TO: OWNER'S REPRESENTATIVE

PROJECT NAME: _____

SPECIFIED ITEM: Section _____ Page _____ Item Number _____ Paragraph _____

DESCRIPTION:

S A M P L E

The undersigned requests consideration of the following:

PROPOSED SUBSTITUTION: (put N/A where not appropriate)

Manufacturer: _____ Color: _____

Model Number: _____ Material: _____

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the requests; applicable portions of the data are clearly identified.

Attached data also includes description of changes to Contract Documents which the proposed substitution requires for proper installation.

The undersigned states that the following paragraphs, unless modified on attachments, are correct:

1. The proposed substitution does not affect dimensions shown on Drawings. If, in fact, it does affect dimensions, the contractor shall provide shop drawings, accurately showing changes to documents.
2. The undersigned shall pay for changes to the design, including engineering design, detailing, and

- construction costs caused by the requested substitution.
3. The proposed substitution shall not adversely affect other trades, the construction schedule, or specified warranty requirements.
 4. Maintenance and service parts are locally available for the proposed substitution.

The undersigned further states that the function, appearance, and quality of the proposed substitution are equivalent or superior to the specified item.

Submitted by:

Signature: _____ Title: _____

License Category: _____ License Number: _____

Firm: _____ Phone No.: _____

Address: _____ Fax No.: _____

Telephone: _____

OWNER'S REPRESENTATIVES REVIEW:

☐ NO EXCEPTIONS TAKEN ☐ EXCEPTIONS TAKEN (SEE ATTACHED COMMENTS)

☐ FURNISH AS CORRECTED ☐ REVISE AND RESUBMIT

By: _____ **S A M P L E**

Date: _____

Comments:

Attachments:

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Procedures to be followed in preparing and submitting the following supplementing and superseding those included in the General Conditions.
 - a. Photographic documentation.
 - b. Construction Schedule.
 - c. Submittal Schedule.
 - d. Project directory.
 - e. Product list.
 - f. Shop drawings.
 - g. Product data.
 - h. Samples.
 - i. Procedures for:
 - 1) Action Submittals.
 - 2) Informational submittals.
 - 3) Deferred submittals.
 - 4) Delegated design services.
 - j. Colors and patterns submittals.
 - k. Operating and maintenance manuals.
 - l. Field samples and mockups, including on-site review of materials, colors, and textures.
 - m. Requests for Information (RFI's).
 - 2. Final distribution of submittals.
- B. Related Requirements:
 - 1. Section 01 25 00 - Substitution Procedures.

1.02 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Owner's Representative's responsive action. Action submittals are those submittals indicated in individual Specification Sections as action submittals.
- B. Informational Submittals: Written and graphic information and physical samples indicated in individual Specification Sections as informational submittals that do not require Owner's Representative's responsive action.
- C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.03 GENERAL

- A. Comply with the requirements specified in addition to submittal review procedures and requirements of the General Conditions.

- B. Do not commence any portion of the Work requiring submission of a shop drawing, product datum, or sample until the submittal has been reviewed by Owner's Representative and appropriate consultant. Such portions of the Work shall be in accordance with reviewed submittals.
- C. Shop drawings, product data, and samples are in no case to be considered Contract Documents but are to be treated only as instruments of convenience and facility to further the progress of the Work.
- D. Shop drawings, product data, samples and supporting data shall be prepared by Contractor or its suppliers but shall be submitted to Owner's Representative by Contractor as the instruments of the Contractor.
 - 1. Contractor shall check the drawings of its suppliers as well as its own drawings before submitting them to Owner's Representative.
 - 2. Contractor shall ascertain that shop drawings, product data, and samples meet all requirements of the Contract Documents and also conform to the structural and space conditions. If shop drawings, product data, and samples show variations from Contract Documents, whether because of standard shop practice or other reasons, Contractor shall make special mention thereof in its letter of transmittal and describe the reasons why there are variations.
 - 3. Contractor shall be fully responsible for observing the need for and making changes in arrangement and manner of installation of piping, connections, wiring, and similar items that may be required by equipment it proposes to supply, both as pertains to its own work and work affected under other parts, headings, or Divisions of the Contract Documents.
 - 4. Prior to submittal to Owner's Representative, each shop drawing, product datum, and sample submitted for review shall be stamped, dated, and signed by Contractor, verifying that it has been checked by Contractor to be in accordance with the Contract Documents. Submittals not signed by Contractor will be returned without review by the Owner's Representative.
- E. Miscellaneous systems not specifically specified but installed to meet code requirements or for other reasons are subject to Owner's Representative's review prior to installation.

1.04 COORDINATION OF SUBMITTALS

- A. Prior to submittal, use all means necessary to fully coordinate all material, including, but not necessarily limited to:
 - 1. Determine and verify all interface conditions, catalog numbers and other data.
 - 2. Coordinate with other trades as required.
 - 3. Clearly indicate all deviations from requirements of the Contract Documents.
 - 4. Verify that each item and the submittal conform in all respects with the requirements of the Contract Documents.
- B. The following products do not require further review except for interface within the Work, unless indicated otherwise:
 - 1. Products specified by reference to standard specifications such as ASTM and similar standards.
 - 2. Products specified by manufacturer's name and catalog model number.
- C. By affixing the Contractor's signature to each submittal, the Contractor certifies that this coordination has been performed.

1.05 GROUPING OF SUBMITTALS

- A. Unless otherwise specified, make submittals in groups containing all associated items to assure that information is available for checking each item when it is received.
 - 1. Partial submittals may be rejected as not complying with the provisions of the Contract.
 - 2. The Contractor may be held liable for delays so occasioned.

1.06 IDENTIFICATION OF SUBMITTALS

- A. Consecutively number all submittals.
 - 1. When material is resubmitted for any reason, transmit under a new letter of transmittal and with a new transmittal number.
 - 2. On resubmittals, reference the original submittal number.
- B. Accompany each submittal with a letter of transmittal showing all information required for identification and checking.
- C. On at least the first page of each copy of each submittal, and elsewhere as required for positive identification, clearly show the submittal number in which the item was included.
- D. Maintain an accurate submittal log for the duration of the Work, showing current status of all submittals at all times. Make the submittal log available to the Owner's Representative for review.
- E. Quality Control Set: Maintain returned final set of submittals at project site, in suitable condition and available for quality control comparisons by Owner's Representative.

1.07 TIMING OF SUBMITTALS

- A. Make submittals far enough in advance of scheduled dates for installation to provide all time required for reviews, necessary approvals, possible revisions, resubmittals, and for placing orders and securing delivery.
- B. In scheduling, allow for review by the Owner's Representative in a timely manner following receipt of the submittal by the Owner's Representative.
- C. Delays caused by tardiness in receipt of submittals will not be an acceptable basis for extension of the Contract completion date.

1.08 SUBSTITUTIONS

- A. Substitution requests shall be written, timely and submitted in accordance with the procedures specified in Section 01 25 00 - Substitution Procedures.

PART 2 - SUBMITTALS

2.01 PROJECT DIRECTORY

- A. After execution of the Construction Agreement but prior to commencement of Work, Contractor shall submit to Owner's Representative a Project Directory listing subcontractors and vendors on the Project and giving a brief description of their scope of work, firm name, contact person, address, phone number, and email address.

2.02 SUBMITTAL SCHEDULE

- A. Contractor shall prepare and submit to Owner's Representative a "Submittal Schedule" when required by the General Conditions showing scheduled dates of submittals and date required for return of submittals to Contractor.
- B. Contractor shall provide in schedule a minimum of 10 working days for Owner's Representative to review and check submittals as may be necessary provided it is not a deferred approval item. Based on

the number and complexity of submittals at any one time, Owner's Representative's review period may be longer than 10 days.

- C. Dates on "Submittal Schedule" shall be agreed upon by both Owner's Representative and Contractor.

2.03 PRECONSTRUCTION PHOTOGRAPHS

- A. Before commencement of work on the site, take digital photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by the Owner's Representative.
- B. Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as cracking or other damage caused by demolition, site preparation, and building construction operations.
- C. Submit digital file as specified for Construction Photographs.
- D. Submit before Work begins.

2.04 CONSTRUCTION PHOTOGRAPHS

- A. Provide digital photographs taken weekly of site and construction from beginning of demolition to completion of exterior work. Photographs shall be produced by the contractor in a manner deemed acceptable to Owner's Representative.
- B. Photographs shall:
 - 1. Provide factual presentation.
 - 2. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
- C. Views:
 - 1. Provide non-aerial photographs from four cardinal views at each specified time until date of Substantial Completion.
 - 2. Consult with Owner's Representative for instructions on views required.
 - 3. View and location for each orientation shall be maintained throughout Project.
- D. Digital File:
 - 1. File Format: Joint Photographic Experts Group (JPEG), unless otherwise directed by Owner's Representative.
 - 2. Minimum Resolution: 2400 x 3000 pixels.
 - 3. Provide digital date/time information in each image file (EXIF metadata).
 - 4. Digital images shall be exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
- E. Submit digital file of photographs on USB flash drive or cloud storage folder with each Application for Payment to Owner with Project Record Documents.
 - 1. Deliver USB flash drive with Project Record Documents. The USB flash drive shall contain digital files of the Project photographs.
 - 2. Provide digital files with dated folders and appropriate descriptions.
 - 3. Prints are not required.

2.05 CONSTRUCTION SCHEDULE

- A. In accordance with the General Conditions, prepare a comprehensive schedule of basic operations of the entire Project in the form of a Critical Path (CPM) network or other appropriate method acceptable to Owner's Representative.
 - 1. Indicate critical dates for submission of specified shop drawings, product data, samples, and certificates. Provide in Schedule a minimum of 10 working days for Owner's Representative to review and check submittals as may be necessary. No extension of time will be granted because of Contractor's failure to make submittals to allow for review and processing by Owner's Representative in accordance with the accepted milestones. Specific submittals considered by the Contractor to be on the "critical path" shall be indicated on the Schedule.
 - 2. Include decision dates for products specified by allowance and for selection of colors/finishes.
 - 3. Include work coordination with other contractor.
- B. The schedule shall be the basis for establishing starting and completing dates of Work for the Project.
- C. Conform to accepted schedule, and arrange work in such a manner that it will be installed in accordance with the schedule.
- D. Establish a program to reevaluate and update the schedule periodically in accordance with requirements of the Project. Submit first schedule 2 weeks after Notice to Proceed.
- E. Coordinate letting of subcontracts, material purchases, delivery of materials, sequence of operations, and similar activities to conform to accepted schedule, and furnish proof of conformance as may be required by Owner.
- F. In case Owner determines, after consultation with Owner's Representative, that Contractor fails or refuses to take appropriate and necessary measures to complete the Work in accordance with the accepted schedule or within time to which such completion may be extended, the Contract, or any part thereof, may be terminated under the provisions of the General Conditions.
- G. Submit to the Owner's Representative for review, within 45 calendar days after date of the Contract or as allowed by the Schedule, all submittals for equipment, fabrications, and specialty items as listed in each Section of the Specifications.

2.06 SHOP DRAWINGS

- A. Shop drawings shall be drawn to a scale, be completely dimensioned, and be sufficiently large to show all pertinent aspects of the item and its method of connection to the Work, or as specifically indicated elsewhere in other Sections of these Specifications.
- B. Entitle shop drawings with name of the Project and list applicable divisions, sections, article, or reference on each sheet.
- C. Submit separate items on separate sheets.
- D. The reproduction of any Contract Documents for use in a shop drawing submittal is not permitted.
 - 1. If the Contractor requires, it may request drawings/backgrounds from the Owner's Representative to use in its preparation of shop drawings. The Owner's Representative will send drawings, via e-mail, only after the following is completed:
 - a. Contractor to complete a "CAD Release & Indemnity Agreement," or similarly named document, to be provided by Owner's Representative. Sign and return to the Owner's Representative.
 - b. Requests for drawings prepared by consultant of Owner's Representative shall be directed to the office of the respective consultant and are subject to each consultant's firm policies.

2. Review comments of the Owner's Representative or its consultants will be shown on the copy returned to the Contractor. The Contractor shall make and distribute additional copies as are required for its purposes.
3. The Owner shall be provided with a copy of shop drawing transmittals only if requested.

2.07 PRODUCT DATA

- A. Manufacturer's standard drawings shall be modified to delete information which is not applicable and shall be supplemented to provide additional information where so required.
- B. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data shall:
 1. Have each copy clearly marked to identify pertinent materials, products, models, finishes, etc.
 2. Show clearly standard options included.
 3. Show dimensions and clearances required.
 4. Show performance characteristics and capacities.
 5. Show wiring diagrams and controls, and show necessary rough-in requirements for utility services and connections, where applicable.
 6. Include manufacturer's installation instructions on 8.5-inch by 11-inch format.
- C. Identify each item of product data by reference to sheet and detail numbers of Contract Drawings and/or specific reference to Articles or paragraphs of a Specification Section.
- D. Where product data, as submitted, contains extraneous information, unmarked options, or is incomplete, it will be returned to Contractor without review.

2.08 SAMPLES

- A. Contractor shall forward to Owner's Representative, at its own expense, samples designated for use on the Project. Include material, equipment, textures, colors, and fabrics in sizes and quantities as required by the Drawings and Specifications or as requested by Owner's Representative. Where there is an expected range of color or texture variations for the specified item, submit sufficient number of samples to illustrate range.
- B. Submit and resubmit samples until accepted by Owner's Representative.
- C. No review of a sample shall be taken in itself to change or modify the Contract requirement.
- D. Finishes, materials, and workmanship in the completed Project shall match accepted samples.
- E. Samples of value will be returned to Contractor, when requested in writing at time of submittal, for its use in the Project after review, analysis, comparison, or testing as may be required by Owner's Representative.
- F. No samples shall be incorporated into the Work, unless otherwise specified or specific approval is given by Owner's Representative.

2.09 DELEGATED DESIGN SERVICES

- A. Performance and Design Criteria:
 1. Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 2. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Owner's Representative.

- B. Delegated-Design Services Certification:
 - 1. In addition to shop drawings, product data, and other required submittals, submit paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 - 2. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

2.10 COLORS

- A. Unless the color and pattern are shown or specified, whenever a choice of color or pattern is available in a specified product, submit accurate color charts and pattern charts to Owner's Representative for review and selection.
- B. Completely describe the relative costs and capabilities of each color and pattern, unless available colors and patterns have identical costs and wearing capabilities.

2.11 FIELD SAMPLES AND MOCKUPS

- A. Comply with requirements specified in respective Specification Section.

2.12 REQUESTS FOR INFORMATION (RFI'S)

- A. RFIs shall be submitted by the Contractor or by subcontractors to the Contractor who shall then assign the request an RFI number and forward the request on to the Owner's Representative. RFIs from contractors under separate contract with Owner, and performing work concurrently with work under this Contract, shall submit RFIs through the Contractor for coordination.
- B. Subcontractors shall not submit RFIs directly to the Owner's Representative.
- C. Each RFI shall be given a discrete, consecutive number such as "001," "002," "003," etc. Revisions or resubmittal of the same RFI shall maintain the original RFI number but be otherwise identified with a suffix such as "001A" for first revisions, "001B" for second revision, etc.
- D. Contractor shall identify in the RFI the specific issue that the Contractor is requesting information on, where the issue is referred to in the Contract Documents, and what is the Contractor's proposed solution to the apparent conflict. RFIs not addressing these three issues will be rejected.
- E. The Owner's Representative's response to RFIs will confirm a stated interpretation or otherwise interpret the design intent and may include furnishing an alternative conflict resolution.
- F. The Owner's Representative will review and process RFIs in an average of 10 working days. It is acknowledged and understood that some RFIs will take longer to answer than others.
- G. RFI Log: Contractor shall prepare and maintain a log of RFIs, and at any time requested by the Owner's Representative, the Contractor shall furnish copies of the log showing all outstanding RFIs.

PART 3 - EXECUTION

3.01 PROCEDURES FOR ACTION SUBMITTALS

- A. General: Submit as specified in the General Conditions and Specification Sections.
 - 1. Submittals shall be made to Owner's Representative. Submittal of shop drawings via e-mail attachment will be generally accepted, though when requested by Owner's Representative, Contractor shall provide full size and half size shop drawings.

2. Subcontractors shall make submittals to Contractor.
 3. Submittals shall not be made directly to the Owner, unless specifically requested, or consultants of the Owner's Representative. Even if a submittal is reviewed and returned by a consultant of the Owner's Representative, such submittal shall be considered as not reviewed if not submitted through the Owner's Representative.
 4. If more than one resubmittal of the same item or its component is required, the Contractor will be billed for additional review time and materials at current billing rates of the Owner's Representative.
- B. Unless otherwise agreed or requested, Owner shall be provided with a copy of transmittals only.
- C. Copies required in each Action Submittal shall be as follows unless otherwise mutually agreed or specified in a respective Specification Section:
1. Shop Drawings and Product Data: Digital PDF (Portable Document Format) files via email, ftp site, or other secure file transfer protocol.
 - a. Digital submittals shall be fully compatible with Adobe Acrobat Reader.
 - b. All parties shall view and print with Adobe Acrobat (fully up-to-date) to ensure compatibility, unless agreed upon otherwise.
 - c. Owner's Representative reserves the right to request hard copies of submittals as follows:
 - 1) Shop Drawings: Three sets of bond prints.
 - 2) Product Data: Three sets.
 2. Samples:
 - a. Unless otherwise specified, submit samples in the quantity which is required to be returned, plus 2 which will be retained by the Owner's Representative.
 - b. By prearrangement in specific cases, a single sample may be submitted for review and, when reviewed, be installed in the Work at a location agreed upon by the Owner's Representative.
- D. Identification:
1. Properly identify each submittal with name of Project, Contractor, subcontractor, and date.
 2. Accompany each submittal by an acceptable transmittal form referring to Project name and Specifications Section number, and paragraph number, when applicable, for identification of each item.
 3. Consecutively number shop drawings for each Section of work; retain numbering system throughout all revisions.
 4. Allow clear space on each drawing, product datum, and sample for stamp of Contractor and Owner's Representative. Where clear space is not available on samples, submit with tags or stickers attached.
- E. Stamp each shop drawing, product datum, and sample to certify that it has been coordinated and checked for completeness and compliance with requirements of the Work, Project, and Contract Documents.
- F. Review by Owner's Representative:
1. General:
 - a. Except for finish, color, and other aesthetic matters left to Owner's Representative's decision by Contract Documents, Owner's Representative's review of shop drawings, product data, and samples is only for Contractor's convenience in following work and does not relieve Contractor from responsibility for deviations from requirements of Contract Documents.
 - b. Do not construe review by Owner's Representative as a complete check or relief from responsibility for errors or omissions of any sort in shop drawings or schedules or from necessity of furnishing work required by Contract Documents that may not have been shown on shop drawings.
 - c. Review of a separate item by Owner's Representative does not indicate review of complete assembly in which it functions.

- d. Review comments of the Owner's Representative (or its consultants) will be shown when it is returned to the Contractor. The Contractor shall make and distribute such copies as are required for its purposes.
2. Submittals not stamped by Contractor and submittals which, in opinion of the Owner's Representative, are incomplete, contain numerous errors, or have not been checked or have only been checked superficially will be returned to Contractor for resubmittal.
3. Processing:
 - a. Owner's Representative will review shop drawings, product data, and samples in accordance with agreed upon "Submittal Schedule" and will return them to Contractor imprinted with stamp of the Owner's Representative.
 - b. Notations by Owner's Representative which increase Contract cost or time of completion shall be brought to attention of the Owner's Representative before proceeding with work. Failure to do so will result in the increased costs being borne by the Contractor.
 - c. Each submittal will be stamped indicating appropriate action required of the Contractor.
 - d. If for any reason the Contractor cannot comply with the notations, Contractor shall re-submit submittal. In the transmittal letter accompanying the re-submittal, clearly describe the reason(s) for not being able to comply with the notations.
- G. Consultants' Review:
 1. Submittals requiring review by Owner's Representative or its consultants shall be sent to the Owner's Representative. Owner's Representative will forward submittal to applicable consultant for their review.
 2. Processing shall be in accordance with consultants stamp.
 3. If action required by consultants stamp is not clear, Contractor shall immediately notify the Owner's Representative for a clarification.
 4. If returned submittal also includes stamp by the Owner's Representative, processing shall be in accordance with the Owner's Representative's stamp.
- H. Revisions:
 1. Make revisions pertinent to by comments noted on the submittal.
 2. If the Contractor considers any required revision to be a change, they shall so notify the Owner's Representative as provided for in the General Conditions.
 3. Show each revision by number, date, and subject in a revision block on the submittal.
 4. If for any reason Contractor cannot comply with the notations, Contractor shall resubmit submittal.
- I. Revisions after Review: When a submittal has been reviewed by the Owner's Representative, resubmittal for substitution of materials or equipment will not be considered unless accompanied by an acceptable explanation as to why the substitution is necessary, or unless directed by the Owner.

3.02 PROCEDURES FOR INFORMATIONAL SUBMITTALS

- A. General:
 1. Prepare and submit "Informational Submittals" where required by the Specifications.
 2. Number of Copies: Submit PDF as specified for Action Submittals two paper copies of each submittal, unless otherwise indicated. Owner's Representative will not return copies.
 3. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 4. Test and Inspection Reports: Comply with requirements specified in Section 01 45 00 – Quality Control.
- B. The following items shall be considered "Informational Submittals" whether or not identified as such in the respective Specification Sections.
 1. Qualification Data.
 2. Certificates for or from the following:
 - a. Installers.

- b. Manufacturers.
- c. Products and materials.
- 3. The following Reports:
 - a. Material and Product Test Reports.
 - b. ICC-ES Reports:
 - c. Preconstruction Test Reports.
 - d. Compatibility Test Reports.
 - e. Field Test Reports.
- 4. Maintenance Data.
- 5. Design Data.
- 6. Manufacturer's Instructions.
- 7. Manufacturer's Field Reports.
- 8. Insurance Certificates and Bond.
- 9. Construction photographs as specified .
- 10. Material Safety Data Sheets (MSDSs).

3.03 PROCEDURES FOR DEFERRED SUBMITTALS

- A. Deferred Approval submittals shall first be submitted to the Owner's Representative. If the Owner's Representative reviews the submittal with corrections noted, those corrections must be addressed and the submittal returned to the Owner's Representative. Once the Owner's Representative has no comments on a submittal, it will be returned and shall be resubmitted with approval by all government agencies having jurisdiction."
- B. The Contractor shall then submit to these agencies and make revisions required by these agencies until approval by all government agencies having jurisdiction is obtained. See Section 01 11 00 - Summary of Work for further requirements.
- C. When approval has been obtained by all governing agencies having jurisdiction, the approved submittal shall be resubmitted to the Owner's Representative for final approval. It is the responsibility of the Contractor to verify acceptability of government agency required revisions with the Owner's Representative. If the resubmittal to the Owner's Representative includes revisions that had not been previously approved by the Owner's Representative in writing, the Owner's Representative has the right to reject these revisions. It is then the Contractor's responsibility to resubmit to government agencies having jurisdiction to obtain approval of the Owner's Representative's noted corrections.

3.04 PROCEDURES FOR CLOSEOUT AND MAINTENANCE MATERIAL SUBMITTALS

- A. Number of Copies: Two, unless otherwise directed by Owner's Representative.
- B. Comply with additional Closeout Procedures specified for the Project.

3.05 FINAL DISTRIBUTION AFTER REVIEW

- A. In addition to copies of submittals required by Contractor, subcontractors, suppliers, and fabricators, Contractor shall make distribution to:
 - 1. Contractor's jobsite file.
 - 2. Project Record Documents file; see additional requirements specified in Section 01 78 39 - Project Record Documents.

END OF SECTION

SECTION 01 41 00

REGULATORY REQUIREMENTS

1.01 SUMMARY

- A. Section Includes:
 - 1. The codes and regulations applicable to the Work.
 - 2. Code and regulatory abbreviations used in the Specifications.
- B. Related Requirements:
 - 1. Section 01 42 00 - References, Abbreviations, and Definitions; requirements relating to industry standard references used in the Specification Sections.

1.02 APPLICABLE CODES AND REGULATIONS

- A. Codes which apply to this Project include, but are not limited to, the following including additions, changes, and interpretations adopted by the enforcing agency in effect as of the date of these Contract Documents.
 - 1. State of California Code of Regulations (CCR):
 - a. Title 8, Industrial Relations.
 - b. Title 19, Public Safety.
 - c. Title 24, Building Standards Code.
 - 1) Part 2, California Building Code.
 - 2) Part 2.5, California Residential Building Code.
 - 3) Part 3, California Electric Code.
 - 4) Part 4, California Mechanical Code.
 - 5) Part 5, California Plumbing Code.
 - 6) Part 6, California Energy Code.
 - 7) Part 9, California Fire Code.
 - 2. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."
 - 3. The following additional Codes and Standards:
 - a. California Occupational Safety and Health Act Standards (Cal-OSHA).
 - b. Occupational Safety and Health Act (OSHA).
 - c. Air Quality Standards of the Bay Area Air Quality Management District of the California Air Resources Board including emissions and dust during construction.
 - d. Americans with Disabilities Act (ADA) Standards.
 - e. Environmental Regulations including:
 - 1) 22 CCR, Section 66260 et seq.; California Hazardous Waste Management Regulations.
 - 2) 40 CFR, Part 260 et seq.; Hazardous Waste Management System.
 - 3) 42 USC, Section 6901 et seq.; Resource Conservation and Restoration Act (RCRA).
 - 4) National Pollutant Discharge Elimination System (NDPES).
 - f. National Fire Protection Association (NFPA): Standards 13, 24, 72, and 80.
 - g. National Electrical Code (NEC).
- B. All work shall meet or exceed the requirements of the above codes.
- C. References in the Specifications to "code" or to "building code," not otherwise identified, shall mean the foregoing specified codes, together with the additions, changes, amendments, and interpretations adopted by the enforcing agency and in effect on the date of these Contract Documents. Nothing on the Drawings or in the Specifications shall be interpreted as requiring or permitting work that is contrary to these rules, regulations, and codes.

- D. Where other regulatory requirements are referenced in these Specifications, the affected work shall meet or exceed the applicable requirements of such references.
- E. Regulatory requirements referred to shall have full force and effect as though printed in these Specifications.
- F. Where the Drawings or Specifications call for or describe materials, workmanship, or construction of a better quality, higher standard, or larger size than is required by said laws, codes, rules, and regulations, the provisions of the Drawings and Specifications shall take precedence over said laws, codes, rules, and regulations.

1.03 OTHER APPLICABLE LAWS AND REGULATIONS

- A. All applicable federal, state, and local laws, regulations of governing utility districts, regulations of the state fire marshal, federal, state and local environmental regulations, and the various other authorities having jurisdiction over the construction of the Project shall apply to the Contract throughout and they shall be deemed to be included in the Contract the same as though printed in these Specifications.
- B. Discrepancies between these codes, rules, and regulations and the Contract Documents shall be brought to the attention of the Owner's Representative for resolution.

END OF SECTION

SECTION 01 42 00

REFERENCES, ABBREVIATIONS, AND DEFINITIONS

1.01 SUMMARY

- A. Section Includes:
 - 1. Requirements for standard references used in the various Specification Sections.
 - 2. Standard reference abbreviations used in the Project Manual.
 - 3. Definitions of terms used in the Project Manual.
- B. Related Requirements:
 - 1. Section 01 41 00 - Regulatory Requirements

1.02 STANDARD SPECIFICATIONS

- A. The Contract Documents contain references to various standard specifications, codes, practices, and requirements for materials, work quality, installation, inspections, and tests published and issued by the organizations, societies, and associations. Such references are hereby made part of the Contract Documents to the extent required.
- B. When standard specifications are included by abbreviation and number only, it is assumed that the Contractor is familiar with and has ready access to the specified standards.
- C. When the effective date of a reference standard is not given, it shall be understood that the current edition or latest revision thereof and any amendments or supplements thereto in effect on the date of original issue of these Contract Documents, as indicated on the cover, shall govern the Work.
- D. Reference standards are not furnished with the Contract Documents, because the Contractor, subcontractors, manufacturers, suppliers, and the trades involved are assumed to be familiar with their requirements.
- E. Contractor shall obtain its own copies of required specified referenced publications.
- F. The specification or standard referred to shall have full force and effect as though printed in these Specifications.
- G. In addition to those standards specifically referenced in the Specifications, comply with the accepted industry standards and trade association recommendations for the respective portions of Work.
- H. In the case of difference between referenced standards and the Contract Documents, the most stringent requirements prevail.

1.03 STANDARD SPECIFICATION ABBREVIATIONS

- A. In addition to abbreviations indicated on the Drawings, references in the Project Manual to trade associations, technical societies, recognized authorities, and other institutions may include the following organizations, which are sometimes referred to by only the corresponding abbreviations. Not all abbreviations are listed, and not all listed abbreviations are used.
- B. Abbreviations:
 - 1. AA Aluminum Association
 - 2. AAADM American Association of Automatic Door Manufacturers
 - 3. AAMA American Architectural Manufacturer's Association.
 - 4. AASHTO American Association of State Highway and Transportation Officials

5.	ACI	American Concrete Institute
6.	AEIC	Association of Edison Illuminating Companies
7.	AIA	American Institute of Architects
8.	AIEEE	American Institute of Electrical and Electronic Engineers
9.	AISC	American Institute of Steel Construction, Inc.
10.	AFI	Air Filter Institute
11.	AJCHN	American Joint Committee on Horticultural Nomenclature
12.	AMCA	Air Moving and Conditioning Association
13.	ANSI	American National Standards Institute
14.	APA	APA - The Engineered Wood Association
15.	ARI	American Refrigeration Institute
16.	ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc.
17.	ASLA	American Society of Landscape Architects
18.	ASME	American Society of Mechanical Engineers
19.	ASSE	American Society of Sanitary Engineering
20.	ASTM	American Society for Testing and Materials
21.	AWMAC	Architectural Woodwork Manufacturers Association of Canada
22.	AWPA	American Wood Protection Association
23.	AWI	Architectural Woodwork Institute
24.	AWS	American Welding Society, Inc.
25.	AWWA	American Water Works Association
26.	BHMA	Builder's Hardware Manufacturers Association
27.	CBC	California Building Code
28.	CRA	California Redwood Association
29.	CSI	Construction Specifications Institute
30.	CLFMI	Chain Link Fence Manufacturers Institute
31.	CRSI	Concrete Reinforcing Steel Institute
32.	CS	Commercial Standard of National Bureau of Standards, U.S. Department of Commerce
33.	DHI	Door and Hardware Institute
34.	FGMA	Flat Glass Marketing Association
35.	FM	Factory Mutual
36.	FS	Federal Specification of General Services Administration
37.	GA	Gypsum Association
38.	ICC-ES	International Code Council Evaluation Service, Inc.
39.	MIL	Military Specification of U.S. Department of Defense
40.	NAAMM	National Association of Architectural Metal Manufacturers
41.	NAAWS	North American Architectural Woodwork Standards
42.	NAFM	National Association of Fan Manufacturers
43.	NBS	National Bureau of Standards
44.	NEC	National Electric Code
45.	NEMA	National Electrical Manufacturers' Association
46.	NFC	National Fire Code
47.	NFPA	National Fire Protection Association
48.	NIST	National Institute of Standards and Technology
49.	NLMA	National Lumber Manufacturers Association
50.	NSF	National Sanitation Foundations
51.	PCI	Precast Concrete Institute
52.	PDI	Plumbing and Drainage Institute
53.	RIS	Redwood Inspection Service [Grading Rules]
54.	SDI	Steel Deck Institute
55.	SDI	Steel Door Institute
56.	SFPA	Southern Forest Products Association
57.	SMACNA	Sheet Metal and Air Conditioning Contractors' National Association, Inc.
58.	State of California:	
	a.	Caltrans Business and Transportation Agency, Department of Transportation
	b.	SFM Office of State Fire Marshal

c.	DSA	Division of State Architect.
59.	SSPC	SSPC: The Society for Protective Coatings
60.	TCNA	Tile Council of North America
61.	UL	Underwriters' Laboratories, Inc.
62.	WCLIB	West Coast Lumber Inspection Bureau
63.	WDMA	Window and Door Manufacturers Association
64.	WI	Woodwork Institute
65.	WMMP	Wood Moulding & Millwork Producers Association
66.	WRCLA	Western Red Cedar Lumber Association
67.	WWPA	Western Wood Products Association.

1.04 DEFINITIONS

- A. Reference to Drawings: Where the words "shown", "indicated", "detailed", "noted", "scheduled". or words of similar import are used, it shall be understood that reference is made to the Drawings accompanying these Specifications, unless otherwise noted.
- B. Addendum: The word "Addendum" shall mean written and/or graphic modifications to the Contract documents provided to holders of the Contract Documents prior to the opening of bids. Addenda shall be issued by the Owners Representative.
- C. Alternates: The word "Alternates" shall be understood to mean alternate products, materials, equipment, systems, methods, units of work or elements of the construction, which may, at the Owners option and under the terms established by the Contract Documents, be added to, or deleted from the work.
- D. Approvals: The words "approved", "approval", "acceptable", "acceptance", shall mean acceptance by the Owners Representative is required.
- E. Contract Change Order: The words "Contract Change Order" shall mean a change order authorization to the Contractor, covering changes to the Contract found by the Owner Representative to be necessary for the proper completion or construction for the whole work required by the Contract, and establishing the basis of payment and/or time adjustments for the work affected by the changes, also sometimes referred to as a "Change Order."
- F. Contract Documents: The words "Contract Documents" shall mean the documents contained in the Agreement described in A2, Section 2.2 and A9 "Form of Contract" elsewhere in these specifications, Change Orders, and other modifications issued by the Owners Representative prior to and after execution of the Contract and identified as a Contract Document. The words "Contract Documents" shall mean those documents as defined in the General Conditions.
- G. Directions: The words "directed," "designated," and "selected" shall mean the directions, designations, selection, of the Owners Representative, unless otherwise noted.
- H. Drawings: The word "Drawings" shall mean the official Project bid or construction plans signed by City staff or authorized City representative, plan details, profiles, typical cross sections, working drawings, shop drawings, supplemental drawings, and/or reproductions thereof, accepted or issued by the Owners Representative, which show the locations, character, dimensions, and details of work to be performed. All such documents are to be considered as a part of the Drawings.
- I. Equals: The words "or equal," "equal to," "approved equal," "or approved equal," "accepted equal," and "equivalent," shall mean "equal to or acceptable in the opinion of the Owners Representative," unless stated otherwise.
- J. Language: Words and phrases requiring an action or performance, such as "perform," "provide," "install," "furnish," "connect," "test," "coordinate," and words and phrases of similar import, shall be understood to be preceded by the phrase "The Contractor shall" unless otherwise stated.

- K. Modifications: The word "modifications" shall mean a written amendment to the Contract signed by both parties to the Construction Contract, a Change Order, a written interpretation issued by the Owners Representative or a written order for a minor change in the work issued by the Owners Representative.
- L. Notice To Proceed: The words "Notice to Proceed" shall mean the written notice issued by the Owners Representative to the contractor fixing the date on which or within which dates the contractor shall start to perform the contractor's obligations under the Contract Documents.
- M. Perform: The word "perform" shall mean that the contractor, at their expense, shall perform all operations including necessary labor, tools, and equipment and further including the furnishing and installation of materials that are indicated, specified, and required to complete such the conditions of the Contract and Contract Documents.
- N. Project: The word "project" shall mean the total construction of the work performed under the Contract Documents.
- O. Provide: The word "provide" shall mean that the Contractor, at its expense, shall furnish and install the work, complete in place and ready for use, including furnishing of necessary labor, materials, tools, equipment and transportation.
- P. Required: The word "required" shall mean "as required to properly complete the work and as required and acceptable to the Owner's Representative" unless otherwise noted.
- Q. Shop Drawings: The words "shop drawings" shall mean drawings, diagrams, schedules, and other data specifically prepared for the work by the contractor or their sub-contractor, manufacturer, supplier, or distributor to illustrate some portion of the work.
- R. Site: The words "Site" or "Sites" shall be understood to mean the property or properties described within the Contract Documents and indicated on the Drawings where the work shall commence.
- S. Substantial Completion: The words "substantial completion" shall mean the time and date when the work, or designated portion thereof, is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the work, or designated portion thereof, for the use for which it was intended, as evidenced by the Owner's Certificate of Substantial Completion. The Certificate of Substantial Completion shall set forth the date on which Substantial Completion is deemed by the Owners Representative in its sole discretion to have occurred. This shall occur only when the site improvements are 100 percent complete and shall exclude correction of final punch list items(s) and the execution of the Landscape Maintenance Period. The issuance of a Certificate of Substantial Completion shall signify the date on which the accounting of Contract "Working Days" or "Calendar Days" is terminated insofar as they may relate to Liquidated Damages.
- T. Work: The word "work" whether capitalized or in lower case, shall be understood to mean labor, materials, or both, and the entire construction encompassed by the Contract Documents.

END OF SECTION

SECTION 01 45 00

QUALITY CONTROL

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Testing and inspection requirements.
 - 2. Testing Agency qualifications.
 - 3. Manufacturer's field services.
- B. Related Requirements:
 - 1. Inspections and Testing Required by Laws, Ordinances, Rules, Regulations, Orders, or Approvals of Public Authorities: Conditions of the Contract.
 - 2. Additional requirements for inspections and testing are included in the General Conditions.

1.02 TESTING LABORATORY SERVICES

- A. General:
 - 1. Requirements for testing are included in governing codes and described in various Sections of the Specifications.
 - 2. The Owner will employ and pay for the services of an Independent Testing Agency to perform testing and inspection requirements required by code and other tests and inspections when specified to be performed and paid for by the Owner. Employment by the Owner of the Testing Agency shall in no way relieve Contractor's obligations to perform the Work of the Contract.
 - 3. Tests required by the Specifications and not specified or required by Code to be performed and paid for by the Owner shall be performed by a testing laboratory employed and paid for by the City. Re-testing for compliance shall be paid by the Contractor.
 - 4. Where no testing requirements are described, but the Owner decides that testing is required, the Owner may require such testing be performed under current pertinent standards for testing. Payment for such testing will be by the Owner.
 - 5. Inspections, tests, and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with the Contract Documents.
- B. Qualification of Testing Agency:
 - 1. Meet "Recommended Requirements for Independent Laboratory Qualification," published by American Council of Independent Laboratories.
 - 2. Meet basic requirements of ASTM E329, "Use in the Evaluation of Testing and Inspection Agencies as Used in Construction."
 - 3. Authorized to operate in the State of California.
- C. Limitations of Authority of Testing Agency: Testing Agencies are not authorized to:
 - 1. Release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Approve or accept any portion of the Work.
 - 3. Perform any duties of the Contractor.
- D. Testing Agency Duties:
 - 1. Cooperate, together with Contractor, in notifications, information, scheduling, storage, and access as necessary to meet requirements for service without causing delays on Project.
 - 2. Perform specified inspections, sampling, and testing of materials and methods of construction.
 - 3. Comply with specified standards.
 - 4. Ascertain compliance of materials with requirements of Contract Documents.

5. Notify Owner's Representative and Contractor when test or inspection reveals undesirable conditions, nonconformance, or failure to meet requirements.
6. Promptly submit written report of each test and inspection, with copies to Owner's Representative, Contractor, and governing agencies as required.
 - a. Include all samples taken and tests made, regardless of results.
 - b. Include reports to show specified requirements, and state whether or not test results comply with requirements.
7. Perform additional tests as required by the Owner's Representative.

1.03 CONTRACTOR'S RESPONSIBILITIES

- A. It is the Contractor's responsibility to coordinate with the City Representative for the services of all testing and inspection required by the Specification Sections whether or not to be performed by the Owner's or Contractor's Testing Agency.
- B. Contractor shall furnish promptly, without additional charge, all reasonable facilities; labor and materials necessary for safe, thorough, and convenient inspection; and tests that may be required by the Contract Documents.
- C. Prepare and submit to Owner's Representative a schedule of tests required of the Testing Agencies at least 15 working days in advance of first test. In addition, Contractor shall give minimum 48 hours' notice to the Testing Agency prior to required tests and inspections.
- D. Furnish, prepare, and deliver test samples and specimens as required by the Testing Agency except where such preparation and handling are to be performed by Testing Agency. Contractor shall be solely responsible for delays due to such samples' not being submitted and resubmitted, if necessary, in the time required for tests or inspections before material is incorporated into the Work.
- E. Cooperate with Testing Agency personnel in providing access to materials being tested or inspected.
- F. Make necessary repairs to in-place work caused by removal of required test samples.
- G. Materials furnished and installed on the Project shall be equal to approved test samples in every respect.
- H. Samples which are of value after testing will remain the property of the Contractor, but no such samples shall be incorporated in the Work without written approval of the Owner's Representative.
- I. Costs associated with testing, inspections, and observations due to the following shall be the responsibility of the Contractor:
 1. Re-testing due to failure of initial samples.
 2. Unacceptable changes in sources, lots, or suppliers of materials after original testing established compliance.
 3. Changes in methods or materials of construction by contractor that require testing, inspection, or other related services in excess of those required by original design.
 4. Failure to properly notify the Owner's Representative at critical stages of construction.
 5. Requesting testing, inspection, and/or observation of work not ready.

1.04 QUALITY ASSURANCE

- A. Materials furnished and work performed under the Contract shall be subject to review by the Owner's Representative. The Contractor shall be held strictly to the requirements of the Contract Documents regarding quality of materials, workmanship, and diligent execution of the Contract. Review by the Owner's Representative may include mill, plant, shop, or field review as deemed necessary.

- B. Work performed in the absence of any prescribed inspection or observation may be subject to removal and replacement. In such a case, the entire cost of removal and replacement shall be borne by the Contractor, regardless of whether the work removed is found to be defective or not.

1.05 CONFLICTING REQUIREMENTS

- A. If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Owner's Representative for a decision before proceeding.
- B. The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Owner's Representative for a decision before proceeding.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 EXAMINATION OF CONDITIONS

- A. Prior to installing any portion of the work, the Contractor shall examine the site and verify that site conditions are acceptable to begin work of each section.
- B. Verify that work specified elsewhere has been completed to an appropriate stage to begin work of each section.
- C. Materials or products requiring installation under the supervision or inspection of a specific materials manufacturer or manufacturer's representative shall be examined and/or tested, and accepted in writing, by such representative(s) prior to installation of work.
- D. Notify the Owner's Representative immediately in writing of any irregularities or unacceptable conditions and re-direct work to avoid delay.
- E. Start of work by Contractor shall indicate Contractor's acceptance of site conditions.

3.02 TOLERANCES

- A. Tolerances not specifically identified shall meet the written standards and/or recognized commercial tolerances established for the specific materials or product. Refer to Section 01 42 00 - References.

3.03 REQUIRED TESTS AND INSPECTIONS

- A. "Special Inspections" as required by the CBC and City of Marina permit requirements.
- B. Additional Tests and Inspections: See the various technical Sections of the Specifications.

3.04 FAILURE TO PASS TESTS

- A. Failure of any material or article to pass specified tests will be sufficient cause for refusal to consider any further samples of the same brand or make of that material or article.

- B. Where an individual material is to be part of an assembly with other materials for incorporation in the Work, failure of the material to pass specified tests or to conform to indicated standards will be sufficient cause for its rejection and removal and replacement, regardless of whether tests or inspections have been made or not in an assembled or in an unassembled condition.
- C. When tests indicate non-compliance, the Contractor shall pay all direct and indirect costs of subsequent re-testing until compliance is established.

3.05 MANUFACTURER'S FIELD SERVICES

- A. When specified in respective Specification Sections, Contractor shall require supplier or manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, testing, adjusting and balancing of equipment as applicable, and to make appropriate recommendations. Contractor is responsible for proper notification of manufacturer's representative before installation of applicable work and for obtaining necessary inspection certificate stating that installation was observed and approved.
- B. Product Performance Verification: The supplier of products specified based on performance criteria shall, at the request of the Agency, inspect the installed product and certify conformance of the product to specified criteria under the installed conditions.
- C. Manufacturer's representative shall submit written report to the Owner's Representative listing observations and recommendations.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Temporary facilities and controls needed for the Work during construction including, but not necessarily limited to:
 - 1. Temporary utilities.
 - 2. Sanitary facilities.
 - 3. Enclosures such as coverings, barricades, and fences.
 - 4. Site security.
- B. Related Requirements:
 - 1. Equipment normally furnished by individual trades in execution of their portions of the Work shall comply with requirements of pertinent safety regulations.
 - 2. Permanent installation and hookup of utility lines are included under other Sections.

1.02 SELECTED REFERENCE AND REGULATORY REQUIREMENTS

- A. National Fire Protection Association (NFPA):
 - 1. 10 - Portable Fire Extinguishers.
 - 2. 241 - Safeguarding Building Construction and Demolition Operations.
- B. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."

1.03 GENERAL

- A. Furnish, install, and pay for meters, equipment, wiring, and piping necessary to provide such utilities.
- B. Additional requirements for construction facilities and temporary controls are included in the General Conditions.
- C. Provide written notification to the Owner to request use of new building equipment for temporary facilities. New building equipment shall not be used for temporary facilities without prior written approval from Owner.

1.04 REQUIREMENTS FOR REGULATORY AGENCIES

- A. Comply with applicable standards referenced in Section 01 42 00 - References, Abbreviations, and Definitions.
- B. All facilities shall be provided and maintained by the contractor in accordance with Cal-OSHA and applicable laws and ordinances.
- C. Contractor shall:
 - 1. Take suitable steps to ensure that public utilities encountered in connection with the Work will not be damaged.
 - 2. Send notices, make necessary arrangements, and provide services required for the care of gas mains, water pipes, sewer pipes, conduits, cables, and other equipment or property.

3. Arrange with utility companies for fees required to move or remove their meters, poles, cables, guy wires, or equipment in or set under the property which will interfere with the construction work or which will not be required in the new construction.

PART 2 - TEMPORARY FACILITIES AND CONTROLS

2.01 MATERIALS

- A. General: Materials may be new or used but shall be adequate in capacity for the required usage, shall not create unsafe conditions, and shall not violate requirements of applicable codes and standards.
- B. Tools, extension cords, and electrical equipment shall conform to Underwriters' Laboratory standards and OSHA requirements and shall be in proper working order to preclude hazard to occupants and premises.

2.02 UTILITY SERVICES

- A. Power and Lighting: Furnish, install, and maintain temporary wiring, poles, meter board, service entrance switch, lamps, and equipment as necessary to provide temporary lighting and power for the construction site.
 1. Pay all costs for temporary electrical systems required for construction.
 2. Source of power shall be at location on site acceptable to the Owner's representative. Required temporary transmission lines shall be arranged by contractor in conjunction with the appropriate utility company.
- B. Water:
 1. Water shall be provided by the Contractor by water truck or coordinate with MCWD to connect to a fire hydrant
 2. Install temporary piping and valves downstream from permanent (new) meter locations as acceptable to the Owner's representative. No temporary water services shall be installed prior to meter installation without prior Owner review and acceptance.
 3. Temporary water facilities shall be installed with an acceptable reduced pressure backflow prevention unit furnished and installed by the contractor.
 4. Locate temporary sources of water route, and construct pipelines so that they do not create a hazard or interfere with public access, traffic, or construction operations.
 5. Design and construct such pipelines.
- C. Utility Costs for Contractors: Distribution of temporary utility services to sub-contractors shall be Contractor's responsibility and cost.

2.03 CONTRACTOR'S FIELD OFFICE

- A. The Contractor shall provide and maintain the following minimum facilities and equipment in the field office:
 1. Door top type jobsite desk or equivalent horizontal desk surface for drawings.
 2. Adequate storage facilities.
 3. A laptop or other portable device for internet access and to transmit and receive information to and from the Architect.
 4. Digital camera, with downloading interface, for purposes of communicating field conditions.
 5. Additional facilities and equipment as required by the Architect.

2.04 TEMPORARY TELEPHONE AND INTERNET SERVICE

- A. Contractor shall arrange, provide, and pay for the following temporary service at the site.

1. A cell phone line and phone for the Contractor's Superintendent.
2. Internet access for laptop or another acceptable internet access device.

2.05 TEMPORARY SANITARY FACILITIES

- A. Provide, pay for, install, and maintain, for duration of the Work, necessary enclosed toilet and sanitary facilities for construction personnel.
 1. Sanitary facilities shall be provided, maintained with supplies as required for the number of construction personnel in compliance to local regulations.
 2. Locate such facilities a reasonable distance from all working areas.
- B. New or existing restroom facilities, if available, shall not be used by construction personnel except with written permission from the Owner.

2.06 FIRST AID

- A. Provide and maintain first aid supplies as required Cal-OSHA and applicable local ordinances.
- B. Make arrangements with local emergency center and nearest hospital to receive personnel requiring medical attention, including emergencies. Information for emergency center shall be conspicuously displayed at the construction office when an office is required on the Project.

2.07 STORAGE ENCLOSURES

- A. Provide sheds and enclosures necessary for storing applicable materials and equipment.
- B. Enclosures shall be conveniently located, substantially and neatly constructed, and weather tight.
- C. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible.
- D. For exterior storage of fabricated products, place on sloped supports, above ground.
- E. Provide off-site storage and protection when site does not permit on-site storage or protection.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of product.
- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent contamination by foreign matter.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.
- J. Hazardous or Flammable Materials:
 1. Use and store hazardous or flammable chemicals, liquids, or gases brought into the Project site in approved containers, conforming to local, state, and national fire codes.
 2. Use hazardous materials in a manner that will prevent their accidental release into other areas.
 3. Do not discard hazardous materials into the jobsite waste-disposal facilities.
 4. Remove empty containers from the premises immediately and disposed of in a legal manner.

2.08 STAGING AND HOISTS

- A. Furnish and maintain hoists, staging, rigging, and runways required in the execution of the Work.
- B. Erect, equip, and maintain temporary work in accordance with the statutes, laws, ordinances, rules, or regulations of the state or other authorities and state-approved insurance companies having jurisdiction.

2.09 SAFETY AND PROTECTION

- A. General:
 - 1. Follow construction procedures necessary to provide a safe working condition through all phases of the Project. Procedures shall conform to the Safety Orders, Division of Industrial Safety, Title 8, California Code of Regulations.
 - 2. Conform to applicable requirements of the State Occupational Safety and Health Administration.
 - 3. The Owner, Owner's Representative, and field inspectors are not hired to review or approve safety procedures followed by the Contractor.
- B. Contractor is solely responsible for outlining safety procedures to be followed by its workers, subcontractors, and related trades working on its Project. Provide for safety of the public both day and night where they are exposed to construction operations.
- C. Contractor shall also take whatever care is necessary to avoid damage to existing facilities or utilities to remain, whether on the Project or adjacent to it, and shall be liable for any damage thereto or interruption of service as a result of its operations.
- D. Provide fences, barricades, railings, warning lights, lights and other protection required by law, Contract Documents, and common sense to ensure public safety.
- E. Give adequate warning to the public at all times whenever a dangerous condition exists as the result of construction work. Furnish Owner's Representative with name, address, pager number and local telephone number of the superintendent responsible and at least one other person for the maintenance of barriers, signs, lights, and other accident prevention devices for evenings and weekends.
- F. Protection of Work and Facilities:
 - 1. Protect adjacent property, roads, streets, curbs, planting areas, erosion control materials and other improvements during construction operations. All damaged materials shall be replaced and/or repaired at the expense of the contractor and to the satisfaction of the Owner's Representative.
 - 2. Protect installed work and provide special protection where applicable.
 - 3. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
 - 4. New turf areas shall be fenced off during turf establishment and specified Landscape Maintenance Period subject to the discretion of the Owner's Representative.
 - 5. Contractor shall install temporary construction fencing per contract documents and place signage on the fence stating, "Construction Area – Keep Out" and "No Trespassing". Signs shall be located along fence every 75 feet.
- G. Vehicular Safety: Motorized and/or self-propelled construction equipment shall be equipped with a hub-cap type reverse signal alarm.

2.10 WATER CONTROL

- A. Furnish and maintain pumps or other devices that may be required by Contractor's work under this Contract.
- B. The Work shall be kept free of standing water during construction.

2.11 MAINTENANCE OF TRAFFIC, ACCESS, AND PARKING

- A. Throughout progress of work, do not interfere with use of or access to adjacent buildings or property.
- B. Construct, designate and maintain specific vehicular access as required for the orderly progress of the work.
 - 1. Engineer construction access roads and parking areas as necessary to provide suitable support during all weather conditions for anticipated loads, including municipal fire apparatus.
 - 2. Provide adequate surface drainage without interrupting natural flow of existing drainage.
- C. Parking:
 - 1. Provide temporary on-site parking to accommodate construction personnel and Owner's Representative to the greatest extent possible. Coordinate location with the Owner's Construction Coordinator.
 - 2. Contractor shall make arrangements for offsite parking, if required, with adjacent public parking facilities to accommodate vehicles of construction personnel. Cost of parking is the responsibility of the Contractor and/or its subcontractor.
- D. Restore temporary vehicular access and parking areas to original or specified conditions prior to Project Final Acceptance.
- E. Move and relocate traffic signs and signals, controls, power and light poles, and similar utility and public service items obstructed by Project barricades and operations.
- F. Maintain accessibility from street at all times to fire hydrants within construction area.
- G. Construction traffic shall be routed, whenever possible, to avoid noise impacts on the surrounding neighborhood.
- H. Construction period for trucks hauling fill and piling materials shall be restricted to nonpeak hours to minimize impact to rush hour traffic and to avoid noise impacts on the surrounding existing residential areas.
- I. Vehicles (wheels in particular) shall be cleaned before leaving site so as to minimize impact on City streets.
- J. Clean and sweep all streets muddied or littered from construction activity to the satisfaction of the City.

2.12 HAUL ROUTES

- A. Comply with any and all local governing ordinances and guidelines.

2.13 FIRE PROTECTION

- A. Take precautions to prevent and eliminate fire hazards. The Contractor shall be responsible for providing, maintaining, and enforcing any necessary or required fire prevention safeguards until project final acceptance.
- B. Provide fire extinguishers on the premises during the course of construction of the type and sizes recommended by the NFPA 10 and NFPA 241 to control fires resulting from the particular work being performed. Instruct employees in their use. Place extinguishers in the immediate vicinity of the work being performed, ready for use.
- C. Fire Inspection: The Contractor's Superintendent shall inspect the entire project as necessary to make certain the required precautions are being maintained.

- D. Combustible and/or flammable Building Materials: Only an appropriate working supply of flammable fuel or building materials shall be located inside storage facilities.
- E. During the use of hazardous equipment, such as acetylene torches, welding equipment, bitumen kettles, and similar devices, no work shall start or equipment used unless fire extinguishers of specified type and capacity are placed in the working area and available for use by workmen using such hazardous equipment. Extinguishers shall meet standards established by Underwriter's Laboratory and shall be inspected at regular intervals and recharged by the contractor, as necessary.
- F. Combustible and/or flammable Waste Materials. Oil-soaked rags, papers, and other highly combustible materials must be stored in closed metal containers with tightly-hinged lids at all times, and shall be removed from the site at the close of each day's work and more often when necessary.

2.14 TOOL AND ELECTRICAL EQUIPMENT

- A. Tools, extension cords, and electrical equipment shall conform to Underwriters' Laboratory standards and OSHA requirements and shall be in proper working order.

2.15 TEMPORARY SIGNS AND NOTICES

- A. Contractor shall post and maintain all signs and notices required by law or ordinance. No advertisements will be permitted on the premises without approval of the Owner.
- B. Project Sign:
 - 1. Contractor shall provide a project sign as directed by the Owner.
 - 2. Sign graphics shall include, as a minimum, the following:
 - a. Project name.
 - b. Owner's name.
 - c. Landscape Architect's name and address.
 - d. Contractor's name and address.
 - 3. Full-scale artwork for logos, if required, will be provided.
 - 4. Location of sign shall be as directed by the Owner.

2.16 TRASH REMOVAL

- A. Store trash or rubbish resulting from construction within the Contract work area.
- B. Provide the necessary on-site containers for the collection of recycling materials, waste materials, and debris.
- C. Remove waste materials and debris from the site periodically and dispose of at recycling centers or legal disposal sites in accordance with governing construction and demolition debris regulations.
- D. Keep the work area clean at all times. Increase frequency of trash removal, when requested by the Owner, to conform to this requirement.
- E. Waste material and debris shall not be buried at the site.
- F. Burning of trash and debris on the site will not be permitted.

2.17 SECURITY

- A. All site security shall be the responsibility of the Contractor at its expense and no additional cost to Owner.

- B. Employment of security personnel for non-construction hours shall be left to the discretion of the Contractor, who shall be fully responsible for any theft or damage to any material, equipment or to portion of the work until Project Final Acceptance.
- C. Security provisions shall be provided 24 hours a day, 7 days a week, including holidays, until acceptance of the Project by Owner.
- D. If security personnel are used, provide Owner's Representative with the name and pager number or 24-hour telephone number of a contact person who shall have primary responsibility for security.

2.18 DUST CONTROL

- A. Blowing dust shall be reduced by timing construction activities so that paving begins as soon as possible after completion of grading and by landscaping disturbed soils as soon as possible.
- B. All portions of the site shall be watered as many times a day as required to ensure proper dust control seven (7) days a week for the duration of the Project.
 - 1. Sprinkle unpaved construction areas with water at least twice per day or as necessary to eliminate dust.
 - 2. Cover stockpiles of soil, sand, and other similar materials.
 - 3. Cover trucks hauling debris, soil, sand, and other similar materials.
- C. The Contractor shall obtain reclaimed water from the City, if available, for compliance with the above requirements.
- D. The Contractor shall maintain and operate construction equipment so as to minimize exhaust emissions of PM10 and other pollutants by means of the following:
 - 1. Prohibition on idling of motors of equipment that is not in use and by waiting trucks.
 - 2. Implementation of specific maintenance programs to reduce emissions for equipment in frequent use during construction.

PART 3 - EXECUTION

3.01 SYSTEMS

- A. Maintain and operate systems to assure continuous service.
- B. Modify and extend systems as work progress requires.

3.02 STORM WATER POLLUTION PREVENTION

- A. Contractor shall be required to adhere to the project's Storm Water Pollution Prevention Plan (SWPPP) prepared and approved for this Project.

3.03 MAINTENANCE AND REMOVAL

- A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the work.
- B. Completely remove temporary materials and equipment when their use is no longer required.
- C. Clean and repair damage caused by temporary installations or use of temporary facilities.

- D. After removal of temporary facilities, restore existing facilities used for temporary services back to an "as was" or better condition subject to the discretion of the Owner's Representative.
- E. Full compensation for cleanup shall be included in other items of work. No separate compensation will be allowed for work pertaining to cleanup or disposal of material.

END OF SECTION

SECTION 01 57 23

STORMWATER POLLUTION PREVENTION

PART 1 - GENERAL

1.01 SUMMARY

- A. Construction shall adhere with the requirements of the California State Water Resource Control Board, General Permit for Storm Water Discharges Associated with Industrial Activities (General Permit). Project construction is covered under the General Permit WDID#: _____.
- B. The project Stormwater Pollution Prevention Plan (SWPPP) applies to operations within the limits of work and adjacent points of discharge that may be outside the limits of work. The SWPPP describes the proposed facilities, identifies potential sources of pollution and recommends appropriate Best Management Practices (BMPs) to reduce the discharge of pollutants. The contractor shall be strictly held to the requirements of the General Permit and shall provide the services of Qualified Stormwater Practitioner (QSP) as the agent to the District, who is the Legally Responsible Person (LRP).
- C. Scope of work:
 - Provide such work to satisfy the requirements of the General Permit including but not limited to:
 - 1. Qualified Stormwater Practitioner (QSP) services.
 - 2. Install, adjust and maintain all necessary; BMPs, non-stormwater pollutants, safe storage, hazardous material controls and construction activities to protect discharge with best available technology.
 - 3. Monitoring, testing and action plans as required by the project SWPPP Document.
 - 4. Amend the SWPPP whenever there is a change in construction or operations that will affect the discharge of pollutants, or change in schedule delaying completion of grading activities beyond completion date identified in the project SWPPP.
 - 5. All necessary data entry submit documentation to the Storm Water Multiple Application and Report Tracking System (SMARTS) during construction and closeout.
- D. Related sections can include, but may not be limited to the following:
 - 1. Section 01 50 00 - Construction Facilities and Temporary Controls
 - 2. Section 02 41 00 - Site Clearing and Demolition
 - 3. Section 31 20 00 - Earthwork
 - 4. Section 33 40 00 - Storm Drainage

1.02 REFERENCES AND REGULATORY REQUIREMENTS

- A. California State Board of Water Resources Construction General Permit Order 2022-0057-DWQ
- A. SWPPP Document WDID#_____

- B. California Stormwater Quality Association (CASQA) Industrial and Commercial BMP Handbook.

1.03 MONITORING AND TESTING:

- A. Monitoring, testing, and action plans documentation required by the project SWPPP Document, and/or as required by the General Permit.

PART 2 - PRODUCTS – NOT APPLICABLE

PART 3 - EXECUTION

3.01 PREPARATION, MONITORING AND DOCUMENTATION

- A. Prior to installing any portion of the work, the contractor shall examine the site and verify that site conditions are acceptable to begin work.
- B. Prior to grading and demolition operations, the contractor shall install and manage all necessary BMPs with best available technology, making all necessary adjustments for the duration of construction.
- C. Contractor shall be responsible for all necessary, modifications and additions to the BMPs and site conditions to meet the requirements of the General Permit at no additional cost to the District.
- D. Regardless of construction schedule or weather conditions, it shall be the contractor's responsibility to; provide all necessary measures, adjust BMPs, protect discharge from pollutants and take necessary actions should numeric action levels be triggered, at no additional cost to the District.
- E. Contractor shall provide QSP to conduct all monitoring and testing and prepare action plans as required by the project SWPPP.
- F. The contractor shall amend the SWPPP and prepare the COI whenever there is a change in construction or operations that will affect the discharge of pollutants or change in schedule that will delay completion of grading activities beyond completion date identified in the project SWPPP.
- G. Contractor shall prepare, track and submit all necessary documentation to SMARTS during construction and closeout. This shall include filing all required Ad Hoc reports, Annual Reports, and the Notice of Termination on the SMARTS site. Contractor shall submit a copy of Notice of Termination to the City for close out submittal.

END OF SECTION

SECTION 01 71 23

FIELD ENGINEERING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Field engineering services for proper completion of the Work including, but not necessarily limited to:
 - 1. Establishing and maintaining lines and levels.
 - 2. Structural design of shoring, forms, and similar items provided by the Contractor as part of its means and methods of construction.
 - 3. Excavations and elevations, footings and piers required for installation of work items.
 - 4. Establishing horizontal and vertical control for site construction items.
- B. Related Requirements:
 - 1. Section 01 78 29 - Conformance Survey

1.02 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Informational submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.

1.03 INFORMATIONAL SUBMITTALS

- A. Name and address of surveyor or professional engineer to the Owner's Representative.
- B. Upon request of the Owner's Representative, submit:
 - 1. Data demonstrating qualifications of persons proposed to be engaged for field engineering services.
 - 2. Documentation verifying accuracy of field engineering work.
 - 3. Certification, signed by the Contractor's retained field engineer, certifying that elevations and locations of improvements are in conformance or nonconformance with requirements of the Contract Documents.

1.04 QUALITY ASSURANCE

- A. Contractor shall employ or under supervision of a California Registered Civil Engineer or Licensed Land Surveyor, hereafter referred to as Surveyor, to lay out the entire work and set grades, lines, levels, and positions throughout the site.

1.05 SURVEY REFERENCE POINTS

- A. Existing horizontal and vertical control points for the Project are those designated on the Drawings Owner's original survey. Locate and protect these control points prior to starting site work and preserve permanent reference points during construction.
- B. Do not change or relocate reference points or items of the work without specific review and acceptance by the Owner's Representative.
- C. Promptly advise the Owner's Representative when a reference point is lost, destroyed, or requires relocation because of other changes in the work. Upon direction of the Owner's Representative, replace reference stakes or markers according to the original or appropriate survey control.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 LAYING OUT THE WORK

- A. Prior to beginning work, locate or set all general reference points, benchmarks, establish monuments and take action as necessary to prevent their destruction, then layout all lines, elevations, and measurements for entire work.
- B. Verify figures and dimensions shown on the Drawings and son surveys furnished by the Owner before starting work. Notify the Owner's Representative immediately of any discrepancies and re-direct work to avoid delay.
 - 1. Contractor shall accept responsibility for errors resulting from failure to notify Owner's Representative of known discrepancies.
 - 2. Offsets will be as agreed upon, in writing, by the Contractor and the Owner's Representative.
- C. Establish monuments on curbs, manholes or pavements with concrete embedded steel pipe with lead plug and/or brass nail with washer, as acceptable to the Owner's Representative.
- D. Verify layout from time to time as work progresses.

3.02 RECORDS

- A. Maintain a complete and accurate log of all control and survey Work as it progresses in accordance with the requirements of Section 01 78 39 - Project Record Documents. Show exact locations of the monuments if any are disrupted or destroyed.

END OF SECTION

SECTION 01 77 00
CONTRACT CLOSE-OUT

PART 1 - GENERAL

1.01 SUMMARY

- A. Scope of work: This section specifies administrative and procedural requirements for project close-out, that may include but are not necessarily limited to:
 - 1. Inspection and/or observation procedures
 - 2. Project record document submittal
 - 3. Operating and maintenance manual submittal
 - 4. Warranty submittal
 - 5. Final cleaning
- B. Related sections can include, but may not be limited to the following:
 - 1. All pertinent Sections of the Specifications

1.02 SUBSTANTIAL COMPLETION

- A. Refer to the General Provisions as applicable, and section 01 42 00 for procedures required to establish Substantial Completion.
 - 1. Final, regular Certificate for Payment (progress payment) shall be issued when all pertinent requirements of the achieving Substantial Completion are met. Final retention payment shall be made after project Final Acceptance and conclusion of any specified Landscape Maintenance Periods subject to the discretion of the Owner's representative.
- B. inspection Procedures: Upon receipt of a request for inspection or observation, the Owner's representative shall either proceed or advise the Contractor of unfilled requirements. The Owner's representative shall prepare the Certificate of Substantial Completion following review or advise the contractor of what must be completed or corrected by "punch-list" before the Certificate is issued. Upon receipt of "punch-list", contractor shall complete all work described in a timely manner subject to the discretion of the Owner's Representative.
 - 1. The Owner's representative shall repeat inspection and/or observation when requested provided the contractor has made the request within the specified lead time and given written assurance that the "punch-list" work has been completed.
 - 2. Results of the completed inspection and/or observation shall help form the basis of requirements for Final Acceptance and if acceptable, may signal the beginning of the specified Landscape Maintenance Period.

1.03 UNCORRECTABLE WORK

- A. Should the Owner's representative determine it is not practical or possible for the contractor to correct work that is damaged or improperly executed, an equitable deduction from the Contract sum may be made at the sole discretion of the Owner's representative.

1.04 CLOSE-OUT SUBMITTALS

- A. Submit one and a digital copy of the following, where applicable, in accordance with applicable Contract Documents:
 - 1. Project record documents (as-constructed)

2. Operation and maintenance manuals
 3. Warranties, guaranties, and bonds
 4. Keys and keying schedule
 5. Spare parts and extra materials
 6. Other items required by the Specifications
 7. Binder of all manufactured items final submittal information that were installed or provided for the project.
 8. Copy of the Building Official acceptance.
- B. Specified number of copies of above close-out submittals shall be received and accepted by the Owner's representative before Final Acceptance shall be given.
- C. In addition to those items previously mentioned in this section, the contractor shall submit to the Owner's representative the following items before a Notice of Completion will be filed:
1. Up-to-date sub-contractor list with names, addresses and telephone numbers.
- D. Final Adjustment of Account:
1. Submit a final statement of accounting to the Owner's representative showing all adjustments to the Contract sum.

1.05 MAINTENANCE MANUALS

- A. Submit one and a digital copy of proposed manual(s) to the Owner's representative for review and acceptance. All maintenance manuals shall be received and accepted by the Owner's representative before Final Acceptance shall be given.
- B. Organize operating and maintenance data into properly indexed heavy duty 2-inch, 3-ring vinyl covered binders. Mark appropriate identification on front and spine of each binder. Manuals can include but are not limited to the following types of information:
1. Emergency instructions
 2. Spare parts list
 3. Copies of warranties or actual warranty cards
 4. Wiring diagrams
 5. Recommended "turn around" cycles
 6. Inspection procedures
 7. Shop drawings and product data
 8. Fixture lamping schedule
- C. Product submittal items (1.04-A-7) can be provided with warranty information binders.

1.06 DEMONSTRATION

- A. Prior to Final Acceptance, the contractor shall fully instruct Owner's representative's designated operating and maintenance personnel in the operation, adjustment and maintenance of all products, equipment, and systems installed.
1. Provide services of factory trained instructors from the manufacturers of each major item of equipment or system, if necessary or requested by the Owner's representative.
- B. Operation and maintenance manual(s) shall be fully described at this instruction meeting.
1. Review contents of manual(s) with personnel in full detail to explain all aspects of operations and maintenance such as:
 - a. Maintenance manuals
 - b. Record documents

- c. Spare parts and materials
 - d. Tools
 - e. Fuels
 - f. Identification systems
 - g. Control sequences
 - h. Hazards
 - i. Cleaning
 - j. Warranties and bonds
 - k. Maintenance agreements and similar continuing commitments.
2. As part of instruction for operating equipment, demonstrate the following procedures:
- a. Start-up
 - b. Shutdown
 - c. Emergency operations
 - d. Noise and vibration adjustment
 - e. Safety procedures
 - f. Economy and efficiency adjustments
 - g. Effective energy utilization

1.07 WARRANTY/GUARANTY FORMAT

- A. Provide written warranties, guaranties (except manufacturers' standard printed warranties and/or guaranties), addressed to the Owner's representative, in the format shown within the General Provisions. Manufacturers' standard printed warranties and/or guaranties shall be submitted as-is.
- B. Warranties and guaranties shall be submitted in duplicate, in the format shown within the General Provisions, signed by all pertinent parties and by the contractor in every case, with modifications as accepted by the Owner's representative to suit the conditions pertaining to the warranty or guaranty. Collect and assemble written warranties and guaranties into bound booklet form and deliver bound books to the Owner's representative for review.

1.08 REMOVAL OF TEMPORARY FACILITIES

- A. Prior to final inspection, the contractor shall remove tools, materials, sheds, temporary power poles, temporary tree protection, and other articles from the project site. Should the contractor fail to take prompt action, the Owner's representative may, given 30 days written notice, treat them as abandoned property.

1.09 FINAL SITE CLEANING

- A. Broom clean and power wash exterior paved surfaces and adjacent public streets. Utilize appropriate cleaning methods to remove spills, stains, tire tracks, etc. from all paved surfaces. Rake clean other surfaces of the site.
- B. Hose down and scrub walls and paving surfaces dirtied or stained as a result of the construction work, as directed by the Owner's representative.
- C. Remove from the site construction waste, unused materials, excess earth, and debris resulting from the work.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01 78 29

CONFORMANCE SURVEY

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Conformance surveying required for proper completion of the work including, but not necessarily limited to, the following:
 - 1. Pickleball and basketball court construction including curbing/edgebands.
 - 2. Other applicable Project components.
- B. Related Requirements:
 - 1. Section 01 33 00 – Submittal Procedures
 - 2. Section 01 71 23 – Field Engineering
 - 3. Section 01 78 39 – Project Record Drawings
 - 4. Section 31 20 00 – Earth Moving
 - 5. Section 32 11 00 – Base Courses
 - 6. Section 32 12 16 – Asphalt Paving
 - 7. Section 32 18 23 – Courts Surfacing
 - 8. Section 32 90 00 – Planting

1.02 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Action and Informational Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.

1.03 ACTION SUBMITTALS

- A. Conformance Survey: In addition to required prints, submit 1 electronic copy in AutoCAD or scaled PDF image of all conformance surveys for the Project. Review response by the Owner Representative shall identify any areas out of tolerance.

1.04 INFORMATIONAL SUBMITTALS

- A. Name and address of Contractor's licensed surveyor to the Owner's Representative.

1.05 QUALITY CONTROL AND REWORK

- A. Contractor shall retain a California Licensed Land Surveyor to obtain survey data and supervise preparation of the Conformance Surveys as specified.
- B. Portions of a survey that does not conform to the grading tolerance requirements identified in this Section will be corrected by the Contractor at its expense. Areas out of conformance shall be resurveyed at the Contractor's expense by its Surveyor. Revised points shall be added to the original digital file for resubmittal, review, and acceptance by the Owner Representative.
- C. Delays and costs incurred due to grades out of conformance are the sole responsibility of the Contractor. At any time during construction and following acceptance of a portion of the survey by the Owner, the Owner reserves the right to recheck the surface grades at its expense to verify it is still in conformance.

- D. It is the Contractor's responsibility to protect the grading and compaction tolerances of surveyed surfaces after Conformance Surveying operations are complete and accepted, and prior to installation of subsequent materials.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 LAYING OUT THE WORK

- A. Prior to beginning work, Contractor shall secure the electronic grading plan from the Owner for use by the Surveyor.
- B. The Contractor's Surveyor shall provide all conformance survey drawings. The drawings shall provide both the design elevations and the as-constructed spot elevations. These elevations shall be for comparison to those on the Contract Documents for the same location. Contractor shall also show the difference in these two numbers. Unique reference numbers shall be assigned to each point for reference purposes. For spacing requirements, refer to specific type of improvement identified in this Section.
- C. Accuracy of the Contractor's surveys provided under this Section shall be to 0.01 feet.
- D. The Contractor's Licensed Surveyor shall provide all conformance survey drawings and all 25-foot grid or other grid conformance grades based on the designed grades shown on the Drawings.

3.02 COURTS SURFACING CONFORMANCE SURVEYING REQUIREMENTS

- A. Prior to the pouring of the pickleball court perimeter curbing, Contractor shall be responsible for verifying the proper horizontal and vertical controls of all concrete formwork. This quality control process does not need to be completed by a licensed surveyor. However, the Contractor shall employ a Licensed Surveyor to determine finish surface grades of all edgebands and curbing upon completion of initial concrete curing process.
- B. A digital file of the curb elevations shall be provided on a minimum 20-foot spacing, including all corner points.
- C. Required Tolerance: No point along the curbing shall be greater than 1/4 inch (0.02 feet) outside the design grades and no spot shall deviate more than 1/2 inch (0.04 feet) from any other adjacent point within the 20-foot spaced curb survey.
- D. After curbing is confirmed to be within the specified tolerances, the Contractor shall pave the tennis court area with specified paving.
- E. Upon completion of the paving, Contractor shall survey the tennis court area utilizing the previously prepared survey data. The paving Conformance Survey shall be completed on a 20-foot longitudinal grid, with grades shot from baseline fence to baseline fence. Grades shall be measured so that no point within the 20-foot grid deviates more than 1/4 inch (0.02 feet) from any other point within the 20-foot grid.
- F. In addition to a Conformance Survey, the completed tennis courts shall undergo a flood test to assure there are no birdbaths and low points that may not be identified by the Conformance Survey. A bird bath is a puddle of water that has not evaporated after one hour in 70 degrees F or warmer temperature. If the bird bath has a water depth greater than 1/16 inch, which shall be verified by

using a nickel with the nickel being fully submerged in the birdbath, then corrective measures shall be taken by the Contractor prior to installation of the final court surface.

END OF SECTION

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

1.01 SUMMARY

- A. Section Includes: Requirements for preparing, maintaining, and submitting the Project Record documents.
- B. Related Requirements:
 - 1. Section 32 80 00 - Irrigation
 - 2. Section 33 40 00 - Storm Drainage Utilities

1.02 DOCUMENT MAINTENANCE

- A. Maintain one record copy of each of the following at the site for the Owner:
 - 1. Contract Drawings, Specifications, Addenda, Change Orders, RFIs and other modifications marked currently to record changes made during construction.
 - 2. Reviewed submittals.
 - 3. RFI log.
 - 4. Addenda log.
 - 5. Submittal log.
 - 6. Inspection reports and log.
- B. Documents shall be kept at the site and maintained in a clean, dry, legible condition.
- C. The Contractor shall advise the Owner's Representative of changes and deviations made during construction.
- D. Make documents available at all times for review by Owner's Representative.
- E. Comply with related requirements of the individual Specification Sections.
- F. Maintenance of Record Drawings shall be delegated to one person on Contractor's staff.

1.03 RECORDING

- A. Label each document "PROJECT RECORD."
- B. Do not permanently conceal any work until required information has been recorded.
- C. Drawings:
 - 1. Make day-to-day changes and notations on a specially designated complete "Job Set" of prints or digital files as the work proceeds.
 - 2. Markings and notations shall be neatly and accurately made, using nonfading, clear, permanent markings. Use contrasting colors for different disciplines of work and where required for clarity.
 - 3. Clearly identify deviations by drawing a "cloud" around affected area and make sufficient notations to describe the change.
 - 4. Convert schematic layouts to portray precise physical layout (including depths) of exposed and concealed work.
 - 5. Drawings shall be marked to indicate:
 - a. Measured depths of various elements of foundation in relation to survey or other approved datum.
 - b. Measured horizontal and vertical locations of underground utilities and appurtenances referenced to permanent surface improvements.

- c. Measured locations of utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.
 - d. Variations in layout of site improvements.
 - e. Field changes of dimensions and detail.
 - f. Changes made by Change Order or Construction Change Directive.
 - g. Significant details not shown on the original Contract Drawings.
 - 6. Contractor shall solely bear any cost of uncovering, recording and re-covering work not recorded on Job Set.
 - 7. Upon completion of the Work and unless otherwise mutually agreed between Owner and Contractor, all changes and notations shall be neatly and accurately transferred by the Contractor to a complete set of Drawings, as originally issued for construction, obtained from the Owner.
 - a. Where the Contract Drawings are not of sufficient size and detail, the Contractor shall furnish its own drawings for incorporation of details and dimensions.
 - b. Each sheet of record drawing shall be signed and certified by the Contractor as to their correctness and turned over to the Owner's Representative.
 - 8. Record Drawings are specifically required for the following work:
 - a. Electrical including exterior lighting and all other related work.
 - b. Water distribution.
 - c. Storm, sanitary, and site drainage.
 - d. Irrigation.
- D. Specifications:
- 1. On a complete and designated copy or digital file of the Project Manual, legibly mark each Specification Section to record:
 - a. Manufacturer, trade name, catalog number, color designation (if applicable), and supplier of each product and item of equipment actually installed.
 - b. Changes made by Addendum, Change Order, or Construction Change Directive.
 - c. Other matters not originally specified.
 - d. Where selection of manufacturers is offered, indicate which manufacturer's product was installed.
- E. Product Data: Maintain one copy or digital file of each product data submittal. Note related Change Orders and markup of Contract Drawings and Specifications.
- 1. Mark these documents to show significant variations in actual work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer's installation instructions and recommendations.
 - 2. Give particular attention to concealed products and portions of the Work that cannot be readily reviewed by direct observation.
- F. Samples: Immediately prior to Substantial Completion, meet with Owner's Representative and Owner's personnel at the Project site to determine which samples are to be transmitted to the Owner for record purposes. Comply with the Owner's instructions regarding delivery to the Owner's storage area.
- G. Miscellaneous Record Submittals: As specified in other Specification Sections.
- 1. Immediately prior to Substantial Completion, complete these miscellaneous records and place in good order.
 - 2. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Digital files are acceptable.
 - 3. Submit for the Owner's records as directed.

1.04 INTERIM REVIEW

- A. Project Record Documents are subject to review at time of review of payment request.
- B. If Record Documents are not properly maintained, Owner may withhold all or a portion of payment to Contractor.

1.05 SUBMITTALS

- A. At completion of work under the Contract, deliver Record Documents as directed.
- B. Partial submittals are not acceptable, unless specifically acceptable to Owner.
- C. Submit documents specified and required prior to claim for final Application and Certificate for Payment.
- D. Accompany submittal with transmittal letter, in duplicate, containing:
 - 1. Date.
 - 2. Title of Work.
 - 3. Contractor's name and address.
 - 4. Title of each Record Document.
 - 5. Certification that each document, as submitted, is complete and accurate.
 - 6. Signature for Contractor or its authorized representative.

END OF SECTION

SECTION 02 41 13

SITE CLEARING AND DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Site clearing and demolition work and related activities as shown on the Drawings and specified herein. The general extent of the site clearing and demolition work includes, but is not necessarily limited to, the following:
 - 1. Demolition, removal and disposal of designated items.
 - 2. Careful removal, protection and re-installation of designated items.
 - 3. Careful removal and salvage of designated items.
 - 4. Disconnection and capping of existing utility and irrigation lines.
 - 5. Incidental demolition of abandoned utility and irrigation lines.
 - 6. Spraying until dead, clearing, grubbing vegetated areas.
 - 7. Protection of existing plant material.
 - 8. Removal of designated trees and planting areas.
- B. Related Requirements:
 - 1. Section 31 20 00 - Earth Moving
 - 2. Section 32 01 90 - Existing Tree Protection and Maintenance

1.02 REFERENCES AND REGULATORY REQUIREMENTS

- A. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Action Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.

1.04 ACTION SUBMITTALS

- A. Product Data: Manufacturer's product information on herbicides to be used for approval prior to use.

1.05 INFORMATIONAL SUBMITTALS

- A. Schedule: Indicate the proposed timeline for site clearing and demolition work including shut off times and capping of utility services on the project schedule.

1.06 QUALITY ASSURANCE

- A. The Owner will obtain and pay for all permits required in connection with this work. Fees for the dumping of debris shall be paid for by the Contractor.

1.07 FIELD CONDITIONS

- A. Dust Control:
 - 1. The Contractor shall prevent the formation of airborne dust on and around the project site with the use of sprinkled water or other means acceptable to the Owner's Representative. Non-compliance

with proper dust control measures may be grounds for issuance of a "stop work" order by the Owner until satisfactory measures are implemented.

- B. Utility Services:
 - 1. Issue written notices of planned demolition operations to utility companies and coordinate site clearing and demolition improvements as requested by the utility companies.
 - 2. Existing power poles and lines serving existing occupied buildings shall remain. Arrange work in order to maintain utilities not designated for removal.
 - 3. Coordinate work in order to maintain utilities to temporary on-site facilities.

PART 2 - PRODUCTS

2.01 HERBICIDES

- A. Herbicides shall conform to Owner's approved chemicals list.
- B. Herbicide shall be non-selective broad-spectrum systemic herbicide for perennial vegetation and straight contact herbicide for annual vegetation in accordance with a licensed pest control advisor or herbicide manufacturers' recommendations.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Conform to applicable requirements of Section 01 45 00 - Quality Control.
- B. Carefully identify limits of demolition and site clearing.
- C. Mark project areas in coordination with the Owner's Representative and as necessary to clearly identify the interface of items to be removed and items remain.

3.02 PREPARATION

- A. Protection:
 - 1. Make provisions and take necessary precautions to protect all existing items not designated for removal. An existing item or area damaged during construction operations shall be replaced or repaired to an "as-was" or better condition at no additional cost to the Owner and subject to the acceptance of the Owner's Representative.
 - 2. Erect barriers, fences, guard rails, enclosures, chutes, and shoring as necessary to protect personnel, structures, and utilities to remain.
 - 3. Provide warning signs and lighting as necessary for vehicular and personnel protection. Maintain warning signs during construction as required by applicable safety ordinances and as reasonably prudent.
 - 4. Coordinate arrangements for items to be salvaged and turned over to the Owner.
 - 5. Notify Underground Service Alert (USA), (800) 640-5137, and local utility companies to verify locations of existing utilities a minimum of 48 hours prior to beginning work.
 - 6. Provide tree protection fencing prior to commencing demolition and site clearing work.
- B. Traffic Access:
 - 1. Ensure minimum interference with roads, streets, driveways, sidewalk and adjacent facilities.
 - 2. Do not close or obstruct streets, sidewalk, alleys or passageways without acceptance from the Owner's Representative or governing authorities as applicable.

3. Provide approved alternate routes around closed or obstructed traffic ways as required by the Owner's Representative.
4. Maintain access to adjacent existing buildings to ensure uninterrupted operations during demolition work.

3.03 DEMOLITION

- A. General: Refer to the Drawings for extent of demolition and site clearing work.
- B. Paving: Demolish paving in accordance with local noise ordinance regulations and as acceptable to the Owner's Representative.
- C. Filling:
 1. Completely fill below-grade areas and voids resulting from demolition work.
 2. Install appropriate, acceptable fill material consisting of soil, gravel, or sand, free of trash and debris, stones over 6-inch diameter, roots, or other organic matter. Meet fill and compaction requirements specified and recommended by the Owner's Geotechnical Engineer.
- D. If unanticipated mechanical, electrical or structural elements which conflict with intended function or design are encountered, investigate and measure both the nature and extent of the conflict. Submit report to Owner's Representative in written, accurate detail. Pending receipt of response from Owner's Representative, rearrange selective demolition and site clearing schedule as necessary to continue overall job progress without delay.

3.04 CLEARING AND GRUBBING

- A. Irrigation heads, valves, and controllers shall be salvaged and provided to Owner.
- B. Clear/strip vegetative material from soil surface and remove unless noted otherwise. Existing turf areas to be removed need to be stripped to remove organic soil from areas to be paved. Areas to be planted do not require topsoil to be removed.
- C. Contractor is responsible for stockpiling and protecting all topsoil needed for landscaping improvements. Refer to respective earthwork and landscape Specifications.
- D. Utilities and Related Equipment:
 1. The locations of existing utilities, as may be shown on the Drawings, are approximate. Should existing utilities not shown on the Drawings be encountered during construction operations, notify the Owner's Representative immediately, and re-direct work to avoid delay. The Owner's Representative will then determine what action, if any, is required.
 2. Remove abandoned utilities as indicated and as uncovered by the work and terminate in a manner conforming to code.
 3. Remove and salvage designated items and related equipment and deliver to a location acceptable to the Owner's Representative.
- E. Underground Piping:
 1. Existing storm drain and irrigation systems, as may be shown on the Drawings, shall be modified to allow for construction of new items and systems as a part of this project. Caution shall be exercised so as not to damage underground piping not scheduled for removal.
 2. Remove underground piping as indicated or necessary and backfill to specified compaction density.
 3. Existing piping abandoned but not removed shall be backfilled with slurry fill (grout), and ends shall be capped with concrete.
 4. Manholes and lines scheduled for removal which connect to active systems shall have their active remaining portions capped, plugged, or blind-flanged as appropriate.

5. Materials used for pipe terminations and temporary connections shall be the same as the existing lines. Fittings and flanges shall be of weight and class suitable for the service in which used.

3.05 SALVAGE

- A. Demolition:
 1. Materials or equipment to be demolished shall become the property of the Contractor except for items specified or noted on the Drawings to be salvaged for the Owner.
 2. Carefully remove items to be salvaged to avoid damage.
 3. Irrigation heads, valves and existing controller shall be salvaged and provided to Owner. Contractor shall clean and box items. Items shall be returned to Owner in accordance with instructions provided by the Owner.
- B. Replacement: In the event items not scheduled to be demolished are damaged, promptly replace or repair such items to an as-was or better condition per the discretion of the Owner's Representative at no additional cost to Owner.
- C. Materials scheduled for removal shall not be placed on view to prospective purchasers or sold on site.

3.06 CLEANING

- A. Debris and Rubbish:
 1. Remove and transport debris and rubbish as it accumulates and dispose in a legal manner via recognized haul routes in accordance with Section 01 50 00 - Temporary Facilities and Controls in a manner that will prevent spillage on streets or adjacent areas.
 2. Remove tools, equipment and appliances used for demolition from the site upon completion of the work.
 3. Clean entire project area, adjacent streets, and pavements to a broom-clean, "stain-free" condition per the discretion of the Owner's Representative.

END OF SECTION

SECTION 26 05 10

GENERAL ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The work of this Section consists of providing all required labor, supervision, materials and equipment to satisfactorily complete all electrical installations that are shown on the Drawings, included in these specifications, or otherwise needed for a complete and fully operating facility.
- B. Furnish and install all required in-place equipment, conduits, conductors, cables and any miscellaneous materials for the satisfactory interconnection and operation of all associated electrical systems.

1.02 RELATED WORK

- A. This Section provides the basic Electrical Requirements which supplement the General Requirements of Division 1 and apply to all Sections of Division 26.

1.03 SUBMITTALS

- A. As specified in Division 1. Submit to the Engineer shop drawings, manufacturer's data and certificates for equipment, materials and finish, and pertinent details for each system specified. Information to be submitted includes manufacturer's descriptive literature of cataloged products, equipment, drawings, diagrams, performance and characteristic curves as applicable, test data and catalog cuts. Obtain written approval before procurement, fabrication, or delivery of the items to the job site. Partial submittals are not acceptable and will be returned without review. Furnish manufacturer's name, trade name, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference, applicable Federal, Industry and Technical Society Publication References, and years of satisfactory service of each item required to establish contact compliance. Photographs of existing installations and data submitted in lieu of catalog data are not acceptable and will be returned without approval.
- B. Organize submittals for equipment and items related to each specification section together as a package.
- C. Proposed substitutions of products will not be reviewed or approved prior to awarding of the Contract.
- D. Substitutions shall be proven to the Engineer to be equal or superior to the specified product. Engineer's decision is final. The Contractor shall pay all costs incurred by the Engineer in reviewing and processing any proposed substitutions whether or not a proposed substitution is accepted.
- E. If a proposed substitution is rejected, the contractor shall furnish the specified product at no increase in contract price.
- F. If a proposed substitution is accepted, the contractor shall be completely responsible for all dimensional changes, electrical changes, or changes to other work which is a result of the substitution. The accepted substitution shall be made at no additional cost to the owner or design consultants.
- G. If a proposed substitution is accepted after bid, the contractor should be required to show the credit due to the owner.

1.04 QUALITY ASSURANCE

- A. Codes: All electrical equipment and materials, including installation and testing, shall conform to the latest editions following applicable codes:

1. California Electrical Code (CEC).
 2. Occupational Safety and Health Act (OSHA) standards.
 3. All applicable local codes, rules and regulations.
 4. Electrical Contractor shall possess a C-10 license and all other licenses as may be required. Licenses shall be in effect at start of this contract and be maintained throughout the duration of this contract.
 5. Caltrans Standard Plans and Specifications, 2018.
- B. Variances: In instances where two or more codes are at variance, the most restrictive requirement shall apply.
- C. Standards: Equipment shall conform to applicable standards of American National Standards Institute (ANSI), Electronics Industries Association (EIA), Institute of Electrical and Electronics Engineers (IEEE), and National Electrical Manufacturers Association (NEMA).
- D. Underwriter Laboratories (UL) listing is required for all equipment and materials where such listing is offered by the Underwriters Laboratories. Provide service entrance labels for all equipment required by the NEC to have such labels.
- E. The electrical contractor shall guarantee all work and materials installed under this contract for a period of one (1) year from date of acceptance by owner.
- F. All work and materials covered by this specification shall be subject to inspection at any and all times by representatives of the owner. Work shall not be closed in or covered before inspection and approval by the owner or his representative. Any material found not conforming with these specifications shall, within 3 days after being notified by the owner, be removed from premises; if said material has been installed, entire expense of removing and replacing same, including any cutting and patching that may be necessary, shall be borne by the contractor.

1.05 DRAWINGS

- A. Drawings: The electrical Drawings shall govern the general layout of the completed construction.
1. Locations of equipment, panels, pullboxes, conduits, stub-ups, ground connections are approximate unless dimensioned; provide and verify locations with the Engineer prior to installation.
 2. Review the Drawings and Specification Divisions of other trades and perform the electrical work that will be required for those installations.
 3. Should there be a need to deviate from the Electrical Drawings and Specifications, submit written details and reasons for all changes to the Engineer for approval.
 4. The general arrangement and location of existing conduits, piping, apparatus, etc., is approximate. The drawings and specifications are for the assistance and guidance of the contractor, exact locations, distances and elevations are governed by actual field conditions. Accuracy of data given herein and on the drawings is not guaranteed. Minor changes may be necessary to accommodate work. The contractor is responsible for verifying existing conditions. Should it be necessary to deviate from the design due to interference with existing conditions or work in progress, claims for additional compensation shall be limited to those for work required by unforeseen conditions as determined by the Engineer.
 5. All drawings and divisions of these specifications shall be considered as whole. This contractor shall report any apparent discrepancies to the Engineer prior to submitting bids.

6. The contractor shall be held responsible to have examined the site and compared it with the specifications and plans and to have satisfied himself as to the conditions under which the work is to be performed. He shall be held responsible for knowledge of all existing conditions whether or not accurately described. No subsequent allowance shall be made for any extra expense due to failure to make such examination.

1.06 CLOSEOUT SUBMITTALS

- A. Manuals: Furnish manuals for equipment where manuals are specified in the equipment specifications or are specified in Division 1.

1.07 COORDINATION

- A. Coordinate the electrical work with the other trades, code authorities, utilities and the Architect.
- B. Provide and install all trenching, backfilling, conduit, pull boxes, splice boxes, etc. for all Utility Company services to the locations indicated on the Drawings. All materials and construction shall be in accordance with the requirements for all the Utility Companies. The contractor shall be responsible for completing the (N) service per PG&E's Greenbook current standards and substructure package. Prior to performing any work, the Electrical Contractor shall coordinate with the various Utility Companies to verify that all such work and materials shown on the Drawings are of sufficient sizes and correctly located to provide services on the site. The contractor shall obtain, provide and coordinate all requirements noted in PG&E's substructure package to successfully complete new service. The Electrical Contractor shall verify with all the Utility Companies that additional contractor furnished and installed work is not required. If additional work, materials, or changes are required by any of the Utility Companies, the Electrical Contractor shall advise the Engineer of such changes and no further work shall then be performed until instructed to do so by the Engineer.
- C. Utility Company charges shall be paid by the Owner.
- D. Contractor shall pay all inspection and other applicable fees and procure all permits necessary for the completion of this work.
- E. Where connections must be made to existing installations, properly schedule all the required work, including the power shutdown periods.
- F. When two trades join together in an area, make certain that no electrical work is omitted.

1.08 JOB CONDITIONS

- A. Operations: Perform all work in compliance with Division 1
 1. Keep the number and duration of power shutdown periods to a minimum.
 2. Show all proposed shutdowns and their expected duration on the construction schedule. Schedule and carry out shutdowns so as to cause the least disruption to operation of the Owner's facilities.
 3. Carry out shutdown only after the schedule has been approved, in writing, by the owner. Submit power interruption schedule 15 days prior to date of interruption.
- B. Construction Power: Unless otherwise noted in Division 1 of these specifications, contractor shall make all arrangements and provide all necessary facilities for temporary construction power from the owner's on site source. Energy costs shall be paid for by the Owner
- C. Storage: Provide adequate storage for all equipment and materials which will become part of the completed facility so that it is protected from weather, dust, water, or construction operations.

1.09 DAMAGED PRODUCTS

- A. Notify the Engineer in writing in the event that any equipment or material is damaged. Obtain approval from the Engineer before making repairs to damaged products.

1.10 LOCATIONS

- A. General: Use equipment, materials and wiring methods suitable for the types of locations in which they are located.
- B. Dry Locations: All those indoor areas which do not fall within the definition below for Wet Locations and which are not otherwise designated on the Drawings.
- C. Wet Locations: All locations exposed to the weather, whether under a roof or not, unless otherwise designated on the Drawings.

1.11 SAFETY AND INDEMNITY

- A. The Contractor is solely and completely responsible for conditions of the job site including safety of all persons and property during performance of the work. This requirement will apply continually and not be limited to normal working hours. The contractor shall provide and maintain throughout the work site proper safeguards including, but not limited to, enclosures, barriers, warning signs, lights, etc. to prevent accidental injury to people or damage to property.
- B. No act, service, drawing review or construction review by the Owner, the Engineer or their Consultants is intended to include reviews of the adequacy of the Contractors safety measures in or near the construction site.
- C. The Contractor performing work under this Division of the Specifications shall hold harmless, indemnify, and defend the Owner, the Engineer, their consultants, and each of their officers, agents and employees from any and all liability claims, losses, or damage arising out of or alleged to arise from bodily injury, sickness, or death of a person or persons and for all damages arising out of injury to or destruction of property arising directly or indirectly out of or in connection with the performance of the work under this Division of the Specifications, and from the Contractor's negligence in the performance of the work described in the construction contract documents, but not including liability that may be due to the sole negligence of the Owner, the Engineer, their Consultants or their officers, agents and employees.
- D. The project work area does not contain asbestos materials. However, if a work area is encountered that does contain asbestos materials, the contractor is advised to coordinate with the owner and it's asbestos abatement consultant all measures necessary to provide installation of conduit, and hangers. All asbestos containing materials related work shall conform to the directions given by the owner. Nothing herein shall be construed to create a liability for American Consulting Engineers regarding asbestos abatement measures.

1.12 ACCESS PANELS AND DOORS

- A. The Contractor shall install access panels as required where floors, walls or ceilings must be penetrated for access to electrical, control, fire alarm or other specified electrical devices. The minimum size panel shall be 14" x 14" in usable opening. Where access by a service person is required, minimum usable opening shall be 18" x 24".
- B. All access doors installed lower than 7'-0" above finished floor and exposed to public access shall have keyed locks.

- C. Where specific information or details relating to access panels differ from these specifications, shown on drawings and or details or on other Divisions of work, these requirements shall supersede these specifications.
- D. Approved Manufacturers: Subject to compliance with requirements under Architectural Specifications, Milcor, Karp, Nystrom or Cesco.
 - 1. Milcor Style K (plaster)
 - 2. Milcor Style DW (gypsum board)
 - 3. Milcor Style M (masonry)
 - 4. Milcor Style "Fire Rated" where required.

PART 2 - PRODUCTS

2.01 STANDARD OF QUALITY

- A. Products that are specified by manufacturer, trade name or catalog number establish a standard of quality and do not prohibit the use of equal products of other manufacturers provided they are approved by the Engineer prior to installation.
- B. Material and Equipment: Provide materials and equipment that are new and are current products of manufacturers regularly engaged in the production of such products. The standard products shall have been in satisfactory commercial or industrial use for two years prior to bid opening. The two-year period includes use of equipment and materials of similar size under similar circumstances. For uniformity, only one manufacturer will be accepted for each type of product.
- C. Service Support: Submit a certified list of qualified permanent service organizations including their addresses and qualification for support of the equipment. These service organizations shall be convenient to the equipment installation and able to render service to the equipment on a regular and emergency basis during the warranty period of the contract.
- D. Manufacturer's Recommendations: Where installation procedures are required to be in accordance with manufacturer's recommendations, furnish printed copies of the recommendations prior to installation. Installation of the item shall not proceed until recommendations are received. Failure to furnish recommendation shall be cause for rejection of the equipment or material.

2.02 NAMEPLATES

- A. For each piece of electrical equipment, provide a manufacturer's nameplate showing his name, location, the pertinent ratings, the model designation, and shop order number.
- B. Identify each piece of equipment and related controls with a rigid laminated engraved plastic nameplate. Unless otherwise noted, nameplates shall be melamine plastic 0.125 inch thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be 0.5 by 2.5 inches unless otherwise noted. Where not otherwise specified, lettering shall be a minimum of 0.25 inch high normal block style. Engrave nameplates with the inscriptions indicated on the Drawings and, if not so indicated, with the equipment name. Securely fasten nameplates in place using two stainless steel or brass screws.
- C. Contractor to provide rigid laminated engraved plastic nameplate for all signal terminal cabinets, fire alarm terminal cans, electrical disconnect switches (fused or non-fused) and data/voice cabinets. Provide and secure as noted above.

2.03 FASTENERS

- A. Fasteners for securing equipment to walls, floors and the like shall be either hot-dip galvanized after fabrication or stainless steel.

2.04 FINISH REQUIREMENTS

- A. Equipment: Refer to each electrical equipment section of these Specifications for painting requirements of equipment enclosures. Repair any final paint finish which has been damaged or is otherwise unsatisfactory, to the satisfaction of the Engineer.
- B. Wiring System: In finished areas, paint all exposed conduits, boxes and fittings to match the color of the surface to which they are affixed.

PART 3 - EXECUTION

3.01 WORKMANSHIP

- A. Ensure that all equipment and materials fit properly in their installation.
- B. Perform any required work to correct improperly fit installation at no additional expense to the owner.
- C. All electrical equipment and materials shall be installed in a neat and workmanship manner in accordance with the NECA Standard of Installation Manual and Workmanship of the entire job shall be first class in every respect.

3.02 EQUIPMENT INSTALLATIONS

- A. Provide the required inserts, bolts and anchors, and securely attach all equipment and materials to their supports.
- B. Do all the cutting and patching necessary for the proper installation of work and repair any damage done.
- C. Earthquake restraints: all electrical equipment, including conduits over 2 inches in diameter, shall be braced or anchored to resist a horizontal force acting in any direction as per Title 24, part 2, table 16a-o, part 3.
- D. Structural work: All core drilling, bolt anchor insertion, or cutting of existing structural concrete shall be approved by a California registered structural consulting engineer prior to the execution of any construction. At all floor slabs and structural concrete walls to be drilled, cut or bolt anchors inserted, the contractor shall find and mark all reinforcing in both faces located by means of x-ray, pach-ometer, or prof-ometer. Submit sketch showing location of rebar and proposed cuts, cores, or bolt anchor locations for approval.

3.03 FIELD TESTS

- A. Test shall be in accordance with Acceptance testing specifications issued by the National Electrical Testing Association (NETA).
- B. Perform equipment field tests and adjustments. Properly calibrate, adjust and operationally check all circuits and components, and demonstrate as ready for service. Make additional calibration and adjustments if it is determined later that the initial adjustments are not satisfactory for proper performance. Perform equipment field test for equipment where
equipment field tests are specified in the

equipment Specifications. Give sufficient notice to the Engineer prior to any test so that the tests may be witnessed.

- C. Provide instruments, other equipment and material required for the tests. These shall be of the type designed for the type of tests to be performed. Test instrument shall be calibrated by a recognized testing laboratory within three months prior to performing tests.
- D. Operational Tests: Operationally test all circuits to demonstrate that the circuits and equipment have been properly installed and adjusted and are ready for full-time service. Demonstrate the proper functioning of circuits in all modes of operation, including alarm conditions.
- E. Re-testing will be required for all unsatisfactory tests after the equipment or system has been repaired. Re-test all related equipment and systems if required by the Engineer. Repair and re-test equipment and systems which have been satisfactorily tested but later fail, until satisfactory performance is obtained.
- F. Maintain records of each test and submit five copies to the Engineer when testing is complete. All tests shall be witnessed by the Engineer. These records shall include:
 - 1. Name of equipment tested.
 - 2. Date of report.
 - 3. Date of test.
 - 4. Description of test setup.
 - 5. Identification and rating of test equipment.
 - 6. Test results and data.
 - 7. Name of person performing test.
 - 8. Owner or Engineer's initials.
- G. Items requiring testing shall be as noted in the additional electrical sections of these specifications.

3.04 CLEANING EQUIPMENT

- A. Thoroughly clean all soiled surfaces of installed equipment and materials.

3.05 PAINTING OF EQUIPMENT

- A. Factory Applied: Electrical equipment shall have factory applied painting system which shall, as a minimum, meet the requirements of NEMA ICS 6 corrosion-resistance test and the additional requirements specified in the technical section.
- B. Field Applied: Paint electrical equipment as required to match finish of adjacent surfaces.

3.06 RECORDS

- A. Maintain one copy of the contract Drawing Sheets on the site of the work for recording the "as built" condition. After completion of the work, the Contractor shall carefully mark the work as actually constructed, revising, deleting and adding to the Drawing Sheets as required. The following requirements shall be complied with:

1. Cable Size and Type: Provide the size and type of each cable installed on project.
2. Substructure: Where the location of all underground conduits, pull boxes, stub ups and etc. where are found to different than shown, carefully mark the correct location on the Drawings. Work shall be dimensioned from existing improvements.
3. Size of all conduit runs.
4. Routes of concealed conduit runs and conduit runs below grade.
5. Homerun points of all branch circuit.
6. Location of all switchgear, panels, MCC, lighting control panels, pullcans, etc.
7. Changes made as a result of all approved change orders, addendums, or field authorized revisions.
8. As Builts: At the completion of the Work the Contractor shall review, certify, correct and turn over the marked-up Drawings to the Engineer for his use in preparing "as built" plans.
9. As Built drawings for fire alarm, data, telephone, CATV/Video, intercom and clock shall also be recorded. Upon completion "As-built" documentation showing actual devices locations and devices identification as installed and labeled, including fire alarm, data, telephone, CATV/Video and int/clock wiring layout. "As-built" shall include; for example, fire alarm equipment location showing all monitor modules and end of line resistor locations. The contractor shall provide one set drawings documents and the other set in electronic CAD file representing actual as-builts. CAD files shall be AutoCAD 14 format. Obtaining CAD files from the Engineer/District shall require contractor to sign CAD release form.
10. As built Drawings shall be delivered to the Engineer within ten (10) days of completion of construction.

3.07 CLEAN UP

- A. Upon completion of electrical work, remove all surplus materials, rubbish, and debris that accumulated during the construction work. Leave the entire area neat, clean, and acceptable to the Engineer.

3.08 MECHANICAL AND PLUMBING ELECTRICAL WORK

- A. The requirements for electrical power and/or devices for all mechanical and plumbing equipment supplied and/or installed under this Contract shall be coordinated and verified with the following:
 1. Mechanical and Plumbing Drawings.
 2. Mechanical and Plumbing sections of these Specifications.
 3. Manufacturers of the Mechanical and Plumbing equipment supplied.
- B. The coordination and verification shall include the voltage, ampacity, phase, location and type of disconnect, control, and connection required. Any changes that are required as a result of this coordination and verification shall be a part of this Contract.
- C. The Electrical Contractor shall furnish and install the following for all mechanical and plumbing equipment:
 1. Line voltage conduit and wiring.

2. Disconnect switches.
 3. Manual line voltage controls.
- D. Automatic line voltage controls and magnetic starters unless otherwise noted, shall be furnished by the Mechanical and/or Plumbing Contractor and installed and connected by the Electrical Contractor. All line voltage control wiring installed by the Electrical Contractor shall be done per directions from the Mechanical and/or Plumbing Contractor.
- E. All low voltage control wiring for Mechanical and Plumbing equipment shall be installed in conduit. Furnishing, installation and connection of all low voltage conduits, boxes, wiring and controls shall be by the Mechanical and/or Plumbing Contractor.
- F. Manual motor starters, where required, shall have toggle type operators with pilot light and melting alloy type overload relays, SQUARE D COMPANY, Class 2510, Type FG-1P (surface) or Type FS-1P (flush) or ITE, WESTINGHOUSE or GENERAL ELECTRIC equal.

3.09 ACCESS DOORS

- A. The Electrical Contractor shall furnish and install access doors wherever required whether shown or not for easy maintenance of electrical systems: As an example, fire alarm devices, controls, junction boxes, etc. Access doors shall provide for complete access to equipment for both removal and replacement of equipment.

END OF SECTION

SECTION 26 05 11

ELECTRICAL DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. General - Remove all material designated to be removed on the drawings and that is surplus to the needs of the system as may be designated by the Owner's Representative. Specific work shall be provided as specified below:
- B. Remove Existing Equipment - Electrical Equipment to be removed shall include but not be limited to switchboards, panel boards, concrete foundations, equipment supports, lighting fixtures, conductors, conduit, raceway and other items as shown on the drawings or specified.
- C. Clean Surface Areas - Clean all floors, streets, sidewalks, driveways, parking lots and landscaped areas of all trash and debris deposited as a result of the work. Clean daily and maintain the property free of trash and debris.

1.02 STANDARDS AND CODES

- A. Work and material shall be in compliance with and according to the requirements of the latest revision of the following standards and codes.
 - 1. California Electrical Code (CEC).

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 DISPOSAL

- A. Except where specifically noted otherwise on the drawings or elsewhere in these specifications, the contractor assumes ownership of all material removed from the project site and assumes all responsibility for its proper disposal.

3.02 CLEANUP

- A. Contractor shall maintain the work site in a neat and orderly state. Contractor shall remove demolition material from the job site daily. No demolition material shall be left on the job site after working hours without written approval from the Owner's Representative.

END OF SECTION

SECTION 26 05 19

LOW VOLTAGE WIRE AND CABLE

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The work of this Section consists of providing all wire and cable rated 600 volts or less, including splices and terminations, as shown on the Drawings and as described herein.

1.02 RELATED WORK

- A. See the following Specification Section for work related to the work in this Section:

1. Section 26 05 33 - Conduits, Raceways and Fittings.
2. Section 26 05 34 - Junction and Pull Boxes.

1.03 SUBMITTALS

- A. In accordance with Division 1.
- B. Submit complete material list with the manufacturer's specifications and published descriptive literature for all materials proposed for use.

1.04 QUALITY ASSURANCE

- A. Field tests shall be performed as specified in paragraph 3.04 of this Section.

PART 2 - PRODUCTS

2.01 CONDUCTORS

- A. Conductors shall be copper, type THHN/THWN/MTW oil and gasoline resistant, 600 volt rated insulation. Minimum power and control wire size shall be No. 12 AWG unless otherwise noted.
- B. Conductors shall be stranded except that sizes #10 and smaller for receptacle circuits shall be solid and of the sizes indicated.
- C. Minimum power and control wire size shall be No. 12 AWG unless otherwise noted.
- D. All conductors used on this Project shall be of the same type and conductor material

2.02 CABLES

- A. All individual conductors shall be copper with type THHN/THWN, 600 volt rated insulation.
- B. Insulation Marking - All insulated conductors shall be identified with printing colored to contrast with the insulation color.
- C. Color Coding - As specified in paragraph 3.03.

- D. Special Wiring - Where special wiring is proposed by an equipment manufacturer, submit the special wiring requirements to the Owner's Representative and, if approved, provide same. Special wire shall be the type required by the equipment manufacturer.
- E. Other Wiring - Wire or cable not specifically shown on the Drawings or specified, but required, shall be of the type and size required for the application and as approved by the Owner's Representative.
- F. Manufacturer - Acceptable manufacturers including Cablec, Southwire, or equal.

2.03 TERMINATIONS

- A. Manufacturer - Terminals as manufactured by T&B, Burndy or equal.
- B. Cable Termination for Copper - Crimp style two hole NEMA spade terminals designed and rated for copper cable.
- C. Wire Terminations - Crimp on ring-tongue terminals, insulated sleeve, of proper size for the wire used.
- D. End Seals - Heat shrink plastic caps of proper size for the wire on which used.

2.04 TAPE

- A. Tape used for terminations and cable marking shall be compatible with the insulation and jacket of the cable and shall be of plastic material.

PART 3 - EXECUTION

3.01 CABLE INSTALLATION

- A. Clean Raceways - Clean all raceways prior to installation of cables as specified in Section 26 05 33 - Conduits Raceway and Fittings.
- B. Cable Pulling - Exercise care in pulling wires and cables into conduit or wireways so as to avoid kinking, putting undue stress on the cables or otherwise abrading them. No grease will be permitted in pulling cables. Only soapstone, talc, or UL listed pulling compound will be permitted. The raceway construction shall be complete and protected from the weather before cable is pulled into it. Swab conduits before installing cables and exercise care in pulling, to avoid damage to conductors.
- C. Bending Radius - Cable bending radius shall be per applicable code. Install feeder cables in one continuous length.
- D. Equipment Grounding Conductors - Provide an equipment grounding conductor, whether or not it is shown on the Drawings, in all conduits or all raceways.
- E. Panelboard Wiring - In panels, bundle incoming wire and cables which are No. 6 AWG and smaller, lace at intervals not greater than 6 inches, neatly spread into trees and connect to their respective terminals. Allow sufficient slack in cables for alterations in terminal connections. Perform lacing with plastic cable ties or linen lacing twine. Where plastic panel wiring duct is provided for cable runs, lacing is not necessary when the cable is properly installed in the duct.

F. Provide #10awg conductors for all 20 amp 120v branch circuits over 100 feet.

3.02 CABLE TERMINATIONS AND SPLICES

- A. Splices - UL Listed wirenuts.
- B. Terminations - Shall comply with the following:
 - 1. Make up and form cable and orient terminals to minimize cable strain and stress on device being terminated on.
 - 2. Burnish oxide from conductor prior to inserting in oxide breaking compound filled terminal.

3.03 CIRCUIT AND CONDUCTOR IDENTIFICATION

- A. Color Coding - Provide color coding for all circuit conductors. Insulation color shall be white for neutrals and green for grounding conductors. Ungrounded conductor colors shall be as follows:

<u>VOLTAGE</u>	<u>208/120V</u>	<u>480/277V</u>
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	Grey
Ground	Green	Green

- B. Color coding shall be in the conductor insulation for all conductors #10 AWG and smaller; for larger conductors, color shall be either in the insulation or in colored plastic tape applied at every location where the conductor is readily accessible.
- C. Circuit Identification - All underground distribution and service circuits shall be provided with plastic identification tags in each secondary box and at each termination. Tags shall identify the source transformer of the circuit and the building number(s) serviced by the circuit.

3.04 FIELD TESTS

- A. All systems shall test free from short circuits and grounds, shall be free from mechanical and electrical defects, and shall show an insulation resistance between phase conductors and ground of not less than the requirements of the CEC. All circuits shall be tested for proper neutral connections.

END OF SECTION

SECTION 26 05 26

GROUNDING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The work of this section consists of furnishing, installing, connection and testing of all grounding systems as specified herein and as shown on the Drawings.

1.02 RELATED WORK

- A. See the following specification sections for work related to work in this section.
 - 1. Section 26 05 10 - Electrical General Requirements.
 - 2. Section 26 05 19 - Low Voltage Wire and Cable

1.03 SUBMITTALS: IN ACCORDANCE WITH SECTION 26 05 10 SUBMITTALS.

- A. Submit manufacturer's literature for review.

1.04 STANDARDS AND CODES

- A. American Society for Testing and Materials (ASTM) Publication:
 - 1. B8-1986, Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
 - 2. B228-1988, Copper Clad Steel Conductors Specification.
- B. The latest editions following applicable codes:
 - 1. California Electrical Code (CEC).
 - 2. Occupational Safety and Health Act (OSHA) standards.
 - 3. All applicable local codes, rules and regulations.

1.05 QUALITY ASSURANCE

- A. Each and every concealed connection must be inspected by the Owner's Representative before it is covered up by the Contractor.

PART 2 - PRODUCTS

2.01 GENERAL

- A. The grounding system shall consist of the grounding conductors, ground bus, ground fittings and clamps, and bonding conductors as shown on the Drawings and as required by codes and local authorities.

2.02 SYSTEM COMPONENTS

- A. Ground Rods: Ground rods shall be cone pointed copper clad Grade 40 HS steel rods conforming to ASTM B228. The welded copper encased steel rod shall have a conductivity of not less than 27% of pure copper. Rods shall be not less than 3/4-inch in diameter and ten feet long, unless otherwise indicated. Rods longer than ten feet shall

be make up of ten foot units joined together with threaded couplings. The manufacturer's trademark shall be stamped near the top.

- B. Ground Conductors: Buried conductors shall be medium-hard drawn bare copper; other conductors shall be soft drawn copper. Sizes over No. 6 AWG shall be stranded conforming to ASTM B8. In

all conduit runs, a green insulated copper ground wire, sized to comply with codes, shall be installed.

- C. Ground Connections: Exposed ground connections shall be high copper alloy bolted pressure types or exothermically welded type as notes. Buried connections shall be either exothermically welded type or approved compression types for connection of copper to copper or copper to steel, as required. Lug for attachment of cables to steel enclosures shall be of the binding post type with a 1/2-13NC stud. Each post shall accommodate cables from #4 AWG to #2/0 AWG.
- D. Ground Rod Boxes: Boxes shall be nine-inch diameter precast concrete units with cast iron traffic covers. Units shall be 12 inches deep. Covers shall be embossed with the wording "Ground Rod".
- E. Ground Bus: 2" x 1/4" x (length as specified on drawings) copper busbar. Provide isolation stand off bushings. Provide drilled and tapped 3/8" diameter holes on 2-foot centers. Provide "ALCU" lugs and bronze bolts. Connect busbar to main grounding system and bond to metallic domestic cold-water pipe with #8 ground conductor.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Ground all equipment, including, but not limited to, panel boards, terminal cabinets and outlet boxes, for which a ground connection is required per the NEC, even though not specifically shown on the Drawings.
- B. The ground pole of receptacles shall be connected to their outlet boxes by means of a copper ground wire connecting to a screw in the back of the box.
- C. Provide a ground rod box for each ground rod so as to permit ready access for the connection and/or removal of any pressure connectors to facilitate testing.
- D. Where ground rods must be driven to depths over ten feet, increase rod diameter used, sufficiently to prevent the rod from bending or being damaged.
- E. Make embedded or buried ground connections, taps and splices with exothermically welded connections or approved compression type connectors.
- F. Make connections of grounding conductors to equipment ground buses and enclosures using binding post type connectors.
- G. Effectively bond structural steel for buildings to the grounding system, "UFER" ground.
- H. Install a ground rod in each primary handhole. Connect the ground conductor installed for each primary duct bank to the ground rod in each handhole. Bond metal conduits to handhole ground rod.

3.02 TESTING

- A. Conduct ground resistance tests using a ground resistance tester with a scale reading of 25 ohms maximum.

- B. Test methods shall conform to IEEE Standard 81 using the three-electrode method. Conduct test only after a period of not less than 48 hours of dry weather.
- C. Take resistance readings for each ground rod individually and for each system as a whole without benefit of chemical treatment or other artificial means. Ground resistance readings shall not exceed 25 ohms. If readings are not to the Contracting Officer's approval, provide lengthened or additional ground rods (maximum of two additional rods).
- D. Furnish to the Owner's Representative a test report with recorded data of each ground rod location and each system.

END OF SECTION

SECTION 26 05 33

CONDUITS, RACEWAYS AND FITTINGS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The work of this section consists of furnishing and installing conduits, raceways and fittings as shown on the Drawings and as described herein.

1.02 RELATED WORK

- A. See the following specification sections for work related to the work in this section:
1. Section 26 05 35 - Underground Ducts.
 2. Section 26 05 19 - Low Voltage Wire and Cable.
 3. Section 26 05 34 - Junction and Pull Boxes

1.03 SUBMITTALS

- A. As specified in Division 1.
1. Catalog Data: Provide manufacturer's descriptive literature.
 2. Single Submittal: A single complete submittal is required for all products covered by this Section.

PART 2 - PRODUCTS

2.01 CONDUITS, RACEWAYS

- A. Electrical Metallic Tubing (EMT) shall be hot-dip galvanized after fabrication. Couplings shall be compression or setscrew type.
- B. Flexible Conduit: Flexible metal conduit shall be galvanized steel.
- C. Liquid Tight Flexible Metal Conduit (LFMC) shall be galvanized steel strip helically wound with nylon sealing cord with smooth surface flexible PVC covering.
- D. Galvanized Rigid Steel Conduit (GRS) shall be hot-dip galvanized after fabrication. Couplings shall be threaded type.
- E. Rigid Non-metallic Conduit: Rigid non-metallic conduit shall be PVC Schedule 40 (PVC-40) or NEMA Type EPC-40) conduit approved for underground use and for use with 90°C wires.
- F. The use of "MC Cable shall not be permitted without written approval.

2.02 CONDUIT SUPPORTS

- A. Supports for individual conduits shall be galvanized malleable iron one-hole type with conduit back spacer.
- B. Supports for multiple conduits shall be hot-dipped galvanized Unistrut or Superstrut channels, or approved equal. All associated hardware shall be hot-dip galvanized.
- C. Supports for EMT conduits shall be galvanized pressed steel single hole straps.
- D. Clamp fasteners shall be by wedge anchors. Shot in anchors shall not be allowed.

2.03 FITTINGS

- A. Provide threaded-type couplings and connectors for rigid steel conduits. Provide compression (watertight) steel type (die-cast zinc or malleable iron type fittings not allowed), or setscrew type for EMT. Provide threaded couplings and Meyers hubs for rigid steel conduit exposed to weather.

- B. Fittings for flexible conduit shall be Appleton, Chicago, IL, Type ST, O-Z Gedney Series 4Q by General Signal Corp., Terryville, CT, T & B 5300 series, or approved equal.
- C. Fittings for liquid tight flexible metal conduit shall be by Appleton, O-Z Gedney or Thomas and Betts. Fittings shall be zinc plated malleable iron or aluminum.
- D. Fittings for use with rigid steel shall be galvanized steel or galvanized cast ferrous metal; access fittings shall have gasketed cast covers and be Crouse Hinds Condulets, Syracuse, NY, Appleton Unilets, Chicago, IL, or approved equal. Provide threaded-type couplings and connectors; setscrew type and compression-type are not acceptable.
- E. Fittings for use with rigid non-metallic conduit shall be PVC and have solvent-weld-type conduit connections.
- F. Union couplings for conduits shall be the Erickson type and shall be Appleton, Chicago, IL, Type EC, O-Z Gedney 3-piece Series 4 by General Signal Corp., Terryville, CT, or approved equal. Threadless coupling shall not be used.
- G. Bushings
 - 1. Bushings shall be the insulated type.
 - 2. Bushings for rigid steel shall be insulated grounding type, O-Z Gedney Type HBLG, Appleton Type GIB, or approved equal.
- H. Conduit Sealants
 - 1. Fire Retardant Types: Fire stop material shall be reusable, non-toxic, asbestos-free, expanding, putty type material with a 3-hour rating in accordance with UL Classification 35L4 or as specified on the Drawings.

PART 3 - EXECUTION

3.01 CONDUIT, RACEWAY AND FITTING INSTALLATION

- A. For conduit runs exposed to weather provide rigid metal (GRS).
- B. For conduit run underground, in concrete or masonry block walls and under concrete slabs, install minimum 3/4" size nonmetallic (PVC) with PVC elbows. Where conduits transition from underground or under slab to above grade install wrapped rigid metal (GRS) elbows and risers.
- C. For conduit runs concealed in steel or wood framed walls or in ceiling spaces or exposed in interior spaces above six feet over the finished floor, install EMT.
- D. Interior conduits installed exposed on the wall below six feet shall be galvanized rigid steel (GRS).
- E. Flexible metal conduit shall be used only for the connection of recessed lighting fixtures and motor connections unless otherwise noted on the Drawings. Liquid-tight steel flexible conduit shall be used for motor connections.
- F. The minimum size raceway shall be 3/4-inch unless indicated otherwise on the Drawings.
- G. Installation shall comply with the CEC.
- H. From pull point to pull point, the sum of the angles of all of the bends and offset shall not exceed 270 degrees.
- I. Conduit Supports: Properly support all conduits as required by the NEC. Run all conduits concealed except where otherwise shown on the drawings.
 - 1. Exposed Conduits: Support exposed conduits within three feet of any equipment or device and at intervals not exceeding NEC requirements; wherever possible, group conduits together and support on common supports. Support exposed conduits fastened to the surface of the concrete structure by one-hole clamps, or with channels. Use conduit spacers with one-hole clamps.

- a. Conduits attached to walls or columns shall be as unobtrusive as possible and shall avoid windows. Run all exposed conduits parallel or at right angles to building lines.
 - b. Group exposed conduits together. Arrange such conduits uniformly and neatly.
- 2. Support all conduits within three feet of any junction box, coupling, bind or fixture.
- 3. Support conduit risers in shafts with Unistrut Superstrut, or approved equal, channels and straps.
- H. Moisture Seals: Provide in accordance with NEC paragraphs 230-8 and 300-5(g).
- I. Where PVC conduit transitions from underground to above grade, provide rigid steel 90's with risers. Rigid steel shall be half-lap wrapped with 20-mil tape and extend minimum 12" above grade.
- J. Provide a nylon pull cord in each empty raceway.
- K. Provide galvanized rigid steel factory fittings for galvanized rigid steel conduit.
- L. Slope all underground raceways to provide drainage; for example, slope conduit from equipment located inside a building to the pull box or manhole located outside the building.
- M. Conduits shall be blown out and swabbed prior to pulling wires.

END OF SECTION

SECTION 26 05 34

JUNCTION AND PULL BOXES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The work of this Section consists of providing all required labor, supervision, materials and equipment to satisfactorily complete all electrical installations shown on the drawings, included in these Specification, or otherwise needed for a complete and fully operating facility. The work shall include but not be limited to the following:
- B. Furnish and install all required material, supports and miscellaneous material for the satisfactory interconnection of all associated electrical systems.

1.02 RELATED WORK

- A. See the following specification sections for work related to the work of this section.
 - 1. Section 26 05 10 - General Electrical Requirements.
 - 2. Section 26 05 33 - Conduits, Raceway and Fittings.
 - 3. Section 26 05 19 - Low Voltage Wire and Cable.

1.03 STANDARDS AND CODES

- A. Submit in accordance with the requirements of Section 16010: Electrical General Provisions, the following items:
 - 1. Pull boxes larger than 6"x 6"x 4".

PART 2 - PRODUCTS

2.01 OUTLET BOXES, JUNCTION AND PULL BOXES

- A. Standard Outlet Boxes: Galvanized, one-piece die formed or drawn steel, knock-out type of size and configuration best suited to the application indicated on the Drawings. Minimum box size shall be 4 inches square by 1-1/2 inches deep with mud rings as required.
- B. Switch boxes: Minimum box size shall be 4 inches square by 1-1/2 inches deep with mud rings as required. Install multiple switches in standard gang boxes with raised device covers suitable for the application indicated.
- C. Conduit bodies: Cadmium plated, cast iron alloy. Conduit bodies with threaded conduit hubs and neoprene gasketed, cast iron covers. Bodies shall be used to facilitate pulling of controls or to make changes in conduit direction only. Splices are not permitted in conduit bodies. Crouse-Hinds Form 8 Condulets, Appleton Form 35 Unilets or equal.
- D. Sheet Metal Boxes: Use standard outlet or concrete ring boxes wherever possible; otherwise use a minimum 16 gauge galvanized sheet metal, NEMA I box sized to Code requirements with covers secured by cadmium plated machine screws located six inches on centers. Circle AW Products, Hoffman Engineering Company or equal.

- E. Flush Mounted Pull boxes and Junction boxes: Provide overlapping covers with flush head cover retaining screws, prime coated.

PART 3 - EXECUTION

3.01 OUTLET BOXES

A. General

1. All outlet boxes shall finish flush with building walls, ceilings and floors except in mechanical and electrical rooms above accessible ceiling or where exposed work is called for on the Drawings.
2. Install raised device covers (plaster rings) on all switch and receptacle outlet boxes installed in masonry or stud walls or in furred, suspended or exposed concrete ceilings. Covers shall be of a depth to suit the wall or ceiling finish.
3. Leave no unused openings in any box. Install close-up plugs as required to seal openings.

B. Box Layout

1. Outlet boxes shall be installed at the locations and elevations shown on the drawings or specified herein. Make adjustments to locations as required by structural conditions and to suit coordination requirements of other trades.
2. Locate switch outlet boxes on the latch side of doorways.
3. Outlet boxes shall not be installed back to back nor shall through-wall boxes be permitted.
4. For outlets mounted above counters, benches or backsplashes, coordinate location and mounting heights with built-in units. Adjust mounting height to agree with required location for equipment served.

C. Supports

1. Outlet Boxes installed in metal stud walls shall be equipped with brackets designed for attaching directly to the studs or shall be mounted on specified box supports.
2. Fixture outlet boxes installed in suspended ceiling of gypsum board or lath and plaster construction shall be mounted to 16 gauge metal channel bars attached to main ceiling runners.
3. Fixture outlet boxes installed in suspended ceilings supporting acoustical tiles or panels shall be supported directly from the structure above where pendant mounted lighting fixture are to be installed on the box.
4. Fixture Boxes above tile ceilings having exposed suspension systems shall be supported directly from the structure above.
5. Outlet and / or junction boxes shall not be supported by grid or fixture hanger wires at any locations.

3.02 JUNCTION AND PULL BOXES

A. General

1. Install junction or pull boxes where required to limit bends in conduit runs to not more than 360 degrees or where pulling tension achieved would exceed the maximum allowable for the cable to be installed. Note that these boxes are not shown on the Drawings.
2. Locate pull boxes and junction boxes in concealed locations above removable ceilings or exposed in electrical rooms, utility rooms or storage areas.
3. Install raised covers (plaster rings) on boxes in stud walls or in furred, suspended or exposed concrete ceilings. Covers shall be of a depth to suit the wall or ceiling finish.
4. Leave no unused openings in any box. Install close-up plugs as required to seal openings.
5. Identify circuit numbers and panel on cover of junction box with black marker pen.

B. Box Layouts

1. Boxes above hung ceilings having concealed suspension systems shall be located adjacent to openings for removable recessed lighting fixtures.

C. Supports

1. Boxes installed in metal stud walls shall be equipped with brackets designed for attaching directly to the studs or shall be mounted on specified box supports.
2. Boxes installed in suspended ceilings of gypsum board or lath and plaster construction shall be mounted to 16 gauge metal channel bars attached to main ceiling runners.
3. Boxes installed in suspended ceilings supporting acoustical tiles or panels shall be supported directly from the structure above.
4. Boxes mounted above suspended acoustical tile ceilings having exposed suspension systems shall be supported directly from the structure above.

END OF SECTION

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SECTION 26 05 35
UNDERGROUND DUCTS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The work of this section consists of furnishing and installing raceways, raceway spacers and encasing material with necessary excavation for underground ducts.
- B. Encasement - Encasement shall be sand for all other raceways.
- C. Where required - All raceways, where run underground in and excavation shall be installed in compliance with the requirements of this Section. Conduits run underground without encasement shall be as indicated in the Drawings.

1.02 RELATED WORK

- A. See the following specification sections for work related to the work of this section.
 - 1. Section 26 05 33 - Conduit Raceway and Fittings

1.03 STANDARDS AND CODES

- A. Work and material shall be in compliance with and according to the requirements of the latest revision of the following standards and codes.
- B. National Fire Protection Association (NFPA), National Electrical Code (NEC) - Latest Revision:
 - 1. Underground Installations NEC - Article 300
 - 2. Rigid Nonmetallic Conduit NEC - Article 347
- C. California Electrical Code (CEC).
- D. Construction of Underground Electric Supply and Communication Systems, State of California Public Utilities Commission, General Order No. 128.

1.04 SUBMITTALS

- A. As specified in Division 1 and Section 26 05 10.
- B. Catalog Data: Provide manufacturer's descriptive literature.
- C. Single Submittal: A single complete submittal is required for all products covered by this Section.

PART 2 - PRODUCTS

2.01 RACEWAYS

- A. As specified in Section 26 05 33 Conduits, Raceways and Fittings.

2.02 SPACERS

- A. Molded plastic as furnished by the raceway manufacturer, to cradle and position the raceways in the excavation for placing the encasement.
- B. Shape to accurately fit the raceway, provide the correct raceway spacing, to interlock in place and stack.

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PART 3 - EXECUTION

3.01 RACEWAY

- A. Install raceways in spacers. Spacers installed at intervals of five feet and within one inch each side of all bends and joints.
- B. Solvent weld connections.

END OF SECTION

SECTION 26 05 44

IN GRADE PULL BOXES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The work of this section consists of providing all labor, supervision, tools, materials, and performing all work necessary to furnish and install pre-cast concrete vaults, and pull boxes with necessary excavation.

1.02 RELATED WORK

- A. See the following specification sections for work related to the work of this section.
 - 1. 31 23 00 Excavation and Backfill.
 - 2. 32 13 13 Portland Cement Concrete.
 - 3. 26 05 43 Underground Ducts.

1.03 STANDARDS AND CODES

- A. Work and material shall be in compliance with and according to the requirements of the latest revision of the following standards and codes.
 - 1. National Fire Protection Association (NFPA), National Electrical Code (NEC) - Latest Revision.
 - 2. California Electrical Code (CEC).
 - 3. American Society for Testing and Materials (ASTM):
 - a. A 185 - Welded Steel Wire Fabric for Concrete Reinforcement.
 - b. A 615 - Deformed and Plain Billet - Steel Bars for Concrete Reinforcement.
 - c. C 33 - Concrete Aggregates.
 - d. C 478 - Pre-cast Reinforced Concrete Vault Sections, Specification for.

1.04 SUBMITTALS

- A. In accordance with Specification Section 26 05 10.1.03.A.
- B. Provide single submittal of complete material list with the manufacturer's specifications and published descriptive literature for all materials proposed for use.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. General Requirements
 - 1. Concrete vaults and pull boxes for electrical power, controls and other communication circuits shall consist of pre-cast reinforced concrete boxes, extensions' bases, and covers as specified herein and as indicated on the Drawings. Pre-cast units shall be the product of a manufacturer regularly engaged in the manufacture of pre-cast vaults and pull boxes. Acceptable manufacturers are Christy, Utility Vault, Brooks, Associated Concrete or equal.
- B. Construction
 - 1. Pre-cast concrete vaults and pull boxes for electrical power distribution and communication circuits with associated risers and tops shall conform to ASTM C478

and ACI 318. Vaults and pull boxes shall be the type noted on the Drawings and shall be constructed in accordance with the applicable details as shown. Tops, walls and bottoms shall consist of reinforced concrete. Walls and bottom shall be of monolithic concrete construction. Duct entrances and windows shall be located near the corners of structures to facilitate cable racking. Provide all necessary lugs,

rabbets, and brackets. Set pulling-in irons and other built-in items in place prior to pouring concrete. A pulling-in iron shall be installed in the wall opposite each duct entrance. All steel other than "rebar" shall be hot dipped galvanized after fabrication.

C. Cable Racks

1. Vaults shall be provided with galvanized cable racks, including rack arms and insulators, and shall be adequate to accommodate the indicated cables; porcelain insulators shall be provided for electrical vaults only.

D. Covers

1. The word "ELECTRICAL" shall be cast in the top face of all electrical power vault and cable boxes.
2. The words "FIRE ALARM" shall be cast in the top face of all fire alarm vault and cable boxes.
3. The word "SIGNAL" shall be cast in the top face of all telecom, intercom, CATV, data, EMS, security and/or clock vault and cable boxes.

E. Sumps

1. Where indicated on the drawings, drain sumps shall be provided.

F. Concrete

1. Aggregates used in the concrete mix, either coarse or fine, excluding light weight aggregates, shall conform to ASTM C 33. Aggregates shall be properly graded and free of deleterious substances to produce a homogeneous concrete mix when blended with cement.

G. Cement

1. The cement shall be Type II low alkali Portland cement and shall meet the requirement of ASTM C 150.

H. Compressive Strength

1. Sufficient cement content shall be used per batch to produce a minimum compressive strength of 3,000 psi at 28 days.

I. Reinforcing Steel

1. Welded wire mesh for street lighting boxes shall conform to ASTM A 185.
2. Reinforcing bars for primary and secondary electrical vaults and pull boxes, and communication vaults and pull boxes shall be intermediate grade billet steel conforming to ASTM A 615.

J. Ladders

1. Ladders for vaults shall be sized as required, stationary galvanized steel.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Pre-cast vaults and pull boxes shall be installed approximately where indicated on the Drawings. The exact location of each vault or pull box shall be determined after careful consideration has been given to the location of other utilities, grading, and paving. All vaults, cable boxes and secondary pull boxes shall be installed with a minimum of 6-inch thick crushed rock or sand bedding.
- B. Paved areas

1. Vaults and pull boxes located in areas to be paved shall be installed such that the top of the cover shall be flush with the finished surface of the paving.
- C. Unpaved Areas
 1. In unpaved areas, the top of vaults and pull box covers shall be approximately 2 inches above finished grade.
- D. Joint Seals
 1. Section joints of pre-cast vaults and pull boxes shall be sealed with compound as recommended by the manufacturer.
- E. Trenching, Backfilling, and Compaction:
 1. Trenching, backfilling and compaction shall be as specified in Section 02200 - Excavation and Backfill.
- F. Grounding
 1. Ground rods and associated copper ground loop shall be installed in all vaults. Ground loop shall be properly connected to the cable shielding, at each cable joint or splice by means of a minimum number 4 AWG or equivalent braided tinned copper wire. Ground rods shall be protected with a double wrapping of pressure-sensitive plastic tape for a distance of two inches above and six inches below concrete penetrations. Ground wires shall be neatly and firmly attached to vault cable support racks.

END OF SECTION

SECTION 26 24 13

SWITCHBOARDS, 600 VOLTS AND BELOW

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The work of this Section consists of providing switchboards, as shown on the Drawings and as described herein.

1.02 RELATED WORK

- A. See the following Specification Sections for work related to the work in this Section.
 - 1. 26 05 10 General Electrical Requirements
 - 2. 26 05 26 Grounding
 - 3. 26 05 19 Low Voltage Wire and Cable
 - 4. 26 22 13 Transformers
 - 5. 26 28 16 Circuit Breakers

1.03 SUBMITTALS

- A. Shop Drawings - As specified in Division 1 and Section 16010. For each switchboard furnished under this Contract, submit manufacturer's name, catalog data, and the following information:
 - 1. Switchboard type.
 - 2. Main bus and terminal connection sizes.
 - 3. Location of line connections.
 - 4. Section dimensions.
 - 5. Gutter space.
 - 6. Gauge of boxes and fronts.
 - 7. Finish data.
 - 8. Voltage rating.
 - 9. Breaker manufacturer, types, trip ratings, and interrupting ratings.
- B. Before construction of the main service switchboard, the contractor shall deliver two or more copies of the switchboard submittal to P.G. & E. for their approval. The contractor shall deliver one P.G. & E. approved copy of the submittal to the Electrical Engineer for his records.

1.04 CLOSE OUT SUBMITTALS

- A. Submit operation and maintenance data for switchboards, and circuit breakers including nameplate data, parts lists, manufacturer's circuit breaker time current coordination curves, factory and field test reports, recommended maintenance procedures and typewritten as-built panel and switchboard schedules. Submit in accordance with Division 1.

1.05 WARRANTY

- A. Manufacturer shall warrant equipment to be free from defects in material and workmanship for one (1) year from date of installation or eighteen (18) months from the date of purchase.

PART 2 - PRODUCTS

2.01 SWITCHBOARDS

- A. General: Switchboards shall be designed, built and tested in accordance with applicable portions of the latest NEMA, EUSERC, and Underwriter Laboratories standards and the latest requirements of the California Electrical Code. All sections and devices shall be UL listed and labeled.

1. Switchboards shall be dead front, completely self-supporting structure of the required number of vertical sections bolted together to form one metal, totally enclosed, switchboard. Sides, top, and rear covers shall be code gauge steel, bolted to the switchboard structure.
2. The switchboard shall be furnished with phase and neutral busses of the amps, volts and phase shown on the Drawings. The bus shall extend the full length of the switchboard. Tapered bus is not acceptable. The switchboard sections, when called for on the plans, shall be as follows:
 - a. Metering Section and landing lugs; Fully Pacific Gas & Electric Company compatible.
 - b. All sections shall include full capacity busing between sections.
 - c. All sections shall be front aligned and shall have front-connected devices.
3. All buses shall be silver plated copper, supported with high impact, non-tracking insulating material, braced to withstand the mechanical forces exerted during short circuit conditions. The switchboard busing shall be of sufficient cross-sectional area to meet UL Standard 891 for temperature rise. Provisions shall be provided for future splicing of additional sections from either end. The neutral bus shall be 100% rated.
4. A ground bus shall be furnished secured to each vertical section structure, and shall extend the entire length of the switchboard. The ground bus shall be sized per UL Standard 891 and be of the same material as the through bus.
5. The neutral bus in the feeder sections shall be not further than 20 inches from the front of the switchboard.
6. Vertical main bus bars shall be furnished full height to accommodate future branch devices.
7. The switchboard shall be furnished and installed complete with all underground pull sections, utility sections, main device and feeder sections as indicated on the Drawings. Underground pull sections, utility cable termination, transformer and metering sections shall be in accordance with Pacific Gas and Electric Company requirements.
8. The main device, where indicated to be individually mounted, shall be completely isolated from the utility and the feeder sections of the switchboard, both in the device section and the cable section of the switchboard cubicle. The cable section shall also be isolated from the main horizontal bus. The main device cubicle shall have UL service equipment label.
9. Feeder devices shall be group-mounted and be front accessible, furnished with vertical wiring gutter on the front of the distribution sections. Wiring gutters shall be furnished with hinged, code gauge steel formed covers. Unused device space shall be covered with blank code gauge steel covers.
10. All vertical sections comprising the switchboard shall be aligned front and rear.
11. Switchboards for outdoor installation shall be furnished in NEMA 3R non-walk-in enclosures provided with thermostatically controlled space heaters in each vertical section. Space heaters shall be powered from a circuit breaker protected circuit originating within the switchboard and shall be sized adequately to prevent the formation of condensation. Space heater shall be suitable for operation at 120V AC.
12. All steel surfaces are to be chemically cleaned and treated, providing a bond between paint and metal surfaces to help prevent the entrance of moisture and formation of rust under the paint finish. Switchboard exterior shall be furnished with a grey enamel finish color over a rust inhibiting primer, unless otherwise noted.

B. Circuit Breakers

1. Circuit breakers, unless otherwise indicated, shall be the molded case type with ratings as indicated on the Drawings. Circuit breakers shall meet the requirements specified under Section 26 28 16 - Circuit Breaker.
2. Series ratings shall not be allowed unless noted on drawings.
3. Main circuit breakers, where indicated to be Molded case type, shall be 80 percent rated, with the frame size and trip plug ratings shown. Circuit breakers shall be provided with a rotary operated stored energy handle mechanism providing quick make-quick break protection.
4. Main circuit breakers where over 1000 amp and voltage over 150 amp to ground per NEC Article 230-95, shall be provided with ground-fault protection device.

C. Customer Metering

1. Instrument Transformers

- a. Current transformers shall be window type conforming to, one per phase, Square D Company Class 4210, General Electric JAG-O or equal.
- b. Potential transformers shall be fixed mounted, Square D Company Class 4210, General Electric JVM, or equal.

D. MANUFACTURER

1. The switchboard shall be Square D, Siemens, General Electric, Cutler Hammer or approved equal. No other Switchboard manufacturers are acceptable.

E. NAMEPLATES

1. Each section of switchgear, circuit breakers or switches shall have an engraved field mounted identifying, rigid, plastic nameplate giving the panel identification as shown on the drawings. Nameplates shall be laminated with black characters minimum 3/16" high on a white laminated background. Nameplates shall be attached with screws.
2. Each section of switchgear shall have a manufacturer's nameplate showing the voltage, bus rating, number of phases, frequency and number of wires.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Switchboards shall be installed where indicated on the Drawings, and in accordance with the manufacturer's instructions.

3.02 MOUNTING

- A. Switchboards shall be mounted on a concrete pad, having a minimum thickness of 6 inches and extending at least 6 inches all around the switchboard enclosure. Reinforcing shall be as shown on the Drawings. The top surface of the pad shall be 2 inches above the surrounding surface.
- B. The switchboard shall be bolted to the pad with 1/2 inch diameter bolts at each corner of each section.
- C. The switchboard shall be seismically qualified to withstand potential seismic forces up to UBC Seismic Zone 4.

3.03 PADLOCKS

- A. Exterior switchboard shall be provided with padlocks keyed as directed by the Owner's Representative. Padlocks shall be provided by the contractor.

3.04 FIELD TESTS

- A. Insulation resistance Tests: Perform insulation resistance tests on circuits to be energized with a line-to-neutral voltage of 120 volts or more. Make these tests after all equipment has been connected, except that equipment which may be damaged by the test voltage shall not be connected. Test the insulation with 500V dc insulation resistance tester with a scale reading 100 megohms. The insulation resistance shall be 2 megohm or more. Submit results for review.
- B. Grounding: Grounding shall conform to Section 26 05 26.
- C. Continuity: Switchboard circuits shall be tested for continuity prior to energizing. continuity tests shall be conducted using a dc device with a bell or buzzer.
- D. The main electrical service shall not be energized prior to the Building Inspector's receipt of a third party NRTL testing laboratory performance test certification for the service ground fault protection. NEC 230-95 where applicable.

END OF SECTION

SECTION 26 24 16

PANELBOARDS AND DISTRIBUTION PANELS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The work of this Section consists of providing panelboards and circuit breakers as shown on the Drawings and as described herein.

1.02 RELATED WORK

- A. See the following specification sections for work related to the work in this Section.
 - 1. Section 26 05 10 - General Electrical Requirements
 - 2. Section 26 05 26 - Grounding
 - 3. Section 26 05 19 - Line Voltage Wire and Cable
 - 4. Section 26 28 16 - Circuit Breakers

1.03 SUBMITTALS

- A. Shop Drawings - As specified in Division 1 and Section 26 05 10. For each panelboard and distribution panels furnished under this Contract, submit manufacturer's name, catalog data, and the following information:
 - 1. Panelboard / distribution panel type.
 - 2. Main bus and terminal connection sizes.
 - 3. Location of line connections.
 - 4. Cabinet dimension.
 - 5. Gutter space.
 - 6. Gauge of boxes and fronts.
 - 7. Finish data.
 - 8. Voltage rating.
 - 9. Breaker manufacturer, types, trip rating, and interrupting ratings.
 - 10. When information is available on the Drawings, show breaker circuit numbers and locations along with trip ratings on a panelboard layout.
- B. Single Submittal - A single complete submittal is required for all products covered by this Section.
- C. Closeout Submittals: Submit operation and maintenance data for panelboards and circuit breakers including nameplate data, parts lists, factory and field-test reports, recommended maintenance procedures and typewritten as-built panel schedules. Submit in accordance with Division 1.

1.04 WARRANTY

- A. Manufacturer shall warrant specified equipment free from defects in materials and workmanship for the lesser of one (1) year from the date of installation or eighteen (18) months from the date of purchase.

PART 2 - PRODUCTS

2.01 PANELBOARDS

- A. General: Lighting and Receptacle Panelboards shall be the automatic circuit breaker type. The number and arrangement of circuits, trip ratings, spares and blank spaces for future circuit breakers shall be as shown on the Drawings or, if not shown, 42 circuits. All circuit breakers shall be quick-make, quick-break, thermal-magnetic bolt-on type, with 1, 2 or 3 poles as shown, each with a single operating handle. Tandem or piggyback breakers shall not be used.
- B. Nameplates
 - 1. Each panelboard shall have a field mounted identifying, rigid, plastic nameplate giving the panel identification as shown on the Drawings. Nameplates shall be laminated with black characters minimum 3/16" high on a white laminated background. Nameplates shall be attached with screws.
 - 2. Each panelboard shall have a manufacturer's nameplate showing the voltage, bus rating, number of phases, frequency and number of wires.
- C. Construction
 - 1. Door and trim shall be finished to match color of surrounding wall. Box shall be hot-dip galvanized, field finished to match the front.
 - 2. Panelboards and enclosures shall conform to requirements of all relevant codes. Panelboards shall be suitable for use as service equipment.
 - 3. Panelboards shall be furnished with door-in-door or hinged trim fronts with key latch, on inner door and a typed directory card and holder. Panelboard circuits shall be arranged with odd numbers on the left and even numbers on the right. Provide weatherproof, NEMA type 3R enclosures for outdoor installation.
- D. Busbars: Panelboard busbars shall be phase sequence type suitable for bolt-on circuit breakers. All busbars shall be copper. Panelboard bus current ratings shall be determined by heat-rise tests conducted in accordance with UL 67.
 - 1. Busbars shall be braced for the indicated short circuit level scheduled.
 - 2. Busbars shall be installed completely throughout the panel for installation of both required and future breakers. Schedules indicate spaces for future breakers.
 - 3. Busbars shall be designed so circuit breakers may be changed without machining, drilling or tapping.
 - 4. Separate isolated Neutral and Ground busbars shall be provided. If called for on panel schedules, Neutral busbar may be oversized. Ground busbar shall be identified with green stripe and fully bonded to enclosure.
- E. Circuit Breakers: Circuit breakers shall be the molded case type with trip and interrupting ratings as shown on the Drawings.
- F. Series ratings shall not be allowed unless specifically noted on drawings.
- G. Typed Circuit Directories: All panelboards shall have typed directories identifying all circuits installed behind plastic cover provided by the panelboard manufacturer.
- H. Manufacturer
 - 1. Panelboards shall be Square D, Siemens or approved equal.

2.02 DISTRIBUTION PANELS

- A. General: Distribution panels shall be the automatic circuit breaker type. The number and arrangement of circuits, trip ratings, spares and blank spaces for future circuit breakers shall be as shown on the Drawings. All circuit breakers shall be quick-make, quick-break, thermal-

magnetic bolt-on type, with 1, 2 or 3 poles as shown, each with a single operating handle. Tandem or piggyback breakers shall not be used.

B. Nameplates

1. Each distribution board shall have a field mounted identifying, rigid, plastic nameplate giving the panel identification as shown on the Drawings. Nameplates shall be laminated with black characters minimum 3/16" high on a white laminated background. Nameplates shall be attached with screws.
2. Each distribution panel shall have a manufacturer's nameplate showing the voltage, bus rating, number of phases, frequency and number of wires.

C. Construction

1. Door and trim shall be finished to match color of surrounding wall. Box shall be hot-dip galvanized, field finished to match the front.
2. Distribution panels and enclosures shall conform to requirements of all relevant codes. Distribution panels shall be suitable for use as service.
3. Distribution panels shall have a front door with key latch and a typed directory card and permanently attached holder. Adhesive backed holders are not acceptable. Distribution panel's circuits shall be arranged with odd numbers on the left and even numbers on the right. Provide weatherproof, NEMA type 3R enclosures for outdoor installation.

D. Busbars: Distribution panel's busbars shall be phase sequence type suitable for bolt-on circuit breakers. All busbars shall be copper. Panelboard bus current ratings shall be determined by heat-rise tests conducted in accordance with UL 67.

1. Busbars shall be braced for the indicated short circuit level scheduled.
2. Busbars shall be installed completely throughout the panel for installation of both required and future breakers. Schedules indicate spaces for future breakers.
3. Busbars shall be designed so circuit breakers may be changed without machining, drilling or tapping.
4. Separate isolated Neutral and Ground busbars shall be provided. If called for on panel schedules, Neutral busbar may be oversized. Ground busbar shall be identified with green stripe and fully bonded to enclosure.

E. Circuit Breakers: Circuit breakers shall be the molded case type with trip and interrupting ratings as shown on the Drawings.

F. Series rating shall not be allowed unless specifically noted on drawings.

G. Manufacturer

1. Distribution panels shall be Square D, Siemens or approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION: Panelboards and Distribution Panels shall be installed where indicated on the Drawings, and in accordance with the manufacturer's instructions.

3.02 INSTALLATION

- A. Panelboards and Distribution Panels shall be installed with the top of the box 6'-6" above the floor. Panelboards and Distribution Panels shall be plumb within 1/8-inch. The highest breaker-operating handle shall not be higher than 72 inches above the floor.
- B. Floor mounted Panelboards and Distribution Panels shall be installed on a concrete house keeping slab. The concrete slab shall be a minimum of 4" above finished floor, with minimum

of 6" extension beyond equipment. The concrete slab shall have a 1/2" chamfer. See Division 3 for concrete work requirements.

3.03 FIELD TESTS

- A. Insulation Resistance Tests: Perform insulation resistance tests on circuits with #2 AWG and larger conductors to be energized with a line-to-neutral voltage of 120 volts or more. Make these tests after all equipment has been connected, except that equipment, which may be damaged by the test voltage, shall not be connected. Test the insulation with a 500Vdc insulation resistance tester with a scale reading 100 megohms. The insulation resistance shall be 2 megohms or more. Submit results for review.
- B. Grounding: Grounding shall conform to Section 26 05 26.
- C. CONTINUITY: Panelboard and Distribution Panel circuits shall be tested for continuity prior to energizing. Continuity tests shall be conducted using a dc device with a bell or buzzer.

END OF SECTION

SECTION 26 27 26

DEVICES WIRING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The work of this section consists of:
 - 1. Furnishing, installing, and connecting all duplex receptacles complete with wall plates and/or covers, as shown on the Drawings.
 - 2. Furnishing, installing and connecting all single pole and three-way switches complete with wall plates and or handle operators, as shown on the Drawings.

1.02 RELATED WORK

- A. See the following specification sections for work related to the work of this section:
 - 1. Section 26 05 33 - Conduits, Raceways and Fittings.
 - 2. Section 26 05 19 - Low Voltage Wire and Cable.
 - 3. Section 26 05 34 - Junction and Pull Boxes.

1.03 SUBMITTALS: As specified in Division 1.

- A. Submit manufacturers published descriptive literature properly marked to identify the items to be supplied.
- B. A single complete submittal is required for all products covered by this Section.

PART 2 - PRODUCTS

2.01 RECEPTACLES

- A. General - Receptacles shall be heavy duty, high abuse, grounding type.
- B. Duplex Receptacles
 - 1. Receptacles shall be specification grade, rated 20 ampere, two-pole, 3-wire, 120 volt, NEMA 5-20 configuration, self-grounding with screw terminals. Color shall be ivory or as selected by the Architect.
 - 2. Devices shall have a nylon composition face, back and side wired.
 - 3. Manufacturer: Leviton #5362 Series, Hubbell #5362-I Series.
- C. GFCI Receptacles
 - 1. Device shall be Smart Lock with lockout action, rated 20 ampere, 2-pole, 3-wire, 120 volt, conforming to NEMA 5-20 configuration. Face shall be nylon composition. Unit shall have an LED type green indicator light, test and reset push buttons. Color shall be ivory unless otherwise noted.
 - 2. GFCI component shall meet UL 2003 Class A standards with a tripping time of 1/40 second at 5 milliampere current unbalance. Operating range shall extend from -31°F to 158°F. Unit shall have transient voltage protection and shall have a diagnostic indication for miswiring.
 - 3. Manufacturer: Leviton #8898-I Series.
- D. GFCI Blank Face Devices

1. Device shall be Smart Lock with lockout action, rated 20 ampere, 2-pole, 3-wire, 120 volt, blank face, dead front. Face shall be nylon composition. Unit shall have a test and reset push buttons. Color shall be ivory unless otherwise noted.
 2. GFCI component shall meet UL 2003 Class A standards with a tripping time of 1/40 second at 5 milliamperes current unbalance. Operating range shall extend from -31°F to 158°F. Unit shall have transient voltage protection and shall have a diagnostic indication for miswiring.
 3. Manufacturer: Leviton #8590-I Series.
- E. Surge Suppression Receptacles
1. Device shall be rated 20 ampere, 2-pole, 3-wire, 120 volt. Face shall be nylon composition. Unit shall have an LED type "Power-on" indication light and damage-alert audible alarm. Color shall be ivory unless otherwise noted.
 2. Surge suppression protection shall be listed to UL standard 1449 and shall instantly absorb a transient surge of 6,000 volts minimum. A minimum of four (4) Metal Oxide Varistors shall be utilized to absorb transients.
 3. Manufacturer: Leviton #8380-I Series, Hubbell #HBL8362S Series.

2.02 SWITCHES

- A. Switches shall be rated 20 amperes to 120/277 volts ac. Units shall be flush mounted, self-grounding, quiet operating toggle devices. Handle color shall be ivory or as selected by the Architect.
1. Manufacturer: Leviton #1221-2I Series, Hubbell #HBL1221 Series.
- B. Timed switches: Shall be as designed by Paragon Electric Company # ET2000f, Watt Stopper TS-100 or Leviton # 6215M rated for the voltage specified on drawings. Time out shall be adjustable from 5 minutes up to 12 hours. Unit shall be provided with warning alarm.
- C. Motion Sensor shall be dual technology as designed by Watt Stopper DT series. Use protective wire covers in restrooms, multi-use, cafeteria, etc.

2.03 PLATES

- A. General - Plates shall be of the style and color to match the wiring devices, and of the required number of gangs. Plates shall conform to NEMA WD 1, UL 514 and FS W-P-455A. Plates on finished walls shall be non-metallic or stainless steel. Plates on unfinished walls and on fittings shall be of zinc plated steel or case metal and shall have rounded corners and beveled edges.
- B. Non-Metallic: Plates shall be plain with beveled edges and shall be nylon or reinforced fiberglass.
- C. Stainless Steel: Plates shall be .040 inches thick with beveled edges and shall be manufactured from No. 430 alloy having a brushed or satin finish.
- D. Cast Metal: Plates shall be cast or malleable iron covers with gaskets so as to be moisture resistant or weatherproof.
- E. Blank Plates: Cover plates for future telephone outlets shall match adjacent device wall plates in appearance and construction.

PART 3 - EXECUTION

3.01 INSTALLATION OF WIRING DEVICES

TECHNICAL SPECIFICATIONS
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- A. Interior Locations: In finished walls, install each device in a flush mounted box with washers as required to bring the device mounting strap level with the surface of the finished wall. On unfinished walls, surface mount boxes level and plumb.
- B. Mounting Heights: Measure locations of wall outlets from the finished floor to the center of the outlet box. Adjust boxes so that the front edge of the box shall not be farther back from the

finished wall plane than 1/4-inch. Adjust boxes so that they do not project beyond the finished wall. Height above finished floor to center of device unless otherwise noted on Drawings shall be as follows:

1. Receptacles 18 Inches above finished floor
2. Toggle Switches 48 Inches above finished floor

C. Receptacles

1. Ground each receptacle using a grounding conductor, not a yoke or screw contact.
2. Install receptacles with connections spliced to the branch circuit wiring in such a way that removal of the receptacle will not disrupt neutral continuity and branch circuit power will not be lost to other receptacles in the same circuit.

3.02 INSTALLATION OF WALL PLATES

- A. General - Plates shall match the style of the device and shall be plumb within 1/16-inch of the vertical or horizontal.
- B. Interior Locations, Finished Walls: Install non-metallic plates so that all four edges are in continuous contact with the finished wall surfaces. Plaster filling will not be permitted. Do not use oversized plates or sectional plates.
- C. Interior Locations, Unfinished Walls: Install stainless steel or cast metal cover plates.
- D. Exterior Locations: Install cast metal plates with gaskets on wiring devices in such a manner as to provide a rain tight weatherproof installation. Cover type shall match box type.
- E. Future Locations: Install blanking cover plates on all unused outlets.
- F. All receptacles shall be labeled with panel and circuit number. Contractor shall provide 3/8" clear label tape on each wall plate with 1/4" black machine lettering.

3.03 TESTS

A. Receptacles

1. After installation of receptacles, energize circuits and test each receptacle to detect lack of ground continuity, reversed polarity, and open neutral condition.

END OF SECTION

SECTION 26 28 16

CIRCUIT BREAKERS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The work of this Section consists of providing circuit breakers as shown on the Drawings and as described herein.

1.02 RELATED WORK: SEE THE FOLLOWING SPECIFICATION SECTIONS FOR WORK RELATED TO THE WORK IN THIS SECTION.

- A. Section 26 05 10 - General Electrical Requirements

1.03 SUBMITTALS

- A. Shop Drawings - Submittals shall be in accordance with Division 1. For each circuit breaker furnished under this Contract, submit manufacturer's name, catalog data, and the following information:
 - 1. Terminal connection sizes.
 - 2. Voltage rating.
 - 3. Breaker manufacturer, types, trip ratings and interrupting ratings.
- B. Single Submittal - A single complete submittal is required for all products covered by this Section.
- C. Closeout Submittals: Submit in accordance with Division 1 and Section 26 05 10 operation and maintenance data for circuit breakers including nameplate data, parts lists, manufacturer's circuit breaker timer, current, coordination curves, factory and field test reports and recommended maintenance procedures.

1.04 WARRANTY

- A. Manufacturer shall warrant specified equipment free from defects in materials and workmanship for the lesser of one (1) year from the date of installation of eighteen (18) months from the date of purchase.

PART 2 - PRODUCTS

2.01 CIRCUIT BREAKER: EACH CIRCUIT BREAKER SHALL CONSIST OF THE FOLLOWING

- A. A molded case breaker with an over center toggle-type mechanism, providing quick-make, quick-break action. Each circuit breaker shall have a permanent trip unit containing individual thermal and magnetic trip elements in each pole. Circuit breakers shall have variable magnetic trip elements which are set by a single adjustment to assure uniform tripping characteristics in each pole.
- B. Breaker shall be calibrated for operation in an ambient temperature of 40°C.

- C. Each circuit breaker shall have trip indication by handle position and shall be trip-free.
- D. Three pole breakers shall be common trip.
- E. The circuit breakers shall be constructed to accommodate the supply connection at either end of the circuit breaker. Circuit breaker shall be suitable for mounting and operation in any position.
- F. Breakers shall be rated as shown on Drawings.
- G. Series rating of circuit breakers shall not be allowed unless specifically noted on drawings.
- H. Breakers shall be UL listed. Circuit breakers shall have removable lugs.
- I. Lugs shall be UL listed for copper and aluminum conductors.
- J. Breakers shall be UL listed for installation of mechanical screw type lugs.
- K. Circuit breakers serving HACR rated loads shall be HACR type. Circuit breakers serving other motor loads shall be motor rated.
- L. Breakers indicated as "current limiting " (CL), shall be of the non-fused type; Square D I-Limiter, Cutler Hammer Limit-R, or ITE Sentron only.

PART 3 - EXECUTION

3.01 MOUNTING

- A. The highest breaker operating handle shall not be higher than 72 inches above the floor.

END OF SECTION

SECTION 26 50 00

LIGHTING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The work of this section consists of providing a lighting system complete, including fixtures, lamps, hangers, reflectors, glassware, lenses, auxiliary equipment, ballasts and sockets.

1.02 RELATED WORK

- A. See the following specification sections for work related to the work of this section:

- 1. 26 05 10 General Electrical Requirements.
- 2. 26 05 33 Conduit, Raceway and Fittings.
- 3. 26 05 19 Low Voltage Wire and Cable.
- 4. 26 05 34 Junction and Pull Boxes.

1.03 SUBMITTALS: In accordance with Division 1.

- A. Submit descriptive data, photometric curves for each fixture configuration proposed.
- B. Submit shop drawings showing proposed methods for mounting lighting fixtures.
- C. Seismic Requirements: Submit:
 - 1. Sketch or description of the anchorage system.
- D. Submit Operation and Maintenance Data per Division 1.

1.04 WARRANTY: High Intensity Discharge lamps which fail within the first year after final acceptance shall be replaced by the Contractor with the warranty clause of the General Provisions.

PART 2 - PRODUCTS

2.01 FIXTURES

- A. Fixtures shall be of the types, wattage's and voltages shown on the Drawings and be UL classified and labeled for the intended use.
- B. Substitutions will not be considered unless the photometric distribution curve indicates the proposed fixture is equal to or exceeds the specified luminaire.
- C. Luminaire wire, and the current carrying capacity thereof shall be in accordance with the CEC.

- D. Luminaires and lighting equipment shall be delivered to the project site complete, with suspension accessories, aircraft cable, stems, canopies, hickeyes, castings, sockets, holders, ballasts, diffusers, frames, and related items, including support and braces.

2.02 BALLASTS

- A. Ballasts shall be of the types shown on the drawings. Ballasts shall be CBM certified and bear the UL label. Magnetic ballasts shall be the high power factor type. Electronic ballasts shall be suitable for lamps specified by Advance, Magnatek/Universal, Triad or approved equal. Electronic ballast shall be CBM certified and have 15% total harmonic distortion or less..
- B. All ballasts for fixtures installed outdoors shall provide reliable starting of lamps at 0°F at 90% of the nominal line voltage.
- C. Ballasts producing excessive noise (above 36 dB) or vibration will be rejected and shall be replaced at no expense to the Owner.

2.03 LAMPS

- A. Lamps shall be new at the time of acceptance and shall be General Electric, Osram /Sylvania, Phillips, or approved equal.
- B. Unless otherwise noted on the drawings, lamps shall be T8, 3500°K, and 85 CRI minimum.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General
 - 1. All fixtures and luminaires shall be clean and lamps shall be operable at the time of acceptance.
 - 2. Install luminaires in accordance with manufacturer's instructions, complete with lamps, ready for operation as indicated.
 - 3. Align, mount, and level the luminaires uniformly.
 - 4. Avoid interference with and provide clearance for equipment. Where an indicated position conflicts with equipment locations, change the location of the luminaire by the minimum distance necessary.
- B. Mounting and Supports
 - 1. Mounting heights shall be as shown on the Drawings. Unless otherwise shown, mounting height shall be measured to the centerline of the outlet box for wall mounted fixtures and to the bottom of the fixture for suspended fixtures and to the bottom of the fixture for all other types.
 - 2. Luminaire supports shall be anchored to structural members.

3. Pendant luminaires shall be provided with ball aligners to assure a plumb installation and shall have a minimum 25 degree clean swing from horizontal in all directions. Sway bracing shall be installed as required to limit the movement of the fixture. Fixtures shall be allowed to sway a maximum of 45° without striking any object.
 4. Fixture supports shall be designed to resist earthquake forces of seismic zone 4.
 5. Refer to fixture mounting details on drawings for installation requirements.
- C. Pendant Fixture Mounting: Provide flexible fixture hangers unless otherwise noted on Drawings.

END OF SECTION

SECTION 31 01 90

LANDSCAPE AND SITE MAINTENANCE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Landscape maintenance and related work as shown on the Drawings and specified herein including, but not necessarily limited to, the following:
 - 1. Tree, shrub, ground cover and turf areas.
 - 2. Irrigation systems.
 - 3. General site clean-up.
- B. Related Requirements:
 - 1. Section 32 80 00 - Irrigation
 - 2. Section 32 90 00 - Planting

1.02 REFERENCES AND REGULATORY REQUIREMENTS

- A. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Action Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.

1.04 ACTION SUBMITTALS

- A. Product Data: Manufacturer's product information on pesticides and herbicides to be used for approval prior to use.

1.05 QUALITY ASSURANCE

- A. Control of Work: Comply with Section 5 of the Standard Specifications.
- B. Control of Materials: Comply with Section 6 of the Standard Specifications.
- C. The Maintenance Contractor shall be experienced in horticulture and landscape maintenance, practices, and techniques, and shall provide sufficient number of workers with adequate equipment to perform the work during the Landscape Maintenance Period.

1.06 LANDSCAPE MAINTENANCE PERIOD

- A. Landscape Maintenance Period shall be 90 calendar days.
- B. Continuously maintain the entire project area during the progress of the work, during the specified Landscape Maintenance Period or until Final Acceptance of the project by the Owner's Representative.
- C. Landscape Maintenance Period shall not start until all elements of construction, planting and irrigation for the entire project are completed in accordance with Contract Documents. A prime requirement is that turf and landscape areas shall be planted and that turf areas shall show an even, healthy stand of "sod-like" turf which shall have been mown twice. If such criteria are met to the satisfaction of the Owner's

Representative, a written notification shall be issued to establish the effective beginning date of Landscape Maintenance Period. Additionally, elements included in the Pre-maintenance Punch-list shall have been completed to the satisfaction of the Owner's Representative. The Landscape Maintenance period shall, at the discretion of the Owner's Representative, be allowed to start and finish at different times in different areas as applicable.

- D. A day of improper maintenance, as determined by the Owner's Representative, shall not be credited as an acceptable Landscape Maintenance Period day. The Landscape Maintenance Period shall be extended on a day-for-day basis should this occur until proper maintenance, as determined by the Owner's Representative, is being performed.
- E. Contractor shall secure the project site against trespass, vandalism, and theft during the Landscape Maintenance Period. Security procedures shall be coordinated with the Owner's Representative.

1.07 GUARANTEE

- A. All work executed under this section shall be guaranteed against any and all poor, inadequate or inferior materials and/or workmanship, as determined by the Owner's Representative, for the entire Landscape Maintenance Period and for a period of one year after Final Acceptance of project.
- B. The Contractor shall install all replacement material in conformance with the Contract Documents.

1.08 FINAL ACCEPTANCE

- A. Upon completion of all project work, including Landscape Maintenance Period, the Owner's Representative will, upon written request from the Contractor (2 working day minimum notice), make an observation to determine conformance with the Contract Documents.
- B. If, at the final project observation, work is found at variance with the Contract Documents, or is otherwise unacceptable, the Owner's Representative shall issue a punch-list of items requiring attention to the Contractor. The Contractor shall repair, replace, or otherwise correct all non-compliant work, continue Landscape Maintenance Period, and make another written request to the Owner's Representative to verify punch-list completion. If punch-list is found to be incomplete, or if site is still found to be unacceptable, the Contractor shall be back-charged as necessary for this and all additional observations required to issue Final Acceptance. All replacement materials and installations shall be in accordance with the Contract Documents. Remove rejected work and materials immediately from project. Prior to Final Acceptance, Contractor shall provide the Owner's Representative with all Record Drawings and written Guaranty Statements in accordance with the Contract Documents.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Materials used shall either conform to Specifications in other Sections or shall otherwise be acceptable to the Owner's Representative. The Owner's Representative shall be given a monthly record of all herbicides, insecticides and disease control chemicals used.
- B. Maintenance Fertilizer: "Gro-Power High Nitrogen" as available through Gro-Power, Inc., 800-473-1307, or accepted equal, and shall contain the following chemical analysis:

<u>Percent</u>	<u>Chemical</u>
14%	nitrogen
4%	phosphoric acid
9%	potash

- C. Humus: Inactive, decomposed organic material approved by Owner's Representative.

PART 3 - EXECUTION

3.01 MAINTENANCE

- A. General: Proper maintenance, including watering, weeding, mowing, edging, fertilization, repairing, and protection is required until Final Acceptance of the entire project but not less than the specified Landscape Maintenance Period.
- B. Watering: Water appropriately for each plant type to insure vigorous and healthy growth until work is accepted. Water or irrigate in a manner to prevent runoff or erosion. When hand watering, use a "water wand" to break the water force.
- C. Weeding: Entire project site shall be kept free of weeds at all times. Control new weed growth with pre-emergent herbicides. If weeds develop, use legally approved herbicides.
 - 1. No herbicide shall be used without the Owner's Representative prior consent. Use herbicides in accordance with manufacturer's recommendations. If selective herbicides are used, extreme caution shall be observed so as not to damage other plants. Spraying shall only be done under windless conditions.
 - 2. Disease and Pest Control: Disease and insect damage shall be controlled by the use of fungicides and insecticides, subject to the prior consent of the Owner's Representative. Mole and gopher mitigation shall be accomplished using legal means other than poison baits.
- D. Tree "rings" in Turf Areas: Remove turf from around each tree to create a 4-foot diameter turf free area.
- E. Pruning:
 - 1. Trees: Prune trees to select and develop permanent scaffold branches; to eliminate narrow V-shaped branch forks that lack strength; to reduce potential toppling and wind damage by thinning out crowns; to maintain a natural appearance; and to balance crown with roots. Prune only as directed by the Owner's Representative.
 - 2. Shrubs: The objectives of shrub pruning are the same as for trees. Shrubs shall not be clipped into balled or boxed forms unless such is required by the design.
 - 3. All pruning cuts shall be made to lateral branches, buds or near flush with the trunk. "Stubbing" or heading cuts is not permitted.
 - 4. Only skilled workers shall perform pruning work in accordance with standard horticultural pruning practices. Remove from the project all pruned branches and material. Remove and replace plant material excessively pruned or malformed resulting from improper pruning practices at no additional cost to the Owner.
- F. Staking: Stakes shall remain in place through the maintenance and guaranty periods and shall be periodically inspected and adjusted by the Contractor to prevent rubbing that causes bark wounds, loosen for proper growth or other appropriate reasons.
- G. Protection: The Contractor shall maintain protection of planting areas until Final Acceptance. Damaged areas shall be repaired or replaced at the Contractor's expense. Install a temporary maintenance fence using 4-foot blaze orange with steel driven stakes, or acceptable equal, around all turf areas for the entire length of Landscape Maintenance Period.
- H. Trash: Remove trash in all project areas plus adjacent pedestrian walkways and parking areas for the entire length of Landscape Maintenance Period.
- I. Replacement: Refer to the Article "Guarantee" in Part 1.

- J. Fertilizing: Turf shall be fertilized on day 45 and 85 after initial seeding or installation with 20 pounds of fertilizer per 1,000 square feet.

3.02 TURF MAINTENANCE

- A. Mowing and Edging
 - 1. Turf shall not be allowed to exceed 3 inches in height and shall not be mown shorter than 1-1/2 inches in height. Turf shall be well established, free of bare spots and weeds, and of a "sod-like" quality to the satisfaction of the Owner's Representative prior to Final Acceptance.
 - 2. All grass clippings shall be picked up and removed from the site and premises.
 - 3. Let turf areas dry out enough so that mower wheels do not skid, tear, or mark the surface.
 - 4. Edges shall be trimmed at least twice monthly or as needed for neat appearance. Clippings shall be completely removed and disposed of off-site.
- B. Watering: Turf shall be watered at such frequency as weather conditions require to replenish soil moisture below root zone and to establish healthy turf areas.
- C. Disease Control: Control all turf diseases throughout the Landscape Maintenance Period with legally approved fungicides and herbicides.
- D. Weed Control: Control broad leaf weeds with selective, legally approved herbicides. No herbicide shall be used without the prior consent of the Owner's Representative.
- E. Replacement: At or near the end of specified Landscape Maintenance Period, a final observation of turf areas will be made jointly by the Owner's Representative and Contractor. Remove deceased areas and unhealthy stands of turf from the site; do not bury into the soil. Replant all applicable areas with materials and in a manner acceptable to the Owner's Representative.

3.03 IRRIGATION SYSTEM

- A. System Observation: The Contractor shall visually check all systems for proper operation on a weekly basis and make necessary repairs. Equipment shall be adjusted as necessary for proper coverage and function.
- B. Controllers: Program automatic controllers for appropriate seasonal water requirements. Perform a full instruction session in the presence of the Owner's designated maintenance personnel demonstrating programming, system testing, and trouble shooting. Include instructions on how to turn off system in case of emergency.
- C. Repairs: Repairs made to the irrigation system shall be at the Contractor's expense. Repairs, when required, shall be made within 24 hours of discovery by either Owner or Contractor.

3.04 FIELD QUALITY CONTROL

- A. Final Review:
 - 1. At, or near the end of specified Landscape Maintenance Period, the Contractor shall make a written request for a final review and the work shall be reviewed for conformance with the Construction Documents.
 - 2. If the work is not accepted at time of review, a punch-list of items requiring attention will be prepared by the Owner's Representative and issued to the Contractor for correction.
 - 3. The Landscape Maintenance Period shall be extended at Contractors sole cost, as necessary.
 - 4. Upon completion of the punch-list, the Contractor shall again make written request for review. If, upon re-visiting the site, it is found that the punch-list has not been completed, the review shall end and a subsequent visit shall not be scheduled until the Contractor can assure the Owner the work is complete. The incomplete punch-list review meeting and any further visits and reviews, and re-

inspections required due to Contractor not being prepared, or non-conformance with the Construction Documents, shall be back charged to the Contractor.

- B. Final Acceptance: When work is found to be in conformance with the Contract Documents, subject to the discretion of the Owner's Representative, a statement of Final Acceptance shall be issued to the Contractor.

END OF SECTION

SECTION 31 20 00

EARTH MOVING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Site excavation and backfilling as shown on the Drawings including, but is not necessarily limited to, the following:
 - 1. Topsoil stripping, stockpiling, and replacement into planting areas.
 - 2. Rough grading.
 - 3. Filling and backfilling to attain required grades.
 - 4. Excavating for paving, footings, and foundations.
 - 5. Compaction and testing.
- B. Related Requirements:
 - 1. Section 01 33 00 - Submittal Procedures
 - 2. Section 01 71 23 - Field Engineering
 - 3. Section 01 78 39 - Project Record Drawings
 - 4. Section 02 41 13 - Site Clearing and Demolition
 - 5. Section 31 23 00 - Excavation and Fill
 - 6. Section 32 01 90 - Existing Tree Protection and Maintenance
 - 7. Section 32 11 00 - Base Courses
 - 8. Section 32 90 00 - Planting

1.02 REFERENCES

- A. California Building Code (CBC).
- B. American Society for Testing and Materials (ASTM):
 - 1. D 1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.
- C. California Occupational Safety and Health Standards (OSHA):
 - 1. Article 6 - Excavations and Shoring.
- D. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Action and Informational Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.

1.04 CLOSEOUT SUBMITTALS

- A. Project Record Drawings:
 - 1. Conform to requirements specified in Section 01 78 39 - Project Record Documents.
 - 2. Accurately record locations of utilities remaining, re-routed utilities, new utilities, and newly discovered utilities by horizontal dimensions, elevations, inverts, and slope gradients.

1.05 ACTION SUBMITTALS

- A. Import Topsoil:
 - 1. It is the Contractor's responsibility to determine if import topsoil is required on the Project.
 - 2. If required, Contractor shall submit four 1/2-pound samples in nominal 1 quart-sized "zip-lock" plastic bags for each proposed import topsoil. Each sample shall include current accompanying fertility and structure analyses prepared by a recognized soil and plant laboratory.

1.06 QUALITY ASSURANCE

- A. Adhere to requirements, recommendations, and Best Management Practices (BMPs) for storm water management as may be outlined in the Project Storm Water Pollution Prevention Plan (SWPPP) prepared for this project, or as required by governing agencies.
- B. Geotechnical Investigation:
 - 1. A Geotechnical Report has been prepared for use on this Project. The recommendations contained therein have been incorporated into the Contract Documents.
 - 2. Accuracy, sufficiency, and competency of Geotechnical Report are not ratified by the Owner or its design consultants and remain the sole responsibility of Geotechnical Engineer.
 - 3. The Geotechnical Report is available from the Owner. A copy of the Geotechnical Report is available upon request for information only and not part of the bidding documents.
 - 4. Unless otherwise specified or indicated on the Drawings, it is intended that all work shall be done in accordance with applicable provisions of the Geotechnical Report.
- C. The Owner may retain the services of the Geotechnical Engineer to make recommendations based on the soil conditions encountered the results of field and laboratory tests, and observations of the activities performed under this Section.
 - 1. If, in opinion of the Geotechnical Engineer, work performed does not meet technical or design requirements stipulated, the Contractor shall make necessary readjustments to the approval of the Geotechnical Engineer.
 - 2. No deviations from the Contract Documents shall be made without specific and written acceptance of the Owner's Representative.
 - 3. In event of conflict between the Specifications and recommendations contained in Geotechnical Report, the Owner's Representative and Geotechnical Engineer shall be notified.
 - a. Contractor shall follow clarification and interpretation issued through the Owner's Representative at no extra cost to the Owner.
 - b. If clarification or interpretation should change scope of work, there will be mutually agreed-to adjustment in the Contract price by written Change Order.
 - 4. The Geotechnical Engineer will not inspect the Contractor's safety measures.
- D. Compaction densities specified for structural fills under footings, slabs, or pavements shall be determined in accordance the Geotechnical Engineer's written recommendations.
- E. Certification:
 - 1. The Contractor shall certify source and type of backfill and topsoil proposed to be incorporated into the work, at the request of the Owner's Representative.
 - 2. The Contractor shall certify elevations of excavations, footings, subgrades, and finish grades with the use of a Licensed Surveyor, at Contractor's expense, at the request of the Owner's Representative.
- F. Control of Work: Conform to Section 5 of the Standard Specifications.
- G. Control of Materials: Conform to Section 6 of the Standard Specifications.

1.07 PROTECTION

- A. Protect all existing structures, fences, roads, sidewalks, paving, curbs, and other items as necessary from earthwork activity.
- B. Protect above or below grade utilities which are to remain.
- C. Protect trees to remain in accordance with Section 32 01 90 - Existing Tree Protection and Maintenance as applicable.
- D. Repair damage to any existing site features which are to remain. Repair and restoration shall be equal to quality and appearance of prior condition and to the satisfaction of the Owner's Representative.

1.08 FIELD CONDITIONS

- A. Underground Utilities: Unknown buried utility lines may exist. If encountered, notify Owner's Representative immediately for direction and re-direct work to avoid delay.
 - 1. Cooperate and coordinate with Owner's Representative and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.
 - 2. Do not interrupt existing utilities serving occupied facilities without proper notification to, and written direction from, Owner's Representative.
- B. Wet Conditions: No grading operations shall be conducted when excessively wet conditions exist as determined by the Owner's Representative.
- C. Contractor shall provide de-watering equipment as required to continue scheduled operations and provide optimum working conditions at no additional cost to Owner.
- D. Dry Conditions: Contractor shall apply sufficient water to materials during construction to properly compact materials and control dust. Contractor shall provide dust control in conformance with Section 10 of Standard Specifications and shall provide water to subgrades as necessary to achieve compaction goals.

1.09 GRADE STAKES AND LINES

- A. Grading and subgrading shall be controlled by Contractor-installed intermediate grade stakes and lines necessary to obtain the finished grade elevations shown or implied in the Drawings. Subgrade and finish grade surfaces shall conform to the control planes established by these grade stakes and lines.
- B. Protect and maintain all existing benchmarks, monuments, and other reference points. If disturbed or destroyed, they shall be replaced at the Contractor's expense.
- C. Contractor shall set temporary benchmarks as necessary to properly complete construction operations.

1.10 SURVEYING

- A. Contractor shall be responsible for hiring a licensed professional surveyor to perform all surveying, layout and staking in accordance with requirements specified in Section 01 71 23 - Field Engineering. Contractor shall be responsible for informing Owner's Representative a minimum 2 working days' notice when staking and layout is scheduled so that a review of completed chalk lines and staking can take place.

1.11 TOLERANCES

- A. Refer to related specification sections for grading tolerances of specified improvements.

PART 2 - PRODUCTS

2.01 PERFORMANCE CRITERIA

- A. Excavations shall not exceed plus or minus 1/10-foot variation from dimensions and elevations shown or noted, unless otherwise accepted by Owner's Representative.
- B. Grading Tolerance: Refer to related specification sections for grading tolerances of specified improvements.

2.02 MATERIALS

- A. Fill Material: Soil excavated from the site or imported conforming to requirements for fill material contained in applicable portions of Division III Grading, Section 19 - Earthwork of the Standard Specifications, unless modified by recommendations for fill material contained in the Geotechnical Report. Imported fill shall be approved by the Geotechnical Engineer before importation to the site.
- B. Topsoil: Excavated material from top 6 inches maximum of existing grade at unpaved areas and/or import material graded free of roots and rocks larger than two inches, subsoil, debris, weeds, large mats of grass, and other deleterious material. Topsoil shall be approved by the Owner's Representative and comply with the additional requirements specified in Section 32 90 00 - Planting.
- C. Subsoil: Excavated material below top 6 inches of existing grade, graded free of clay clods larger than 6 inches, rocks larger than 3 inches, and debris.
- D. Permeable Fills: As specified in Section 32 11 00 - Base Courses and conforming to recommendations for granular fill in the Geotechnical Report.
- E. Water: Clean and free from deleterious amounts of acids, alkalis, salts, and organic matter.
- F. Additional Materials: As noted in the Geotechnical Report.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Identify all required lines, levels, contours, datum, control points and property lines required to properly establish limits of work.
- B. Verify elevations of critical existing grades as noted on Drawings and as directed by Owner's Representative. Notify Owner's Representative of discrepancies prior to start of work and re-direct work to avoid delay.
- C. Identify all known below grade utilities. Stake and flag locations.
- D. Identify and flag surface grades and utilities.

- E. Contact Underground Service Alert (USA), 800-642-2444, and local utility companies to verify locations of existing utilities a minimum of 5 working days prior to excavation.

3.02 PROTECTION

- A. Maintain and protect existing utilities remaining which pass through work area.
- B. Perform excavation work near utilities by hand. Provide necessary protection as the work progresses.
- C. Provide and maintain protection for walks, curbs, drains, trees, corners of structures, and other improvement, as necessary to prevent damage.
- D. Barricade and/or cover open excavations occurring as part of this work and post with warning lights to the satisfaction of the Owner's Representative. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
- E. Keep adjacent properties, streets and drives clean of any dirt, dust, or stains caused by earthwork operations.
- F. Upon discovery of unknown utility or concealed conditions, notify the Owner's Representative immediately and re-direct work to avoid delay.
- G. Control dust on and near the work, and on and near off-site borrow areas.
 - 1. Thoroughly moisten surfaces as required to prevent dust from being a nuisance to the public, neighbors, and concurrent performance of any other activities that may occur on the site.
 - 2. Non-compliance with proper dust control measures will be cause for issuance of a "stop work" order by the Owner until such time as satisfactory measures can be implemented.

3.03 TOPSOIL EXCAVATION

- A. Excavate topsoil from areas scheduled for paving or rough grading and stockpile material in neat wind-row(s) and in location(s) previously established and accepted in coordination with the Owner's Representative and which will cause least interference to construction operations.
- B. Do not excavate topsoil that has become wetted to, or beyond, the saturation point that would be required for optimum compaction.
- C. Stockpile topsoil in wind-row(s) of a height not to exceed 8 feet, protect from erosion, and cover as necessary to prevent formation of dust.
- D. Topsoil excavation shall occur for the entire area or each field. No topsoil excavation shall occur for partial field areas without approval.
- E. Topsoil staging areas shall be clearly defined and protected from other grading and utility operations.

3.04 ROUGH GRADING

- A. Grade site subsoil to establish proper subgrade elevations and site contouring as described or implied in the Drawings:
- B. Contouring:
 - 1. Construct landforms depicted in the Drawings to the satisfaction of the Owner's Representative.
 - 2. "Round-off" tops of slopes.
 - 3. "Feather" toes of slopes.

- C. Compaction:
 - 1. Compact subgrade and engineered fill in accordance with the procedures and to relative compaction percent indicated in the Geotechnical Report.
 - 2. Compact by power tamping, rolling, or combinations thereof as accepted by Geotechnical Engineer.
 - a. Where impractical to use rollers in close proximity to adjacent construction, compact by mechanical tamping.
 - b. Scarify, moisture condition, and recompact any layer not attaining compaction until required density is obtained.
 - 3. Repeat compaction procedure until proper grade is attained.
- D. Compaction: Compact subgrade for the specific areas as follows unless otherwise noted:
 - 1. Areas to be Planted: Maximum 8-inch loose lifts to be between 85 percent and 88 percent relative compaction.
 - 2. Areas to be Paved:
 - a. Maximum 8-inch loose lifts to at least 95 percent relative density.
 - b. Additional lifts should not be placed if the previous lift did not meet the required density, relative compaction, moisture content or if the soil conditions are not stable. The top 12 inches shall be compacted to at least 95 percent relative compaction.
 - c. Fill soils shall be compacted to no less than 90 percent relative compaction at moisture content of 2 to 4 percent for pavement area.
 - d. Compacted subgrade should be non-yielding under construction traffic, including a loaded ten-wheel truck such as a water or dump truck, in all pavement areas. Removal and subsequent replacement of some material (i.e. areas of excessively wet materials, unstable subgrade, or pumping soils) may be required to obtain the minimum 95 percent compaction to the recommended depth of 12 inches.
 - e. Subgrade preparation for pavement areas shall extend laterally for at least two feet beyond the edge of pavement.
- E. Remove all excess subsoil material from site and dispose of in a legal manner. Refer to "Material Storage" below.
- F. Entire project or individual field area shall be rough graded at one time. No earthwork operation shall occur for partial field areas without receiving direction from the Owner or prior written approval from the Owner.

3.05 EXCAVATION

- A. Remove and dispose of all miscellaneous materials encountered when establishing required grade elevations:
 - 1. Miscellaneous materials can include but are not limited to: pavements and other obstructions, underground structures, utilities, abandoned irrigation materials, and other materials encountered per the discretion of the Owner's Representative.
- B. Stability of Excavations:
 - 1. Comply with any applicable recommendations contained within the Project Geotechnical Report and requirements of agencies having jurisdiction.
 - 2. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.
- C. De-watering: Provide and maintain, at all times during construction, ample means and devices with which to promptly remove and properly dispose of water from any source entering structural excavation, pipe trenches, or other excavations. All costs incurred from de-watering activities shall be paid for by the Contractor.
- D. Excavation for Structures: Conform to elevations and dimensions shown in the drawings within a tolerance of plus-or-minus 1/10 (0.10) of a foot, and extending a sufficient distance from footings and

foundations to permit placing and removal of concrete form-work, installation of services, and quality review.

- E. Excavation for Pavements: Cut surface under pavements to comply with cross-sections, elevations, and grades as shown in the Drawings.
- F. Material Storage:
 - 1. Stockpile satisfactory excavated materials where appropriate, until required for use.
 - 2. Stockpile topsoil and subgrade soil in separate piles.
 - 3. Place, grade, and shape stockpiles for proper drainage.
 - 4. Locate and retain stockpiles away from edge of excavations.
 - 5. Dispose of excess soil material in a legal fashion after it has become evident that the material is no longer needed on the project and is of no value to the Owner.

3.06 TOPSOIL PLACEMENT

- A. Thoroughly cross-rip all subgrade soil to a depth of 12 inches prior to placing the specified thickness of topsoil back into all applicable planting areas. Secure review and acceptance of ripping depth prior to placement of topsoil. Refer to Section 32 90 00 - Planting for this process.
- B. Topsoil placement requirements for planting areas shall be as follows:
 - 1. Planting Areas: A minimum of 6 inches of clean, acceptable topsoil.
 - 2. Topsoil shall not be placed until all earthwork and utility operations are complete.
 - 3. Topsoil shall be installed at one time for entire project or entire field area. No partial placements shall occur.
- C. Compact topsoil to 84 percent to 89 percent relative density.
- D. Maintain slopes and gradients established during subgrade operations and shape landforms to satisfaction of the Owner's Representative.
- E. Refer to Section 32 90 00 - Planting for finish grading information and finish grades at edge of planting areas and hardscape.

3.07 FIELD QUALITY CONTROL

- A. Tolerances: Conform to Section 19 of the Standard Specifications, unless more stringent requirements in these Contract Documents are provided, in which place the more stringent tolerances shall govern. Refer to Section 01 71 23 - Field Engineering for additional project requirements.
- B. The Owner Representative shall review and accept work at the following stages:
 - 1. Topsoil removal and stockpile.
 - 2. Grading plan for project. Plan shall provide strategy for grading sequence for entire site at one time or by field. Limits and sequence shall be reviewed and coordinated.
 - 3. Cross ripping of subgrade shall be reviewed and observed.

END OF SECTION

SECTION 31 23 00

EXCAVATION AND FILL

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Trenching, backfilling, and compaction required for, but not necessarily limited to, the following:
 - 1. Sanitary sewer line installation.
 - 2. Storm drainage system installation.
 - 3. Potable water line installation.
 - 4. Irrigation system installation.
 - 5. Electrical conduit installation.
- B. Related Requirements:
 - 1. Section 01 33 00 - Submittal Procedures
 - 2. Section 01 71 23 - Field Engineering
 - 3. Section 01 78 39 - Project Record Drawings
 - 4. Section 02 41 13 - Site Clearing and Demolition
 - 5. Section 31 20 00 - Earth Moving
 - 6. Section 32 01 90 - Existing Tree Protection and Maintenance
 - 7. Section 32 11 00 - Base Courses
 - 8. Section 32 90 00 - Planting
 - 9. Section 33 11 00 - Domestic Water Utilities
 - 10. Section 33 40 00 - Storm Drainage Utilities

1.02 REFERENCES

- A. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."

1.03 SEQUENCING AND SCHEDULING

- A. Refer to all other Contract Documents, determine the extent and character of related work, and properly coordinate work specified herein with that described elsewhere to produce a complete, operational installation.

1.04 CLOSEOUT SUBMITTALS

- A. Project Record Drawings:
 - 1. Conform to requirements specified in Section 01 78 39 - Project Record Documents.
 - 2. Accurately record locations of utilities remaining, re-routed utilities, new utilities, and newly discovered utilities by horizontal dimensions, elevations, inverts and slope gradients as practical.

1.05 QUALITY ASSURANCE

- A. Control of Work: Comply with Section 5 of the Standard Specifications.
- B. Control of Materials: Comply with Section 6 of the Standard Specifications.
- C. Trench Safety: Comply with applicable portions of Sections 5 and 7 of the Standard Specifications and requirements of OSHA and other agencies having jurisdiction).

1.06 FIELD CONDITIONS

- A. Wet Conditions: No trenching shall occur when excessively wet conditions exist in the opinion of the Owner's Representative.
- B. Dry Conditions: Contractor shall provide dust control in conformance with Section 10 of Standard Specifications and shall provide water to work as necessary to achieve compaction goals.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General: Materials shall be free of debris, roots, wood, scrap material, vegetative matter, refuse, soft unsound particles, or other deleterious and objectionable materials.
- B. Bedding for Utility Piping: Sand conforming to Section 19-3.02F(2) of the Standard Specifications.
- C. Native Backfill: Native backfill shall be acceptable soil material excavated from the project site. This material will be considered unclassified and no testing other than for compaction will be required. Additional material required for backfill shall be acceptable to the Owner's Representative.
- D. Permeable Material: Permeable material shall be Caltrans Class II permeable rock material.
- E. Slurry Fill: Controlled low-strength fluid material (CLSM) consisting of water, Portland cement, aggregate, and fly ash with slump of 10 inches or more and an unconfined compressive strength of 200 psi or less.
- F. Aggregate Base: As specified in Section 32 11 00 - Base Courses.

PART 3 - EXECUTION

3.01 PREPARATION

- A. General:
 - 1. Prior to trenching, the Contractor shall pothole existing utilities at locations indicated or implied on the Drawings, where new piping or utilities will cross existing utilities of uncertain depth to determine the elevation of the utility in question and ensure that the new line will clear the potential obstruction.
 - 2. The Contractor shall mark out construction areas in white with non-permanent paint and contact Underground Service Alert (U.S.A.), 800-642-2444, to locate all known utilities a minimum 48 working hours prior to any excavation.
 - 3. Should an existing crossing utility present an obstruction, the proposed line shall be adjusted as acceptable to the Owner's Representative to clear the existing utility.

3.02 TRENCH EXCAVATION

- A. General:
 - 1. Excavation shall include removal of water and materials that interfere with construction. Remove water which may be encountered in the trench by pumping or other methods prior to pipe laying, bedding and backfill operations. Trenches shall be sufficiently dry to permit proper jointing and compaction.
 - 2. Contractor is responsible for directing vehicular and pedestrian traffic safely through or around the work area at all times.

3. The Contractor shall relocate, replace, reconstruct or repair, to an "as-was" or better condition, surface or subsurface improvements which are in the line of construction or which may be damaged, removed, disrupted or otherwise disturbed by the construction activities. Except as specified in other Sections or shown in the Drawings, this provision applies to all surface improvements of whatever nature such as walls, fences, above-grade utilities, landscaping, paving, structures, or other physical features whether shown in the Drawings or not and to all subsurface improvements such as utilities which may be indicated in the Drawings or marked in the field. The Contractor shall connect modified utilities to existing systems and leave work in an operating condition. The cost of this work shall be considered as included in other items of work and no additional compensation will be allowed.
 4. The maximum allowable trench width at the top of pipe shall be 18 inches greater than the pipe diameter.
 5. New utility trenches extending deeper than 2 feet below finish grade should be located a minimum of 5 feet away from footings and foundations.
- B. Existing Paving Areas:
1. Existing asphalt paving over new trenches shall be sawcut, removed, and legally disposed. Existing asphalt paving shall be neatly sawcut 1 foot greater on each side than the trench width. If a longitudinal pavement joint or edge of pavement is located within 3 feet of the limit of excavation, intervening pavement shall be removed and replaced after completion of backfilling. If curb, gutter, or similar concrete improvement are to be replaced, the adjacent existing asphalt paving shall be sawcut 2 feet from the edge of concrete.
 2. Existing Portland cement concrete paving over new trenches shall be sawcut to a minimum depth of 1-1/2 inches in straight lines either parallel to the curb or at 90-degree angles to the alignment of the sidewalk prior to being broken out. No section to be replaced shall be smaller than 30 inches in either length or width. If the sawcut would fall within 30 inches of a construction joint, expansion joint, or edge, or within 12 inches of a score mark, the concrete shall be removed to the joint, edge, or mark.
- C. Walkway Areas:
1. Backfill for trenches or other excavations within walkway areas should be compacted in 6-inch maximum layers, unless otherwise noted, with hand-held tampers to assure adequate subgrade support.
- D. Compacted Fill Areas:
1. Where trenches are to be excavated in compacted fill, these trenches shall be backfilled with the fill materials excavated and re-compacted in the layers and to the density specified for the particular area.
- E. Open Trench:
1. No trench shall be left in an open un-protected condition at the end of the day. At the end of the day, open trenches shall be protected in a manner acceptable to the Owner's Representative.
 2. Provisions for trench crossings and access shall be made at all street crossings, driveways, water gate valves, and fire hydrants unless otherwise acceptable to the Owner's Representative.
- F. Excavated Material:
1. Excavated material not required for backfill or of value to the Owner shall be removed and legally disposed of by the Contractor at no additional cost.
 2. Material excavated in streets and roadways shall be laid alongside the trench no closer than 2 feet from the trench edge and kept trimmed to minimize inconvenience to public traffic.
 3. Provisions shall be made whereby all storm and waste water can flow uninterrupted in gutters or drainage channels to drainage structures.
 4. Excavated material shall not be stored on existing landscaping or paving without provisions being made to protect the surface below from being stained or otherwise adversely affected.
- G. Shoring

1. Should excavations extend more than 4 feet below existing ground surface, shoring will be required.
2. For trenching greater than 4 feet deep side slopes are not to exceed 1-1/2: 1 with a depth of 20' max.
3. When trenching greater than 4 feet deep, provide a trench box or shield approved by a PE or designed with accompanying tabulated data approved by a PE.
4. Provide shoring, bracing, or underpinning when trenching next to adjoining walls, sidewalks, or pavements. There shall be no trenching below the base or footing of a foundation that can reasonably be expected to pose a hazard to workers unless one of the mentioned support systems is used.
5. Follow OSHA standards for maintaining, installing, and removing support systems.
6. Utility trenches shall be excavated according to accepted engineering practices following OSHA.

3.03 PIPE BEDDING

A. Stabilization of Trench Bottom:

1. When the trench bottom is unstable due to wet or spongy foundation, trench bottom shall be de-watered as necessary. The Owner's Representative will determine the suitability of the trench bottom and the amount of sand, gravel, or crushed rock needed to stabilize the soft foundation.

3.04 TRENCH BACKFILL AND COMPACTION

A. General:

1. Construct backfill in two operations, initial and final.
2. Do not backfill where the foundation material in trench is already saturated, except as acceptable to the Owner's Representative. Provide a minimum cover as shown or specified.
3. Where settling greater than the tolerance allowed for grading occurs in trenches and pits due to unstable subgrade material, excavate to the depth necessary to rectify the problem, then backfill and compact the excavation as specified herein and restore the surface to the required elevation.
4. Place final backfill in 6-inch maximum loose lifts for utilities under roads, streets, concrete slabs or other areas to be paved.
5. Compact backfill surrounding ducts, conduits, pipes and other structures, including the top 12-inches of subgrade to 95 percent maximum density in accordance with ASTM D1557.
6. Backfill to permit the rolling and compacting of the completed excavation with the adjoining material providing the specified density necessary to enable rock placement of paving of the area immediately after backfilling has been completed.

B. Initial Backfill:

1. Prior to trench backfill, the condition of the trench and laying of pipe shall be acceptable to the Owner's Representative.
2. Select backfill material shall be used as initial backfill for all utilities except irrigation piping, except as otherwise noted and specified.
 - a. After the pipe has been properly laid and accepted by the Owner's Representative, selected backfill material shall be placed on both sides of the pipe and compacted to the depth shown in the Drawings.
 - b. Compaction: The initial backfill material shall be hand tamped in layers not exceeding 4 inches in uncompacted depth and shall be brought up uniformly on both sides of the pipe to avoid bending or distortional stress. After hand-tamping, the relative compaction of the initial backfill material shall be at least 95 percent relative compaction.

C. Final Backfill:

1. Native backfill material shall be used for final backfill, unless otherwise noted.
2. Compaction: Final backfill compaction shall be by mechanical means with backfill material placed in layers not exceeding 6 inches in loose depth. Each layer shall be thoroughly compacted before succeeding layers are placed. The use of machine tampers, except manually held types, shall not be permitted. Final backfill shall be compacted to a relative compaction of 95 percent for paving

areas. In planting areas, provide acceptable topsoil to required depth compacted to 85 percent to 89 percent maximum relative compaction.

D. Jetting: No jetting will be allowed.

3.05 TRENCH SURFACING

A. General:

1. In unimproved areas, the trench surface shall be restored to its original condition. No mounds of earth shall be left along the trench.
2. Backfill shall be flush with adjoining grade in a firm, unyielding position with no visible settling for a period of one year after Final Acceptance.

B. Paved Areas:

1. Temporary surfacing acceptable to the Owner's Representative shall be laid within 1 day after backfilling, except where the Contractor elects to place permanent surfacing within this time period, until permanent paving is installed.

END OF SECTION

SECTION 32 01 90

EXISTING TREE PROTECTION AND MAINTENANCE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Protection of trees and other plants that are scheduled to remain.
 - 2. Work necessary to ensure that trees, and landscaping in general, designated on the Drawings to remain receive all due protection, care, and maintenance necessary to ensure their survival.
 - 3. Irrigation as directed or as required to maintain the health of trees and other plants to remain, where existing irrigation of such plants is shut down for the work of this Contract.
 - 4. Provisions included in the Tree Removal Permit and Arborist Report.
- B. Work specifically includes the following:
 - 1. Erection of barriers and other general protective measures.
 - 2. Placement of wood shavings.
 - 3. Care of roots during grading.
 - 4. Inspection and recommendations.
 - 5. Repair and/or replacement of trees and other plants damaged during the construction operations.
 - 6. Repair and/or replacement of any irrigation systems damaged or removed during construction operations.
- C. Related Requirements:
 - 1. Section 02 41 13 - Site Clearing and Demolition
 - 2. Section 31 01 90 - Landscape and Site Maintenance
 - 3. Section 31 20 00 - Earth Moving
 - 4. Section 31 23 00 - Excavation and Fill
 - 5. Section 32 80 00 - Irrigation
 - 6. Section 32 90 00 - Planting
 - 7. Section 33 11 00 - Domestic Water Utilities
 - 8. Section 33 30 00 - Sanitary Sewerage Utilities
 - 9. Section 33 40 00 - Storm Drainage Utilities

1.02 REFERENCES AND REGULATORY REQUIREMENTS

- A. American Joint Committee on Horticultural Nomenclature (AJCHN), Standardized Plant Names.
- B. American Association of Nurserymen, Inc. (AAN), American Standard for Nursery Stock.
- C. Sunset Western Garden Book, Lane Publishing Company.
- D. Agricultural Code of California.
- E. Tree Removal Permit and Arborist Report (Attachment A).

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Action and Informational Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.
- B. Contractor shall avoid injury or damage resulting from the Contractor's operations, including:

1. Cutting, breaking, or skinning of roots, trunks, or branches.
2. Smothering or soil compaction by stockpiled materials, excavated materials, foot or vehicular traffic within the dripline.
3. Desiccation due to interruption of existing irrigation schedule.

C. Pre-Construction Meetings:

1. The Tree Work Contractor: Prior to commencing installation of Tree Protection Measures (TPM's), or performing any tree work or tree removal work, arrange and have the tree work contractor attend a pre-construction meeting with the Owners Representative to review tree protection requirements, TPM's, tree work and work procedures prior to commencing such on-site work.
2. Other Contractors: Unless specifically agreed to in advance by the Owners Representative, schedule all other contractors so as to be present on site to attend a single pre-construction meeting with the Owners Representative to review project specific tree protection requirements and review work procedures prior to commencing on-site activities. Schedule meeting after TPM's have been installed and accepted by the Owners Representative.

1.04 ACTION SUBMITTALS

- A. Product Data: Manufacturer's descriptive literature or "cut-sheets" for all products proposed for use.

1.05 EXAMINATION

- A. At the outset of construction, the Contractor shall have all trees to remain inspected by a qualified and experienced arborist, and the recommendations of the arborist shall be submitted in writing to the Owner's Representative.
- B. The Contractor shall be notified by the Architect of any changes or additions to the procedures herein specified.

1.06 GUARANTEE

- A. If a tree to remain is destroyed, or damaged so that in the judgment of the Owner's Representative it should be replaced, it shall be removed at Contractor's expense.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Protective Fencing: 6 foot high, self-supporting, chain link. Materials and installation shall conform to the requirements of the Chain Link Fence Manufacturers Institute (CLFMI) "Product Manual." Driven support posts are not acceptable.

PART 3 - EXECUTION

3.01 GENERAL

- A. Protect, prune, irrigate and maintain all existing trees and other vegetation not designated for removal.
- B. At a minimum, protect existing trees and other vegetation not designated for removal from the following:
1. Breaking, cutting and skinning of branches, bark and roots.
 2. Stockpiling of building materials, soil or trash within dripline.
 3. Vehicular traffic and parking.

- C. Trees and other vegetation not designated for removal that become damaged during the life of the project shall be repaired or replaced by the contractor at no cost to the Owner subject to the discretion of the Owner's Representative.

3.02 TREE PROTECTION

- A. Tree Protection Zones (TPZ): Unless otherwise expressly permitted by the Owners Representative in writing, establish a 20 foot TPZ as measured horizontally and radially from the edge of the root flare at the ground surface at all trees to be preserved.
- B. TPZ Access and Uses:
 - 1. TPZ's are intended to control access and limit physical damage to canopy and root system, and to prevent harmful changes to growing conditions such as altered drainage, or soil compaction.
 - 2. No ground disturbing construction such as clearing and grubbing, trenching, grading or excavation, nor other construction activities such as demolition, long or short term debris, spoils, soils and materials stockpiling or storage, washout or dumping of wastes and contaminants, equipment staging, equipment access, or worker access, shall be permitted within TPZ's unless specifically enumerated in the owners Representative accepted tree protection documents, or as may be otherwise specifically established by written agreement between the owners Representative.
- C. Ground Disturbance Controls:
 - 1. Relocate from and/or limit ground disturbing activities within TPZ's.
 - 2. Obtain Owners Representative acceptance of all ground disturbing work and contractor means and methods proposed within the TPZ's prior to commencing such work.
 - 3. Perform all such Owners Representative accepted ground disturbing work in a manner that minimizes root disturbance and soil compaction.
 - 4. As may be requested by the Owners Representative, employ alternative means and methods including but not limited to clearing and grubbing by hand tools and/or hand operated equipment, demolition using a "lifting" technique, and excavation and trenching by hand digging, soil vacuuming, air spading or hydraulic jetting, or by boring in lieu of trenching, employing cellular confinement backfilled with class ii permeable material in lieu of subgrade excavation, scarification and/or compaction.
 - 5. Reflect Owners Representative accepted ground disturbance control measures in tree protection documents and/or Construction Plan as appropriate.
- D. Equipment Access Controls:
 - 1. Where mechanized equipment access within TPZ's is accepted by the Owners Representative, but prior to accessing equipment, protect tree trunks and limbs to a minimum height of 8 feet above the soil line.
 - 2. Wrap the tree trunk and/or limbs with burlap wrap fiber rolls, place vertical 2 x 4 wood slats set 8 inches on center over the netting and secure with orange safety fencing and nylon or metal banding, or continuously spiral wrap trunk and limbs with burlap covered rice straw wattles.
 - 3. Do not attach fasteners into the tree.
 - 4. Prior to accessing equipment within TPZ's, protect soil from compaction by placing and then maintaining wood chips to a depth of 6 inches in all areas of the TPZ subject to equipment traffic.
 - 5. Based upon equipment to be used and access frequencies planned, provide additional protection measures such as steel plating or cellular confinement filled with class ii permeable material as may be directed by the Owners Representative.
 - 6. Throughout the project duration, the Owners Representative reserves the right to require the Contractor to reposition equipment or utilize alternative construction methods to avoid damage to trees to be preserved.
 - 7. Reflect Owners Representative accepted equipment access control measures in tree protection documents and/or Construction Plan as appropriate.
- E. Aerial Equipment Controls:

1. When Construction Plan utilizes aerial equipment such as cranes or boom trucks, such equipment staging and maneuvering shall be subject to Owners Representative acceptance.
 2. Aerial movements of boom or suspended loads shall avoid passing over or in close proximity to canopies of trees to be preserved.
 3. The Owners Representative reserves the right to require spotters and/or to require the repositioning of equipment or utilization of alternative equipment to avoid movements in close proximity to canopies of trees to be preserved.
 4. Reflect Owners Representative accepted aerial equipment control measures in tree protection documents and/or Construction Plan as appropriate.
- F. Tree Protection Fencing (TPF) :
1. Install a 6 foot tall self-supporting chain link type TPF at perimeter of TPZ of all trees to be preserved.
 2. Where site constraints and safety considerations prevent placement of the TPF at the limits of the TPZ, obtain direction from the owners representative and locate fence as directed.
 3. Caution: Owners Representative accepted adjustments in TPF locations do not alter the extents of the actual TPZ's or the requirements related thereto.
 4. Mount Owner-furnished tree protection signs on TPF in a manner and in locations as may be directed by the Owners Representative.
 5. Where Owners Representative accepted work within TPZ's requires temporary relocation of TPF, obtain Owners Representative acceptance for proposed fence relocation prior to relocation.
 6. Promptly relocate TPF to the original alignment whenever not actively engaged in working within a specific TPZ.
- G. Work Monitoring:
1. When required by the Owners Representative, all work performed within TPZ's shall be continuously monitored by the Owners Representative and/or Project Arborist, if retained.
 2. Coordinate scheduling of work with availability of the designated monito.
- H. Tree Roots:
1. Severing roots greater than 1 inch in diameter within the TPZ requires prior written authorization by the Owners Representative.
 2. Where roots in excess of 1 inch in diameter are encountered within the TPZ, avoid damaging the roots as set forth above in ground disturbance controls.
 3. If damage is unavoidable, suspend work prior to damaging the roots, protect exposed roots, and request a change assessment as set forth above in assessments. Do not resume work or damage roots until Owners Representative has provided written instructions.
 4. Roots damaged during construction shall be exposed to sound tissue and cut cleanly.
 - a. Sever roots cleanly by cutting with a sharp hand saw.
 - b. Severed roots greater than 1 inch in diameter are subject to field review by the Owners Representative prior to backfilling.
- I. Canopy Pruning:
1. Pruning of tree canopies for clearance during construction shall be allowed only with prior acceptance by the Owners Representative. Notify the Owners Representative of proposed canopy pruning and request a change assessment as set forth above in assessments.
 2. Where practical, the Owners Representative may require that tree limbs be temporarily tied back in lieu of pruning.
 3. When pruning is not permitted, perform work by alternate means that does not require pruning of canopies.
 4. Tying and pruning work shall be performed under the supervision of the Project Arborist.

3.03 PROTECTIVE FENCING

- A. Prior to site clearing, demolition or grading, install acceptable protective fencing around all existing trees and other vegetation not designated for removal 1 foot beyond dripline or as directed by Owner's Representative.
- B. Locate structural roots by hand probing and set posts with care to preclude root damage.
- C. Space protective fencing posts at 6'-0" centers maximum and securely attach fabric.
- D. Maintain protection until Final Acceptance of project.
- E. Install signage indicating that the protective fencing and area within shall not be disturbed.
- F. When work is required within the fenced protection area, submit a written request to the Owner's Representative stating work to be performed and approximate time of completion. No work shall be allowed within the protected fenced area without the prior acceptance by the Owner's Representative. Fencing shall be replaced promptly following completion of work within fenced areas.

3.04 GRADING AND TRENCHING

- A. The earth surface within protective fencing shall not be altered except as acceptable to the Owner's Representative. Grading and trenching necessary within the dripline shall be done by hand at the discretion of the Owner's Representative.

3.05 IRRIGATION

- A. Provide and maintain irrigation for existing trees and other vegetation not designated for removal as necessary to promote healthy, vigorous growth. Weekly watering shall occur with a 20 minute soak equivalent to 100 gallons per tree.

3.06 ROOT PRUNING

- A. Root pruning shall consist of a smooth, final cut and shall be performed wherever a root 2 inches or more in diameter has been broken or severed.

3.07 CANOPY PRUNING

- A. Pruning shall be completed by a tree care contractor or under supervision of a licensed arborist.
- B. Prune existing trees to remain in accordance with the following guidelines:
 - 1. Proper removal of dead branches and live "stubs" 3 inches and over in diameter.
 - 2. Removal of broken or loose branches and other debris lodged in trees and shrubs.
 - 3. Removal of live branches which interfere with tree structural strength and healthful development. These include:
 - a. Limbs which rub and abrade a more "important" or dominant branch, and as directed by the Owner's Representative.
 - b. Limbs of weak structure.
 - c. Limbs with twigs and foliage obstructing the development of more "important" branches, as directed by the Owner's Representative.
 - d. Branches near the end of a limb which may produce more weight than the limb is likely to support.
 - e. Branches conflicting with building or vehicular roadways.
 - 4. Removal of branches located between grade level and 10 feet above grade over pedestrian walkways.

- C. Selectively prune branches as deemed necessary by the Owner's Representative.

3.08 PRUNING REPAIRS

- A. Prune and treat damaged area as directed by the Owner's Representative.

3.09 CLEAN-UP

- A. Branches, trimmings and debris remaining upon completion of each operation shall become property of the Contractor and shall be promptly removed from the site.

END OF SECTION

SECTION 32 11 00

BASE COURSES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Grading and compaction of subgrade soil for areas to receive pavement, structures, and base material.
 - 2. Furnishing and placing of aggregate base material.
- B. Related Requirements:
 - 1. Section 01 71 23 - Field Engineering
 - 2. Section 31 20 00 - Earth Moving
 - 3. Section 32 12 16 - Asphalt Paving
 - 4. Section 32 13 13 - Concrete Paving

1.02 REFERENCES

- A. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Action Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.
- B. Sequencing and Scheduling
 - 1. Work of this Section shall not proceed until all underground utilities and irrigation sleeving have been installed and accepted.
 - 2. Contractor shall schedule work so that installation of paving and surfacing occurs no later than 5 working days after placement and proper compaction of base materials. Base materials left unpaved longer than this time period shall be subject to testing and re-compaction at the contractor's expense.

1.04 ACTION SUBMITTALS

- A. Certificates of compliance, including sieve analyses, for products and materials proposed to be used in work covered by this Section.

1.05 QUALITY ASSURANCE

- A. Control of Work: Conform to Section 5 of the Standard Specifications.
- B. Control of Materials: Conform to Section 6 of the Standard Specifications.

1.06 FIELD CONDITIONS

- A. Wet Conditions: Do not prepare subgrade or place base material when excessively wet conditions exist as determined by the Owner's Representative.

- B. Dry Conditions: Contractor shall provide dust control in conformance with Section 10 of Standard Specifications and shall provide water to subgrades and base courses as necessary to achieve compaction goals.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Materials shall be stockpiled on site in locations that, in the opinion of the contractor, cause least interference with construction operations and as acceptable to the Owner's Representative.
- B. Materials shall not be stockpiled in proposed planting areas.
- C. Protect materials from segregation, contamination and wind and water erosion.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Aggregate Base: Class 2, 3/4-inch maximum material conforming to Section 26-1.02A of the Standard Specifications. No recycled materials will be accepted.

PART 3 - EXECUTION

3.01 SUBGRADE PREPARATION

- A. Preparation of subgrade shall conform to Section 6 of the Standard Specifications and as specified in Section 31 20 00 - Earth Moving.
- B. Remove unsuitable subgrade material as necessary and replace with suitable material or aggregate base per the discretion of the Owner's Representative.

3.02 BASE MATERIAL PLACEMENT

- A. Conform to Section 26 of the Standard Specifications.
- B. Obtain acceptance of subgrade preparation work prior to placing base material thereon.
- C. Place and compact base material in 6-inch maximum lifts unless otherwise noted. Compaction shall be at least 95 percent relative compaction.
- D. Base material shall be moisture conditioned to between optimum and 3 percent above optimum prior to placement and compaction.

3.03 TOLERANCES

- A. Conform to Section 26 of the Standard Specifications, unless more stringent requirements in these Contract Documents are provided, in which place the more stringent tolerances shall govern.

3.04 CLEAN-UP OF WORK AREA

- A. The Contractor shall remove and legally dispose of excess materials, spoils, and debris from the job site on a daily basis.

3.05 PROTECTION OF FINISHED PRODUCT

- A. The Contractor shall provide lighted barricades, signs, and other devices as necessary to prevent damage to finished base courses.

END OF SECTION

SECTION 32 12 16

ASPHALT PAVING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Asphalt paving is shown on the Drawings including, but is not necessarily limited to, the following:
 - 1. Plant-mixed asphalt and other asphalt items.
 - 2. Header boards.
- B. Related Requirements:
 - 1. Section 01 33 00 - Submittal Procedures
 - 2. Section 31 20 00 - Earth Moving
 - 3. Section 32 11 00 - Base Courses
 - 4. Section 32 13 13 - Concrete Paving
 - 5. Section 32 33 00 - Site Furnishings
 - 6. Section 33 40 00 - Storm Drainage Utilities

1.02 REFERENCES

- A. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Informational Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.
- B. Sequencing and Scheduling:
 - 1. Time delay between placement and compaction of base material and installation of asphaltic shall not be more than 5 calendar days. Base material left unpaved longer than this time period shall be subject to testing and re-compaction at the expense of the contractor.

1.04 ACTION SUBMITTALS

- A. Product Data: Descriptive literature for primer and other materials proposed for use if requested by the Owner's Representative.
- B. Certificates, signed by asphaltic producer and Contractor, stating that materials comply with specification requirements. Minimum information submitted shall include a manufacturer's certification for asphalt products and an asphalt mix design by an independent, qualified laboratory.
- C. The Contractor shall furnish vendor's certified test reports for each carload, or equivalent of bituminous material shipped to the project, signed by asphaltic producer and Contractor stating that materials comply with specification requirements.
 - 1. Minimum information submitted shall include a manufacturer's certification for asphalt products and an asphalt mix design by an independent, qualified laboratory.
 - 2. The report shall be submitted and approved before material is used on the Project. The furnishing of the vendor's certified test report for the bituminous material shall not be interpreted as basis for final acceptance.

3. Test reports shall be subject to verification by testing samples of materials received for use on the project.

1.05 CLOSEOUT SUBMITTALS

- A. Warranty as specified.

1.06 QUALITY ASSURANCE

- A. Work shall conform to the appropriate portion of the referenced "Standard Specifications" except references to "measurement" and "payment" are not applicable.
- B. Control of Work: Conform to Section 5 of Standard Specifications.
- C. Control of Materials: Conform to Section 6 of Standard Specifications.
- D. Asphalt paving surfaces shall have positive drainage as indicated on the Drawings.

1.07 PROTECTION OF WORK

- A. Curbs and other work shall be covered with suitable material and protected from staining or injury by equipment and contact with oil, emulsion, and asphalt.
- B. Manholes, catch basins, and other gratings shall be covered with suitable material so that no asphalt or emulsion will come in contact with the inside walls or floors of the structures.
- C. Damage to adjacent improvements shall be repaired or replaced at the Contractor's expense and to satisfaction of the Owner's Representative.

1.08 FIELD CONDITIONS

- A. Grade Control:
 1. Establish and maintain required lines and grades, including crown and cross slope.
 2. The final grades and elevations of the ground paving shall be a consistent depth below adjacent concrete work.
- B. Ambient Conditions:
 1. Apply bituminous prime and tack coats only when ambient temperature in shade is at least 50 degrees F and when temperature has not been below 35 degrees F for 12 hours immediately prior to application.
 2. Do not apply when substrate surface is wet or contains an excess of moisture.
 3. Construct asphaltic surface course only when atmospheric temperature is above 40 degrees F and underlying base is thoroughly dry.

1.09 WARRANTY

- A. Contractor: Provide an extended 2-year warranty for asphalt paving.
 1. Warranty shall be limited to ordinary wear and tear by weather or defects due to faulty materials and workmanship.
 2. Make repairs at no expense to Owner.

PART 2 - PRODUCTS

2.01 DESIGN AND PERFORMANCE REQUIREMENTS

- A. At no point shall paved surface fail to drain. Provide drainage as indicated on the Drawings.
- B. Asphalt paving shall be free from excessive segregation defined as gaps between aggregate visible at 3/16 inch or larger, cracking, potholes, raveling, slippage, depressions, corrugations, or other defects at the date of completion and acceptance of the project.
- C. Unless otherwise noted, aggregates in asphalt mix may be a blend of virgin material and reclaimed asphalt paving (RAP), with the RAP constituting no more than 15% of the aggregate blend per Section 39 of the Standard Specifications.
- D. Asphalt mix for use beneath track surfacing, tennis court surfacing, or other court system to receive surface coating shall consist of only virgin material; RAP shall not be used.

2.02 ASPHALT PAVING

- A. Paving Asphalt Binder: Shall be PG 64-10, conforming to Section 92 of the Standard Specifications.
- B. Prime Coat: Liquid asphalt to conform to the requirements for SS-1 liquid asphalt as per Section 94 of the Standard Specifications and approved by the Owner's Representative.
- C. Tack Coat: Asphaltic emulsion to be penetration type conforming to the RS-1 requirements of Section 94 of the Standard Specifications.
- D. Aggregates:
 - 1. Traffic Areas (Vehicular Asphalt Paving): 1/2-inch medium in accordance with the gradation requirements of Section 39 of the Standard Specifications, unless otherwise specified or noted. Traffic area aggregate shall be used in parking and street areas.
 - 2. Pedestrian and Non-Vehicular Areas: 3/8 inch maximum or No. 4 maximum aggregate in accordance with the gradation requirements of Section 39 of the Standard Specifications, unless otherwise specified or noted.

2.03 HEADERS

- A. Refer to details on the Drawings.

2.04 AGGREGATE BASE

- A. Aggregate base shall conform to Section 32 11 00 - Base Courses.

2.05 EQUIPMENT

- A. Spreading and rolling equipment shall be in accordance with Section 39-5 of the Standard Specifications and additional requirements specified.
- B. Spreading and compaction shall be in accordance with Section 39-6 of the Standard Specifications and additional requirements specified.
- C. Pavers that leave ridges, indentations or other marks in the surface that cannot be eliminated by rolling or prevented by adjustment in operation shall not be used.

PART 3 - EXECUTION

3.01 EDGE BAND AND WOOD HEADER INSTALLATION

- A. Install to conform to shapes, lines, dimensions, and grades shown on the Drawings.
- B. Radii shall be smooth and constant with properly aligned tangent points.

3.02 PAVING INSTALLATION - GENERAL

- A. Conform to requirements of Sections 37 and 39 of the Standard Specifications.
- B. Place plastic materials under asphaltic paving equipment while not in use, to catch and/or contain drips and leaks.
- C. Areas shall be paved in sequence and direction to avoid driving loaded trucks on the new asphalt surface.

3.03 PREPARATION – PRIME COAT

- A. Apply primer in accordance with Standard Specifications Section 39 on aggregate base.
- B. Immediately before applying the prime coat, loose dirt and other objectionable material shall be removed from the full width of the surface to be primed.
- C. The bituminous material including solvent shall be uniformly applied with a bituminous distributor at the rate of 0.25 to 0.50 gallon per square yard depending on the base course surface texture. The type of bituminous material and application rate shall be approved by the Owner's Representative prior to application.
- D. Following the application, the primed surface shall be allowed to dry not less than 24 hours without being disturbed or for such additional time as may be necessary to permit the drying out of the prime coat until it will not be picked up by traffic or equipment. This period shall be determined by the Owner's Representative. The surface shall then be maintained by the Contractor until the surfacing has been placed.
- E. Suitable precautions shall be taken by the Contractor to protect the primed surface against damage during this interval, including supplying and spreading sand necessary to absorb excess bituminous material.

3.04 PREPARATION – TACK COAT

- A. General: Apply tack coat to contact surfaces of adjacent pavement and concrete curbs.
- B. Immediately before applying the tack coat, the full width of surface to be treated shall be swept with a power broom and/or air blast to remove all loose dirt and other objectionable material.
 - 1. Vegetation shall be removed and an approved herbicide applied to those areas before cleaning.
 - 2. Emulsified asphalt shall be diluted by the addition of water when directed by the Owner's Representative and shall be applied a sufficient time in advance of the paver to ensure that all water has evaporated before the overlying mixture is placed on the tacked surface.
 - 3. The bituminous material including vehicle or solvent shall be uniformly applied with a bituminous distributor at the rate of 0.05 to 0.07 gallons per square yard. The type of bituminous material and application rate shall be approved by the Owner's Representative prior to application.

- C. Following the application, the surface shall be allowed to cure without being disturbed. The curing period shall be not less than 24 hours, unless otherwise approved by the Owner's Representative, and shall be sufficient to permit drying out and setting of the tack coat.
- D. After tack coat has cured, suitable precautions shall be taken by the Contractor to protect the surface against damage prior to placement of next course.

3.05 PLACING ASPHALT PAVEMENT

- A. General:
 - 1. Place asphalt within 48 hours of applying primer or tack coat and after required curing time for emulsions.
 - 2. Each course of asphalt concrete shall be installed or constructed in accordance with the Standard Specifications Section 39.
 - 3. All layers, except as otherwise provided in these Specifications, shall be spread with mechanical spreading and finishing equipment as provided for in the Standard Specifications Section 39-5.01.
- B. Tack and Levelling Course:
 - 1. After completion of the base course a tack coat shall be applied and a leveling course of minimum 1-inch thickness shall be placed and compacted over entire courts area.
 - 2. After compacting, the surface of the leveling course shall be check for compliance with the specified tolerances.
 - 3. Where required, depressions shall be filled with asphalt concrete fines prior to proceeding with subsequent pavement construction and final court surfacing.
- C. Paver Equipment Requirements:
 - 1. Asphalt pavers shall be self-propelled mechanical spreading and finishing equipment provided with a screed or strike-off assembly capable of distributing the material to not less than the full width of a traffic lane.
 - a. Screed action shall include cutting, crowding, and other practical action which is effective on the mixture without tearing, shoving, or gouging, and which produces a surface texture of uniform appearance.
 - b. The screed shall be adjustable to the required section and thickness. The paver shall be provided with a full width roller or tamper or other suitable compacting devices.
 - 2. Asphalt pavers shall be operated to insure continuous and uniform movement of the paver.
 - 3. The asphalt paver shall operate independently of the vehicle being unloaded or shall be capable of propelling the vehicle being unloaded in a satisfactory manner and, if necessary, the load of the haul vehicle shall be limited to that which will insure satisfactory spreading.
 - 4. While being unloaded, the haul vehicle shall be in contact with the machine at all times, and the brakes on the haul vehicle shall not be depended upon to maintain contact between the vehicle and the machine.
- D. Placing Hot-Mix Asphalt:
 - 1. The completed mixture shall be deposited at a uniform quantity per linear foot to provide the required compacted thickness without resorting to spotting, picking-up or otherwise shifting the mixture.
 - a. Segregation shall be avoided, and the surfacing shall be free from pockets of coarse or fine material.
 - b. Asphalt containing hardened lumps shall not be used.
 - 2. Unless lower temperatures are directed by the Owner's Representative, mixtures shall be spread, and the first coverage of initial or breakdown compaction shall be performed, when the temperature of the mixture is not less than 275 degrees F. Breakdown compaction shall be completed before the temperature of the mixture drops below 250 degrees F.

- a. A layer shall not be placed over another layer that exceeds 2 inches in compacted thickness until the temperature of the layer that exceeds 2 inches in compacted thickness is less than 150 degrees F at mid depth.
 - b. Layer thickness shall not be less than 1.25 inches or exceed 2 inches unless approved in advance and in writing by Owner's Representative.
- E. Construction Joints: Before placing the top layer adjacent to cold transverse construction joints, the cold transverse construction joints shall be trimmed to a vertical face and to neat line.
 - 1. Transverse joints shall be tested with a 16-foot straightedge and shall be cut back to conform to meet the specified tolerances.
 - 2. Connections to existing surfacing shall be feathered to conform to the requirements for smoothness.
 - 3. Longitudinal joints shall be trimmed to a vertical face and to a neat line if the edges of the previously laid surfacing are, in the opinion of the Owner's Representative, in such condition that the quality of the completed joint will be affected.
- F. Rollers and Roller Equipment: The Contractor shall furnish a sufficient number of rollers to achieve the compaction and surface finish required by these Specifications.
 - 1. Each roller shall have a separate operator.
 - 2. Rolling equipment shall be self-propelled and reversible.
 - 3. Rollers shall be equipped with pads and water systems that prevent sticking of asphalt mixtures to the pneumatic- or steel-tired wheels.
 - 4. A parting agent that will not damage the asphalt mixture, as determined by the Owner's Representative, may be used to aid in preventing the sticking of the mixture to the wheels.
- G. Compaction:
 - 1. Compact pavement by rolling to a specified relative compaction that is 93-96% of bulk unit weight, tested in accordance with the nuclear gauge or CTM 309 core method.
 - a. Do not displace or extrude pavement from position.
 - b. Hand compact in areas inaccessible to rolling equipment.
 - c. A "pass" shall be one movement of a roller in either direction.
 - d. A "coverage" shall be as many passes as are necessary to cover the entire width being paved.
 - e. Overlap between passes during a coverage, made to ensure compaction without displacement of material in accordance with good rolling practice, shall be considered to be part of the coverage being made and not part of a subsequent coverage.
 - f. Each coverage shall be completed before subsequent coverages are started.
 - g. Rolling shall commence at the lower edge and shall progress toward the highest portion.
 - h. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.
 - i. In-place density of asphalt concrete will be determined prior to opening the pavement to public use.
 - j. Relative compaction will be determined by California Test 375.
 - k. Laboratory specimens will be prepared in conformance with California Test 304.
- H. The completed surfacing shall be thoroughly compacted, smooth, and free from routes, humps, depressions, or irregularities. Ridges, indentations, or other objectionable marks left in the surface of the asphalt paving by blading or other equipment shall be eliminated by rolling or other means. The use of any equipment that leaves ridges, indentations, or other objectionable marks in the asphalt paving shall be discontinued, and other acceptable equipment shall be furnished by the Contractor.

3.06 TOLERANCES

- A. Surface Tolerance:
 - 1. The Contractor shall have on site a 12-foot straightedge for testing the asphalt paving surface when said straightedge is laid on the finished surface and parallel with the center line, the surface shall not vary more than 0.01-foot from the lower edge of the straightedge.

2. The transverse slope of the finished surface shall be uniform to a degree that no depressions greater than 0.02-foot are present when tested with a straightedge 12 feet long.
3. Skin patching will not be allowed to correct depressions.

B. Thickness Tolerance:

1. The pavement thickness shall be determined by measuring the average thickness of core samples taken from the pavement for density determination.
2. Thickness will be determined from the cores and shall be based upon the average of the cores.
3. The asphalt thickness indicated on the cross sections shall be maintained.
4. Thickness deficiencies in excess of 3/8-inch shall be corrected by removal and replacement of overlay at the discretion of the Owner's Representative.
5. Skin patches and overlays less than 1-1/2 inches will not be allowed.

C. Adjustments to Contract Sum:

1. The Contract will be reduced for thickness deficiencies equal to or less than 3/8-inch in proportion to 2 times the percent of thickness deficiencies to the specified pavement thickness (i.e., a 1/4-inch thickness deficiency in a pavement with a 2-inch specified thickness would result in a reduction of the unit price of $(2 \times 0.25)/2.0 = 25$ percent) for the lot containing a thickness deficiency.
2. No Contract Sum adjustment will be made for thickness in excess of those specified or shown.

3.07 FIELD QUALITY CONTROL

- A. Take samples and perform tests in accordance with Caltrans Test Methods.
- B. Upon completion of the work, Contractor shall provide a water drainage test for paved areas.
 1. Areas that fail to drain properly, as determined by the Owner's Representative, shall be corrected and repaired at no additional cost.
 2. If repaired, the entire surface shall have a seal coat applied at Contractor's cost.
 - a. Type of seal coat will be determined by the Owner's Representative.
 - b. Repairs shall be made within 15 calendar days of notification at the expense of the Contractor.

3.08 PROTECTION

- A. After final rolling, do not permit vehicular traffic on pavement until it has cooled to not less than temperature noted in the "Standard Specifications" and hardened and in no case sooner than 6 hours.
- B. Contractor shall be responsible for erecting barricades to protect paving from traffic until mixture has cooled and attained its maximum degree of hardness.
- C. Ample time shall be allowed for drying before traffic, vehicular and pedestrian, is allowed on the pavement.

END OF SECTION

SECTION 32 13 13

CONCRETE PAVING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Concrete flatwork as shown on the Drawings including, but is not necessarily limited to, the following
 1. Curbs and gutters.
 2. Valley gutters and concrete swales.
 3. Mowbands and edge bands.
 4. Accessible ramps.
 5. Driveway aprons.
 6. Walkways.
 7. Expansion and control joints.
 8. Reinforcement.
 9. Finishing.
- B. Related Requirements:
 1. Section 01 33 00 - Submittal Procedures
 2. Section 01 71 23 - Field Engineering
 3. Section 32 12 16 - Asphalt Paving
 4. Section 31 20 00 - Earth Moving
 5. Section 32 11 00 - Base Courses
 6. Section 32 32 15 - Landscape Concrete; foundations and formed concrete for planters, seat walls, and other site improvements as shown.
 7. Section 32 33 00 - Site Furnishings

1.02 REFERENCES

- A. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Informational Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.
- B. Pre-Installation Meeting: Conduct meeting at Project site to review scope of concrete paving work and expectations.
 1. Meeting shall be scheduled after approval of mockups and sufficiently in advance of commencement of concrete paving.
 2. Attendees shall include:
 - a. Contractor.
 - b. Concrete subcontractor.
 - c. Owner's Representatives.

1.04 ACTION SUBMITTALS

- A. Product Data: Manufacturers' current catalog cuts and specifications for the following:
 1. Expansion joint filler materials.

2. Color admixtures.
3. Curing compounds.
4. Surface retarder.
5. Other items as requested by Owner's Representative.

B. Samples:

1. Concrete materials as required for testing and inspection.
2. Expansion Joint Sealant: Manufacturer's standard bead samples showing full range of colors available.
3. Concrete Panels: Not less than 12 inches by 12 inches for each selected color and finish texture using concrete mix proposed for this Project.
 - a. Indicate materials and methods used to produce each color and texture.
 - b. Mockup work shall not commence until a concrete sample panels have been approved.

- C. Concrete Mix Design: Submit mix designs and certified compressive strength test reports for each concrete strength, type, additives, and maximum aggregate size required, prepared, and certified by the ready-mix concrete supplier.

1.05 INFORMATIONAL SUBMITTALS

- A. Statement of installer/finisher qualifications if requested by Owner's Representative.
- B. Mill Certificates and Certifications for reinforcing bars, if used.
- C. Delivery tickets for each load of concrete delivered to the site.
- D. Results of slip-resistance testing.

1.06 QUALITY ASSURANCE

- A. Construction of concrete flatwork, including curbs and gutters, shall conform to Section 73 of the Standard Specifications.
- B. Codes and Standards: Comply with the applicable provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:
 1. California Building Code, Title 24, Part 2, Chapter 19A - Concrete
 2. ACI 301 Specifications for Structural Concrete for Buildings
 3. ACI 318 Building Code Requirements for Reinforced Concrete
 4. ACI 614 Recommended Practice for Measuring, Mixing, and Placing Concrete
 5. Concrete Reinforcing Steel Institute, Manual of Standard Practice
- C. Contractor shall be responsible for quality of concrete in place and shall bear burden of proof that concrete as placed meets minimum requirements.
- D. Slip Resistance: Floor tile shall provide a value equal to or greater than 0.42 when tested in accordance under dry conditions with DCOF AcuTest procedure contained in ANSI A137.1:2012, Section 9.6, and under wet conditions with DCOF AcuTest procedure of ANSI B101.3.
- E. Concrete Testing:
 1. The Owner may retain, at its expense, a testing laboratory to perform material evaluation tests in accordance with Section 01 45 00 - Quality Control.
 2. Testing may include slump tests and securing samples of concrete, cement, aggregates, or other materials for testing. Applicable materials shall be provided by the Contractor at no additional cost to the Owner.

- F. When review or observation is required of the Owner's Representative of the concrete work, Contractor shall notify the Owner's Representative not less than 2 working days prior to date when the review or observation is required.
- G. Pre-Pouring Review:
 - 1. Formwork, joint patterns, base material, reinforcement, "dobies," ties, and other installation accessories shall be reviewed and accepted by the Owner's Representative prior to pouring concrete.
 - 2. Forms, reinforcing, and accessories shall be in place and Contractor shall give a minimum of 5 working day lead-time notice to Owner's Representative when scheduling the review request.
 - 3. Contractor shall allow a minimum of 2 working days after pre-pour review in Construction Schedule for possible modifications to concrete preparation work, at no cost or delay to the project.
- H. The Owner's Representative shall have access to any off-site batch plant or quarry supplying materials at all times for subject project and trucks in route to the project site.
- I. Mockups:
 - 1. General:
 - a. Mix design shall match that used on accepted sample panels and proposed for use in final construction including cement and color additive.
 - b. Prepare at least one month before start of final concrete work to allow concrete to cure before observation.
 - c. Concrete color and finish for mockup appearance shall match color and finish of accepted sample.
 - d. Build mockups at the location indicated or, if not indicated, as selected by the Owner's Representative
 - e. Notify Owner's Representative 5 working days in advance of dates and times when mockups will be constructed and layouts will be ready for review.
 - f. Color and texture shall be approved before starting construction.
 - g. Perform specified slip-resistance testing on mockups.
 - h. Maintain final accepted mockups in an undisturbed condition as a standard for judging the completed Work.
 - i. Retain samples of sands, aggregates, and color additive used in the mockups for comparison with materials used in final work.
 - j. Demolish and remove mockups when directed if not incorporated into the final work.
 - 2. Flat Paving Mockups:
 - a. 4-feet x 4-feet sample panels of colored concrete flatwork for each required color and texture shall be poured by the Contractor at the site for review and acceptance by the Owner's Representative.
 - b. Quantity:
 - 1) Contractor shall allow for preparation of up to 2 flat paving mockups for evaluation and final approval of each concrete.
 - 2) For mockups demonstrating appearance using specified surface retarder, Contractor shall prepare a mockup using specified retardant level plus additional samples one level higher and one level lower, of applicable, for review by Owner's Representative.
 - c. Samples shall include each type and profile of joint, surface texture, and tooled conditions for approval. Contractor shall schedule review well in advance of concrete operations to allow for modifications and preparing an additional mockup panel if necessary.

1.07 DELIVERY AND STORAGE

- A. Deliver concrete reinforcement to job site properly tagged and ready to set. Store above ground surface on platforms, skids, or other supports. Coordinate delivery and storage of all other materials as appropriate.
- B. Coordinate delivery so that mixes may be immediately poured upon arrival at site.

1.08 FIELD CONDITIONS

- A. Maintain control of concrete dust and water. Do not permit adjacent areas to be contaminated.

PART 2 - PRODUCTS

2.01 BASE MATERIALS

- A. Aggregate: As specified in Section 32 11 00 - Base Courses.

2.02 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
 - 1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less.
 - 2. Do not use notched and bent forms.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.03 REINFORCING

- A. General:
 - 1. Reinforcing steel shall be cut and bent cold to exact lengths and shapes to comply with Drawings, reviewed shop drawings, and referenced codes and standards.
 - 2. Comply with the additional requirement shown on the Drawings.
- B. Welded Wire Mesh (WWM): 6 x 6 #10, unless noted otherwise in the Drawings, conforming to ASTM A185. Wire mesh shall be "chaired" up with 2-inch x 2-inch x 2-inch concrete blocks to ensure uniform embedment into concrete section to dimension as shown in the Drawings.
- C. Reinforcing Steel: Deformed billet steel bars complying with Section 52-1.02B of Standard Specifications, Section 1907 of CBC and ASTM A615.
 - 1. Provide Grade 60 for No. 4 and larger, Grade 40 for No. 3 and smaller.
 - 2. Bars shall be in a new, "first-class" condition.
- D. Smooth Dowel Steel Bars for Expansion Joints: ASTM A29, Grade 40, No. 3 smooth.
 - 1. Dowels shall be shop painted with iron-oxide zinc-chromate primer.
 - 2. Where shown, provide metal dowel sleeve or other approved break-bond method at one end of dowel to permit lateral movement at dowel within concrete section.
 - 3. Provide for movement which equals joint width plus 1/2 inch.
 - 4. Bars shall be in a new, "first-class" condition.
- E. Dowel Insert System: Single component dowel sleeve with self-locking design; Greenstreak "Speed Dowel" by Sika, or equal selected for dowel profile and diameter indicated on the Drawings.
- F. Tie Wire: ASTM A82, black annealed, minimum 16 gage.
- G. Supports for Reinforcement: Provide bolsters, chairs, spacers, and other devices for spacing, support and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI specifications, unless otherwise acceptable.

2.04 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type II, and shall be provided by one manufacturer.
- B. Pozzolan: Class F Fly Ash per ASTM C618 comprising 15-20% of total cementitious materials. Fly Ash may be added to a maximum ratio of 35% of total cementitious materials where testing reports are provided for the mix design review.
- C. Coarse Aggregates: Coarse aggregates shall conform to ASTM C33, sizes 57, 67 or 7. Pea gravel aggregate shall not be used.
- D. Fine aggregates: Fine Aggregates shall conform to ASTM C33.
- E. Water: Clean and not detrimental to concrete.
- F. Surface Retarder at Concrete Paving: Water-based, top-surface retarder and etch; "Grace Top-Cast" by Grace Construction Products. Contractor shall verify compatibility with concrete mix to achieve desired sandblast finish.
 - 1. Grade: 05 Light Blue, unless otherwise required to achieve a median sand blasted texture.

2.05 CONCRETE ADDITIVES

- A. Pigment for Concrete: Synthetic mineral-oxide pigments or colored water-reducing admixtures, color stable, nonfading, and resistant to lime and other alkalis, and complying with ASTM C979; Davis Colors Inc., 800-800-6856, as specified and noted on the Drawings, or equal.
 - 1. If added to mix at Project site, additive shall be furnished in manufacturer's "Mix-Ready" disintegrating bags.
 - 2. Dosage Rate: As required to achieve color of approved sample but not exceeding 10 percent of weight of cementitious materials in mix.
 - 3. Colors:
 - a. Pavilions concrete surface: 'Mesa Buff', see plans for locations.
- B. Fiber Reinforcement: 100 percent virgin homopolymer polypropylene fibrillated fibers; "Fibermesh 300" by Propex Concrete Systems Corp., or equal.
- C. No admixtures shall be allowed without written acceptance by the Engineer of Record. Admixtures that have a negative impact on concrete finish shall not be used. When more than one admixture is used, admixtures shall be compatible.

2.06 ACCESSORIES

- A. Non-Shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,400 psi in 48 hours and 7,000 psi in 28 days. SIKAGrout 212 or equal.
- B. Curing Materials:
 - 1. Liquid Curing Compounds: ASTM C309, Type 1.
 - 2. Sheet Material: Waterproofed Kraft paper, ASTM C17, regular type.
- C. Joint primer: One component, solvent based; Sonneborn horizontal paving joint primer No. 733, or No. 766, or equal.
- D. Fiber Expansion Joint Material: Preformed cellular fiber complying with ASTM D1751; 1/2 inch thick unless otherwise indicated.

1. Expansion joint material shall be variety with "zip-strip" H-channel joint sealant receptacles. If proposed joint material is not installed with sealant receptacles then, the expansion joint material shall be completely covered with a Sonneborn "Sonofoam" closed cell backer rod or acceptable equal prior to application of joint sealant.
 2. Provide 3/8-inch tooled edges each side of joint material. Refer to Drawings for additional information.
- E. Paving Expansion Joint Sealant: One-part, self-leveling polyurethane conforming to ASTM C920, Class 25, Type S, Grade P; Sonneborn "Sonolastic SL 2," or equal.
1. Color: As selected by Owner's Representative.
- F. Cold Joint Form: "Key Kold" by MeadowBurke, or equal.

2.07 CONCRETE MIXING

- A. General:
1. Mix and deliver concrete in accordance with ASTM C94.
 2. Addition of water to the mix after leaving the plant is not permitted.
 3. No admixtures will be allowed without prior acceptance by the Owner's Representative. If accepted, use admixtures according to manufacturer's written instructions.
 4. Ensure equipment and plant will afford accurate weighing, minimize segregation, and will efficiently handle materials.
 5. Deposit concrete into final position within 90 minutes of introduction of cement.
- B. Add fiberglass reinforcement into the track trench drain concrete bedding at the batch plant. Specified fibers shall be added at the rate of 1.5 pounds per cubic yard of concrete.
- C. Pigments:
1. Darkening Agent: Add 1/4 pound of specified black colorant per 94 lb. sack of cement to all concrete which will be exposed to view when cured except for drain rims and concrete receiving other colorants.
 2. Other Colors: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.
- D. Minimum ultimate compression strength of concrete at 28 days is as follows:

Item	Strength	Maximum slump	Size of aggregate	Cement (# of 94 lb. sacks per yard)	W/C Ratio
Slab-On-Grade	3,000	4"	3/4"-1"	5	0.50
Curbs / Edgebands	3,000	4"	3/4"-1"	5	0.60

- E. Drying Shrinkage Limit at 21 Days: 0.40 percent.
- F. Adjustment to Concrete Mixes:
1. Mix design adjustments may be requested by Contractor when job conditions, weather, test results warrant, or to meet appearance of accepted samples or mockup.
 2. Test data for revised mix design shall be submitted to and accepted by Owner's Representative before using in work.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify requirements for concrete cover over reinforcement.
- B. Verify that anchors, seats, plates, reinforcement, and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

3.02 PREPARATION

- A. Prepare joints in previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
- B. Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

3.03 EXCAVATION

- A. In addition to the general grading excavation required, the Contractor shall excavate to the required depths in the locations shown for flatwork and curbs. Excess excavation shall be replaced with concrete poured monolithically with the wall or pavement, at no additional cost to the Owner.

3.04 INSTALLATION OF FORMWORK

- A. Formwork shall conform to Section 51 of the Standard Specifications and as follows:
 - 1. The Contractor shall build forms with a high degree of care and shall select from materials of adequate strength and smoothness to produce smooth, even surfaces of uniform texture and appearance, free of bulges, depressions, or other imperfections per the discretion of the Owner's Representative. Remove any residue remaining on concrete after forms are removed.
 - 2. Transition of curves to straight lines and of curves to curves shall be formed as smooth, continuous, and uninterrupted with typical 90-degree radius alignment at the points of tangency.

3.05 PLACING REINFORCEMENT

- A. General:
 - 1. When there has been a delay in placing concrete, reinforcement shall be inspected and, if necessary, cleaned, relocated, and tied at no additional cost to Owner.
 - 2. Wherever conduits, piping, inserts, sleeves, and similar item interfere with placing of reinforcing steel, obtain approval of Owner's Representative of method of procedure before concrete is placed.
- B. Reinforcement installation shall conform to the provisions of the Standard Specifications as follows:
 - 1. Cleaning Section 52-1.03B
 - 2. Bending Section 52-1.03C
 - 3. Placing Section 52-1.03D
 - 4. Splicing Section 52-6
 - 5. Lapped Splices Section 52-6.03B

3.06 PLACING CONCRETE

- A. Place concrete in accordance with ACI 301.

- B. Notify Engineer of Record and Special Inspector minimum 48 hours prior to commencement of operations. Do not place concrete until forms and reinforcements, as well as other required inspections, have occurred and the Special Inspector is present to perform observations and testing during placement.
- C. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints are not disturbed during concrete placement.
- D. Separate slabs on grade from vertical surfaces with 1/2-inch-thick joint filler. Place joint filler to required elevations. Secure to resist movement by wet concrete.
- E. Extend joint filler from bottom of slab to within 1/8 inch of finished slab surface.
- F. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- G. Place concrete continuously between predetermined contraction joints.
- H. Do not interrupt successive placement; do not permit cold joints to occur.
- I. Screed slabs on grades shown, maintaining surface to tolerance of 1/4 inch maximum in 10 feet.

3.07 CONCRETE JOINTS

- A. General:
 - 1. Joints shall be constructed as detailed in the Drawings.
 - 2. Refer to layouts on the Drawings for location of each joint type.
- B. Expansion Joints: Install to full depth of slab.
 - 1. Cold Joints: Install specified cold joint forms in accordance with manufacturer's recommendations. Joints shall not be covered with concrete. Tool joint to remove concrete from edge of metal.
 - 2. Fiber Expansion Joints: After allowing concrete to fully cure, remove zip strips and install expansion joint sealant as shown and in accordance with manufacturer's instructions.
 - 3. Install specified dowel sleeves in accordance with manufacturer's instructions and as shown.
- C. Score Joints: Tool to a 3/8-inch radius and to a 1-inch depth.
- D. Form contraction joints as detailed on plans. Joints shall be formed immediately after final finishing with an approved concrete-sawing machine; "SOFF-Cut" as manufactured by SOFF-Cut International: Corona, California (909) 272-2330, or equal.
 - 1. Avoid dislodging aggregates.
 - 2. Unless otherwise indicated or directed, the joints shall be 1/8-inch-wide and 1-inch deep. Do not use zip-strips.
 - 3. Saw contraction joints to true alignment with "SOFF-Cut" concrete-sawing machines adequate in number and power and with sufficient replacement blades to complete the sawing at the required rate.
 - 4. Joints shall be cut as the concrete has hardened sufficiently to permit walking on the slab, and as recommended by the saw manufacturer.
 - 5. Unless otherwise approved, saw joints in the sequence of concrete placement. Remove cutting debris.
 - 6. Saw cuts shall be made in accordance with manufacturer's instructions.
- E. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

1. Cut depth shall be 25 percent of slab depth unless otherwise shown or required to comply with accepted mockup.
2. Layout: As shown on the Drawings.

F. Curb and Edge Band Joint: Locate as follows, unless otherwise noted on the Drawings.

1. Every 5 feet for score joints.
2. Install fiber expansion joints maximum 15 feet on center.
3. Install fiber expansion joints at corners, and beginnings and endings of radii.
4. Align score and fiber expansion joints with proposed fence posts.

3.08 EDGING

- A. Edges of slabs, curbs, and other paving shall be tooled with a 1/2-inch radius edging tool, unless otherwise indicated or specified in the Drawings.
- B. Trowel marks resulting from tooling of edges shall be carefully troweled out.

3.09 PLACING OF CONCRETE

- A. Notify Owner's Representative minimum 5 working days prior to pour.
- B. Preparation:
 1. Protect finished surfaces adjacent to areas to receive concrete.
 2. Valve boxes, electric boxes, drainage inlet structures, manholes, lids, and other similar items shall be covered and protected prior to and during concrete pour. Concrete staining to these items will not be accepted.
 3. Verify that the Owner's Representative, if required, has inspected reinforcement.
 4. Notify the Owner's testing laboratory at least 2 working days before placing concrete.
- C. Placing:
 1. Concrete placement shall conform to Section 40-103H of the Standard Specifications.
 2. Moisten earth, and spray forms and reinforcement with water before placing concrete.
 3. Place concrete in continuous operation to permit proper and thorough integration and to complete scheduled placement.
- D. Concrete shall not be dropped freely where reinforcing bars will cause segregation, nor shall it be dropped freely more than six feet. Spouts, elephant trunks, or other acceptable means shall be used to prevent segregation.

3.10 CONCRETE FINISHING - GENERAL

- A. Provide formed concrete surfaces to be left exposed with a medium sand-blast finish. Coordinate with Landscape Architect prior to placing concrete.
- B. Finish concrete floor surfaces in accordance with ACI 301. Provide non-slip surface where concrete floor surfaces are left exposed, unless noted otherwise.
- C. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains as indicated on drawings.

3.11 FLATWORK FINISHING

- A. General:
 1. Provide each concrete finish where shown in the Drawings.

2. Provide samples and mockups as specified of all concrete finishes for review and acceptance prior to pouring concrete.
- B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats.
- C. Trowel Finish: After applying float finish, apply first trowel finish and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restreighten until surface is free of trowel marks and uniform in texture and appearance.
- D. Broom Finish:
 1. Broom with medium bristled broom to a uniformly roughened surface. Finished surface shall be clean with uniform and straight lines.
 2. Paving with a slope greater than 6 percent shall be heavy broom finish and paving less than 6 percent shall be a medium broom finish.
- E. Areas to Receive Surface Retarder:
 1. Apply specified surface retarder uniformly to wet concrete after the initial bleed water rises to the surface using low pressure spray equipment in accordance with manufacturer's recommendations.
 2. Remove retarded cement matrix with water.
 3. Exercise care, and install protective procedures, to prevent rinse water from damaging adjacent materials or entering adjacent soil and planting areas. Should rinse water contaminate soil of planting areas, affected soil shall be removed and replaced with new soil complying with Section 32 90 00 - Planting at no additional cost to Owner.

3.12 FIELD QUALITY CONTROL

- A. Provide free access to Work and cooperate with Owner's Representatives.
- B. Tests of cement and aggregates may be performed to ensure conformance with specified requirements.
- C. One additional test cylinder will be taken during cold weather concreting, cured on job site under same conditions as concrete it represents.
- D. At a minimum one slump test will be taken for each set of test cylinders taken.
- E. Tolerances:
 1. Vertical deviation from specified grades shall not exceed 0.04 foot.
 2. Surface smoothness deviations shall not exceed 1/8 inch in 8 feet, in any direction.
 3. Thickness shall not be more than 0.01 foot less than planned thickness at any point.

3.13 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Cure floor surfaces in accordance with ACI 308.
- D. Spraying: Spray water over floor slab areas and maintain wet for 7 days.

- E. Provide necessary security to protect the concrete from vandalism. Concrete which is defaced or damaged during the course of this Contract shall be replaced by the Contractor at no additional cost to the Owner.

3.14 PATCHING

- A. Allow Engineer to inspect concrete surfaces immediately upon removal of forms.
- B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.
- C. Patch imperfections in accordance with ACI 301.

3.15 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances, or specified requirements; concrete with excessive honeycombs or other surface or finish defects.
- B. Repair or replacement of defective concrete will be determined by the Engineer of Record.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Engineer for each individual area.
- D. No additional compensation will be allowed for repair of defective concrete.

3.16 CLEANING

- A. Remove excess base material, concrete spills, cement stains and all other excess materials from all project areas prior to Final Acceptance.

END OF SECTION

SECTION 32 17 23
PAVEMENT MARKINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all labor, materials, equipment, facilities, transportation and services to complete all striping and related work shown on the Drawings and/or specified herein.
- B. Scope of Work: The general extent of the striping work is shown on the Drawings and can include, but is not necessarily limited to the following:
 - 1. Curb painting
 - 2. Accessible parking striping, lettering, and symbols
 - 3. Parking lot striping
- C. Related sections can include, but may not be limited to the following:
 - 1. Section 32 12 16 - Asphalt Paving
 - 2. Section 32 13 13 - Concrete Paving

1.02 REFERENCES AND REGULATORY REQUIREMENTS

- A. State of California Department of Transportation Standard Specifications, current edition.

1.03 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 Submittals and/or applicable Division One and Division Two specifications, General Conditions and Special Provisions.

1.04 PROJECT/SITE CONDITIONS

- A. Work shall not be performed during wet, or other adverse conditions as determined by the Owner's Representative and/or paint manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Unless otherwise specified, all striping shall be two coats of solvent borne, rapid dry paint (of the colors indicated in the Drawings) in conformance with Section 84 of the Standard Specifications.
- B. Colors shall be as follows:
 - 1. Parking stalls – white.
 - 2. Accessible parking – blue.
 - 3. No parking and emergency access – red.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Contractor shall make provisions and take all necessary precautions to protect existing improvements and surrounding property from overspray or damage due to pavement marking work.
- B. Contractor shall layout all striping (with chalk-lines or other acceptable method) prior to start of work for review and acceptance by the Owner's Representative. Adjust layout as directed by the Owner's Representative.

3.02 APPLICATION

- A. No striping shall be installed until the pavement surface has fully cured and/or has been properly stripped, cleaned and prepped per the paint manufacturers' instructions.
- B. Paint shall be applied at rates approximately as follows:
 - 1. First Coat: 360 square feet per gallon of paint
 - 2. Second Coat: 150 square feet per gallon of paint

3.03 PROTECTION

- A. The contractor shall provide appropriate barriers, warning signs, and/or other acceptable arrangements to protect all painted surfaces until project Final Acceptance.

END OF SECTION

SECTION 32 18 00

MISCELLANEOUS PAVING AND SURFACING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Miscellaneous paving surfacing as shown on the Drawings including, but is not limited to, the following:
 - 1. Decomposed granite.
 - 2. Natural aggregate paving.
 - 3. Sand in dog park.
- B. Related Requirements:
 - 1. Section 32 33 00 - Site Furnishings
 - 2. Section 31 20 00 - Earth Moving
 - 3. Section 32 11 00 - Base Courses

1.02 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Action and Informational Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.
- B. Sequencing and Scheduling:
 - 1. Coordinate applicable subgrade preparations, installations of base course materials, and all other work with work of this Section to insure a proper, timely installation.

1.03 ACTION SUBMITTALS

- A. Samples:
 - 1. Unless otherwise specified, submit 1-quart size samples of the following:
 - a. Decomposed granite.
 - 2. Poured-in-Place Rubber Surfacing: 1 foot by 1 foot poured sample for each color or color mix of to be used. Approval is required prior to delivery of material to the site.

1.04 QUALITY ASSURANCE

- A. Materials Source: Sources of materials specified herein shall not be changed during course of work without review and written acceptance by the Owner's Representative.

1.05 WARRANTY

- A. Manufacturers: Provide Owner with the following manufacturers extended warranties.
 - 1. Poured in Place Rubber Resilient Surfacing: 10 years.

PART 2 - PRODUCTS

2.01 ADDITIONAL MATERIALS

- A. Aggregate Base: As specified in Section 32 11 00 - Base Courses.

2.02 DECOMPOSED GRANITE PAVING

- A. Supplier: TMT Enterprises, Inc., San Jose, CA, 408-432-9040 as specified and the basis of design unless otherwise noted, or equal. Contact: Matt Moore.
- B. Decomposed Granite: "California Gold Track" fines.
 - 1. Fines: "California Gold Pathway".
- C. Binder for Decomposed Granite: Natural, non-toxic, colorless and odorless binding material for use with decomposed granite fines; "PHP Organic Aggregate Binder."
 - 1. Binder shall be pre-mixed with the track fines by supplier prior to delivery to project site.
 - 2. Rate: 12 pounds per ton of fines, unless otherwise recommended by fines supplier.

2.03 RESILIENT SURFACINGS

- A. Poured in Place Rubber Resilient Surfacing: Wet poured, two-layer rubber-urethane playground surfacing system troweled on site; "EnduraFlex" and FlexGrout by FlexGround, Contact: Sandi Walsh at 916-474-5431, as specified and the basis of design, or approved equal.
 - 1. Local Supplier: FlexGround, 916-474-5431.
 - 2. System Components:
 - a. Aliphatic Urethane primer.
 - b. Basemat: Blend of 100 percent recycled SBR (styrene butadiene rubber) and urethane.
 - c. Top Surface: 1/2" UV stable, urethane adhered TPV granules, 1-4mm TPV granules vulcanized product.
 - 1) Colors: Shall be solid (one color) as designated on Materials Plan.
 - 3. Thickness of basemat and top surface shall be IPEMA certified, and adhere to the ASTM F1292 and as recommended by manufacturer for fall height of the equipment.
 - 4. Performance Requirements:
 - a. Dry Static Coefficient of Friction (ASTM D2047): 1.0.
 - b. Wet Static Coefficient of Friction (ASTM D2047): 0.9.
 - c. Dry Skid Resistance (ASTM E303): 89.
 - d. Wet Skid Resistance (ASTM E303): 57.
 - 5. FlexGrout, medium viscosity grout engineered for the high wear areas, to penetrate and fill the voids between the pad's rubber granules. Colors are to be per plans.

2.04 SAND

- A. Sand for dog park: Washed sand and #1 plaster sand.
 - 1. Material shall generally meet the following gradation and material properties:

Sieve Size	ASTM 144 Spec	Percent Passing
#4	100	100
#8	95-100	98
#16	70-100	91
#30	40-75	71
#50	10-35	21
#100	2-15	4
#200		0.9

- 2. Supplier: TMT Enterprises, Inc., San Jose, CA, 408-432-9040 as specified and the basis of design unless otherwise noted, or equal. Contact: Matt Moore.

PART 3 - EXECUTION

3.01 AGGREGATE BASE

- A. Install as shown on the Drawings and in accordance with Section 32 11 00 – Base Courses.

3.02 DECOMPOSED GRANITE

- A. Install base course as specified per Section 31 11 00 - Base Courses.
- B. Spread evenly and compact in 2-inch lifts in designated areas.
- C. Water lightly and compact with roller.
- D. Spread additional material, roll and compact to establish even finished grade at specified elevation.

3.03 TOLERANCES

- A. Vertical deviation from specified lines, grades, and detail cross sections shall not exceed 0.04 foot for all surfacing specified in this Section.

END OF SECTION

SECTION 32 18 23

COURT SURFACING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Installation of acrylic surfacing for asphalt basketball and pickleball courts required for proper completion of the work including, but not necessarily limited to, the following:
 - 1. Asphalt base preparation, testing, and acceptance.
 - 2. Court surfacing installation.
 - 3. Other applicable Project components.

1.02 RELATED SECTIONS

- A. Related Requirements:
 - 1. Section 32 12 16 - Asphalt Paving
 - 2. Section 32 33 00 – Site Furnishings
- B. References
 - 1. National Asphalt Paving Association (NAPA)
 - 2. United States Tennis Association (USTA)
 - 3. International Tennis Federation (ITF)
 - 4. American Sport Builders Association (ASBA)
 - 5. USA Pickleball.

1.03 QUALITY ASSURANCE

- A. Surfacing shall conform to the guidelines of the ASBA for planarity.
- B. All surface coatings products shall be supplied by a single manufacturer.
- C. The contractor shall record the batch number of each product used on the site and maintain it through the warranty period.
- D. The contractor shall provide the inspector, upon request, an estimate of the volume of each product to be used on the site.
- E. The installer shall be an authorized applicator of the specified system.
- F. The manufacturer's representative shall be available to help resolve material questions.

1.04 SUBMITTALS

- A. Manufacturer specifications for components, color chart and installation instructions.
- B. Authorized Applicator certificate from the surface system manufacturer.

- C. ITF classification certificate for the system to be installed.
- D. Reference list from the installer of at least 5 projects of similar scope done in each of the past 3 years.
- E. Current Material Safety Data Sheets (MSDS).
- F. Product substitution: If other than the product specified, the contractor shall submit at least 7 days prior to the bid date a complete type written list of proposed substitutions with sufficient data, drawings, samples and literature to demonstrate to the owners satisfaction that the proposed substitution is of equal quality and utility to that originally specified. Information must include a QUV test of at least 1000 hours illustrating the UV stability of the system. The color system shall have an ITF pace rating in Category 2. Under no circumstances will systems from multiple manufacturers be considered.

1.05 MATERIAL HANDLING AND STORAGE

- A. Store materials in accordance with manufacturer specifications and MSDS.
- B. Deliver product to the site in original unopened containers with proper labels attached.
- C. All surfacing materials shall be non-flammable.

1.06 GUARANTEE

- A. Provide a guarantee against defects in the materials and workmanship for a period of one year from the date of substantial completion.

1.07 INSTALLER QUALIFICATIONS

- A. Installer shall be regularly engaged in construction and surfacing of cushioned acrylic tennis courts, play courts or similar surfaces.
- B. Installer shall be an Authorized Applicator of the specified surface system.
- C. Installer shall be a builder member of the ASBA.

1.08 MANUFACTURER QUALIFICATIONS

- A. System manufacturer shall provide documentation that the surface to be installed has been classified by the ITF as a medium pace surface.
- B. System manufacturer shall be a US owned company.
- C. System manufacturer shall be a member of the ASBA.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. California Products Corp., Andover, MA. 01810 / Plexicushion Prestige System www.plexipave.com
- B. Substitutions: Submit requests at least 7 days prior to the bid date with a complete type written list of proposed substitutions with sufficient data, drawings, samples and literature to demonstrate to the owners satisfaction that the proposed substitution is of equal quality and utility to the specified product. Information must include a QUV test of at least 1000 hours illustrating the UV stability of the system. The

system shall have an ITF pace rating in Category 2. Under no circumstance may the final color surface contain silica sand added at the job site.

2.02 MATERIALS

- A. Patching Mix (California Court Patch Binder) - for use in patching cracks, holes, depressions, and other surface imperfections.
- B. Crack Filler (Plexipave Crack Filler) - for use in filling fine cracks.
- C. Acrylic Filler Course (California Acrylic Resurfacer) – for use as a filler for new or existing asphalt surfaces. The 100% acrylic filler shall be blended with approved silica sand at the jobsite.
- D. Plexipave Grand Prix – 100% flexible acrylic coating filled with select silica.
- E. Acrylic Color Playing Surface (Plexichrome/Plexipave Color Base) – for use as the finish color and texture. Plexichrome and Plexipave Color Base are blended at the job site to achieve the correct surface texture. *Factory Fortified Plexipave may be used as an alternative material.
- F. Line Paint (California Line Paint) – for use as the line marking on the court/play surface.
- G. Water – for use in dilution/mixing shall be clean and potable.

2.03 MATERIAL SPECIFICATIONS

- A. Court Patch Binder – 100% acrylic resin blended with Portland Cement and silica sand.
 - 1. Percent solids by weight (minimum) 46%
 - 2. Weight 8.7-8.9 lbs./gallon
- B. Plexipave Crack Filler – 100% acrylic resin heavily filled with sand.
 - 1. Percent solids by weight (minimum) 85%
 - 2. Percent solids by weight (minimum) 15 lbs./gallon
- C. California Acrylic Resurfacer – 100% acrylic resin (no vinyl copolymerization constituent). The product shall contain not less than 3.5% attapulgite.
 - 1. Percent solids by weight (minimum) 26.7%
 - 2. Weight 8.7-8.9 lbs./gallon
- D. Plexipave Grand Prix
- E. Plexichrome – 100% acrylic resin (no vinyl copolymerization constituent) with selected light fast pigments. Green shall contain not less than 8% chrome oxide.
 - 1. Percent solids by weight (minimum) 36.5%
 - 2. Weight 10.0-10.2 lbs./gallon
- F. Plexipave Color Base – 100% acrylic resin containing no vinyl copolymerization constituent. Contains not more than 63% rounded silica sand.
 - 1. Percent solids by weight (minimum) 74%

- 2. Weight 13.1-14.1 lbs./gallon
- G. California Line Paint – 100% acrylic resin containing no alkyds or vinyl constituents. Texturing shall be rounded silica sand.
 - 1. Percent solids by weight (minimum) 60.5%
 - 2. Weight 12-12.3 lbs./gallon
- H. All surfacing materials shall be non-flammable and have a VOC content of not less than 100g./ltr. Measured by EPA method 24.
- I. Local sands are not acceptable in the color playing surface. Sands must be incorporated at the manufacturing location to ensure quality and stability.

PART 3 - EXECUTION

3.01 WEATHER LIMITATIONS

- A. Do not install when rainfall is imminent or extremely high humidity prevents drying.
- B. Do not apply unless surface and air temperature are 50°F and rising.
- C. Do not apply if surface temperature is in excess of 140°F.

3.02 PREPARATION FOR CUSHIONED UNDERLAYMENT

- A. Clean surfaces of loose dirt, oil, grease, leaves, and other debris in strict accordance with manufacturer's directions. Pressure washing will be necessary to adequately clean areas to be coated. Any areas previously showing algae growth shall be treated with bleach or approved product to kill the organisms and then be properly rinsed.
- B. Holes and cracks: Cracks and holes shall be cleaned and a suitable soil sterilant, as approved by the owner, shall be applied to kill all vegetation 14 days prior to use of **Court Patch Binder** according to manufacturer's specifications.
- C. Depression: Depressions holding enough water to cover a five-cent piece shall be filled with Court Patch Binder Patching Mix. 3 gallons of Court Patch Binder, 100 lbs. 60-80 silica sand, 1-gallon Dry Portland Cement (Type I). **This step shall be accomplished prior to the squeegee application of Acrylic Resurfacer.** The contractor shall flood all the courts and then allow draining. Define and mark all areas holding enough water to cover a nickel. After defined areas are dry, prime with tack coat mixture of 2 parts water/1 part Court Patch Binder. Allow tack coat to dry completely. Spread Court Patch Binder mix true to grade using a straight edge (never a squeegee) for strike off. Steel trowel or wood float the patch so that the texture matches the surrounding area. Never add water to mix. Light misting on surface and edges to feather in is allowed as needed to maintain work ability. Allow to dry thoroughly and cure.

NO WORK FROM THIS STAGE ON SHALL COMMENCE UNTIL AN INSPECTOR HAS ACCEPTED THE SURFACE.

- D. Filler Course. (Acrylic Resurfacer): Filler course shall be applied to the clean underlying surface in one application to obtain a total quantity of not less than .06 gallon per square yard based on the material prior to any dilution. Acrylic Resurfacer may be used to pre-coat depression and crack/hole repairs to achieve better planarity prior to filler course application.

1. Over a properly repaired surface of asphalt on existing courts, apply one coat of Acrylic Resurfacer according to the following mix:
 - a. Acrylic Resurfacer 55 gallons
 - b. Water 20 - 40 gallons
 - c. Sand 600-800 pounds / 60-80 mesh
 - d. Liquid Yield 112-138 gallons
2. On new asphalt, two coats of Acrylic Resurfacer shall be used to properly fill all voids in the asphalt surface. Use clean, dry 50-60 mesh sand and clean, potable water to make mixes. The quantity of sand and water in the above mix may be adjusted within above limits to complement the roughness and temperature of the surface.
3. Mix the ingredients thoroughly using accepted mixing devices and use a 70 Durometer rubber bladed squeegee to apply each coat of Acrylic Resurfacer as required.
4. Allow the application of Acrylic Resurfacer to dry thoroughly. Scrape off all ridges and rough spots prior to any subsequent application of Acrylic Resurfacer or subsequent cushion surface system.

3.03 APPLICATION OF ACRYLIC COLOR PLAYING SURFACE

- A. All areas to be color coated shall be clean, free from sand, clay, grease, dust, salt, or other foreign matters. The Contractor shall obtain the Engineer's approval, prior to applying any surface treatment.
- B. Blend color base and Plexichrome with a mechanical mixer to achieve a uniform Fortified Plexipave mixture. The mix shall be:
 1. Color Base 30 gallons
 2. Plexichrome 20 gallons
 3. Water 20 gallons
- C. Application shall be made by 50 durometer rubber faced squeegees. The Fortified Plexipave mixture should be poured on to the court surface and spread to a uniform thickness in a regular pattern.
- D. A total of 3 applications of Fortified Plexipave shall be made to achieve a total application rate of not less than .15 gal./sy. No application should be made until the previous application is thoroughly dry.
- E. If a more flexible surface is desired, Plexipave Gran Prix coating may be used. It is applied at a total application rate of .18 gal./sy.

3.04 LINE PAINTING

- A. Line shall be 2" wide unless otherwise noted on the drawings. Lines shall be carefully laid out in accordance with ASBA and USTA guidelines. The area to be marked shall be taped to insure a crisp line. The California Line Paint shall have a texture similar to the surrounding play surface. Application shall be made by brush or roller at the rate of 150-200 sg. /gal. (3/4 gal. per tennis court).

3.05 PROTECTION

- A. Erect temporary barriers to protect coatings during drying and curing.
- B. Lock gates to prevent use until acceptance by the owner's representative.

3.06 CLEAN UP

- A. Remove all containers, surplus materials, and debris. Dispose of materials in accordance with local, state, and Federal regulations.
- B. Leave site in a clean and orderly condition.

END OF SECTION

SECTION 32 31 13

CHAIN LINK FENCING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: chain link fencing improvements as shown on the Drawings including, but not necessarily limited to, the following:
 - 1. Galvanized chain link fabric, posts, gates, and hardware.
 - 2. Chain link fence with integrally woven privacy plastic slats.
 - 3. Concrete footings and mow bands.
- B. Related Requirements:
 - 1. Section 01 33 00 - Submittal Procedures
 - 2. Section 32 33 00 - Site Furnishings
 - 3. Section 32 32 15 - Landscape Concrete
 - 4. Section 32 90 00 - Planting
 - 5. Structural Drawings

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - 2. A121 - Specification for Metallic-Coated Carbon Steel Barbed Wire."
 - 3. A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 4. A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.
 - 5. F567 - Standard Practice for Installation of Chain-Link Fence."
 - 6. F1043 - Standard Specification for Strength and Protective Coatings on Steel Industrial Chain Link Fence Framework.
 - 7. F1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.
- B. American Welding Society (AWS):
 - 1. A2.4: "Symbols for Welding, Brazing and Nondestructive Examination."
- C. Chain Link Fence Manufacturers Institute (CLFMI): Product Manual CLF-PM0610.
- D. Industrial Steel Guide for Fence, Rails, Posts, Gates and Accessories.
- E. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Action and Informational Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.
- B. Sequence and Scheduling: Contractor shall coordinate construction timing of chain link fencing and related work with installation of concrete work specified in Section 32 32 15 – Landscape Concrete and all other work.

1.04 ACTION SUBMITTALS

- A. Shop Drawings: To scale drawings showing all different types and sizes of gates, and fencing systems.
 - 1. Shop Drawings shall include, but may not be limited to:
 - a. All information regarding clearances, connections, components and any miscellaneous related appurtenances (such as wood baseboards at backstops, locking mechanisms etc.).
 - b. Concrete footing and reinforcement information.
 - 2. Indicate materials, dimensions, sizes, weights and finishes of components. Include plans, elevations, sections and other required installation and operational clearances, connections, components and miscellaneous related appurtenances.
 - 3. Show required field measurements and interface with work of other Sections. Provide details showing interface and anchorage of fencing and gates with adjacent construction, both new and existing.
 - 4. Details showing post anchorage, attachment and bracing. Provide setting drawings, templates, instructions, and directions for installation of anchorage devices.
 - 5. Details of gates and hardware.
 - 6. Welds, both shop and field, shall be indicated by AWS "Symbols for Welding, Brazing and Nondestructive Examination," A2.4.
- B. Product Data: Manufacturer's descriptive literature for materials and components of the chain link fencing system including coatings, fittings, and hardware.
 - 1. Include the manufacturer's name and catalog number for each item where applicable.
 - 2. Clearly identify which portions of the information on the printed literature are applicable if more than one product is shown.
- C. Delegated-Design Services: Engineering data and certification prepared by the engineer in responsible charge that framework and foundations have been sized according to good engineering practice and comply with governing codes comply with specified design and performance criteria.
- D. Samples:
 - 1. Chain-link fabric, approximately 12 inches square, if requested by Owner's Representative.
 - 2. Hardware and fittings Owner's Representative.
 - 3. Sample of privacy slat system.

1.05 INFORMATIONAL SUBMITTALS

- A. Installation Instructions and/or Drawings: Submit as applicable.

1.06 QUALITY ASSURANCE

- A. Design Engineer: Professional structural or civil engineer registered in the State of California or shall otherwise be acceptable to governing authorities. Design engineer shall be experienced in providing engineering services of the kind indicated.
- B. Welding:
 - 1. Qualifications: Certified and qualified in accordance with AWS D1.1.
 - 2. Procedures and operations shall comply with AWS "Standard for Welding Procedure and Performance Qualifications," B2.1.
 - 3. Comply with AWS publication "Welding Zinc Coated Steel" for galvanized products.
 - 4. Welding inspector's qualifications shall be in accordance with AWS D1.1.

PART 2 - PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

- A. It is intended that all fencing, by area, receive the same finish coating wherever possible. Nuts, bolts, applicable moving portions of hinges etc. shall be painted to match with PVC touch-up paint in vinyl or powder coated systems.
- B. Except as otherwise specified, comply with Chain Link Fence Manufacturers Institute (CLFMI) Product Manual.
- C. Industry Standards: Materials and installation shall conform to the requirements of the Chain Link Fence Manufacturers Institute (CLFMI) "Product Manual."
- D. Regulatory Requirements: Pedestrian gates and related hardware shall comply with applicable codes, including provisions for accessibility required by CBC Chapters 10 and 11B, Part 2; and the Americans with Disabilities Act (ADA) Standards for Accessible Design.
- E. Bottom 10 inches of pedestrian gates shall have a smooth uninterrupted surface.

2.02 MATERIALS

- A. Fabric: Galvanized steel wire complying with ASTM A392, Class 1, with not less than 1.2 ounce zinc coating per square foot.
 - 1. Selvage: Knuckled finish top and bottom.
 - 2. Steel Fabric: Comply with Chain Link Fence Manufacturers Institute (CLFMI) Product Manual. Furnish one-piece fabric widths for fencing up to 16 feet high. Wire sizes includes zinc coating.
 - 3. Mesh Opening: 2 inches.
 - 4. Wire Diameter: 9-gauge (0.148-inch diameter), unless noted otherwise.
- B. Framework: Posts and rails shall be Schedule 40 pipe complying with conforming to ASTM F1083, Regular Grade, 30,000 psi Yield Strength, or ASTM F1043, Group 1-C, High Strength Grade 50,000 psi Yield Strength, galvanized with no less than 1.8 ounces of zinc coating per square foot of surface area complying with ASTM A123.
 - 1. Strength requirements for posts and rails shall conform to ASTM F1043 or F1083 as noted below.
 - 2. Pipe shall be straight, true to section, material, and sizes specified, and shall conform to the following weights per foot:

NPS in inches	Outside Diameter (OD) in inches	Type I Steel ASTM F1083 (30 KSI)	Type II Steel ASTM F1043 (50 KSI)
1	1.315	1.68	1.35
1.25	1.660	2.27	1.84
1.5	1.900	2.72	2.28
2	2.375	3.65	3.12
2.5	2.875	5.79	4.64
3	3.500	7.58	5.71
3.5	4.000	9.11	6.56
4	4.500	10.79	---
6	6.625	18.97	---

NPS in inches	Outside Diameter (OD) in inches	Type I Steel ASTM F1083 (30 KSI)	Type II Steel ASTM F1043 (50 KSI)
8	8.625	28.55	---

C. Fittings and Accessories:

1. Unless specified otherwise, steel fence fittings and accessories shall comply with ASTM F626 and be galvanized in accordance with ASTM A53, with zinc weights per Table 1 of ASTM A153.
2. Tension Wire: 7-gauge (0.177 inch diameter) coil spring steel with finish to match fabric.
3. Tie Wires: 9 gauge (0.148 inch diameter) steel with finish to match fabric.
4. Caps: Provide weather tight closure cap for each post and exposed ends of framing. Provide line post caps with loop to receive wire or top rail with finish to match fabric.
5. Tension Bars: Hot-dip galvanized steel with minimum length 2 inches less than full height of fabric, minimum cross-section of 3/16 inch by 3/4 inch and minimum of 1.2 ounce zinc coating per sq. ft. of surface area.
6. Tension Clips: Minimum 3/4 inch wide 12-gauge (.105 inch) thick with finish to match fabric.
7. Truss Rods: Hot dipped galvanized steel rods with a minimum diameter of 5/16 inch (7.9 mm).

D. Hardware for Swinging Gates:

1. General:
 - a. Hardware shall be of adequate size and strength to provide proper operation of gates.
 - b. Provide hinges, latching and locking devices, and other hardware as shown on the Drawings or required for a complete operable installation.
2. Hinges: Master Halco heavy duty, or acceptable equal.
3. Self-closing Hinges:
 - a. For gates up to 330 lbs and 5-feet wide: Heavy-duty self-closing hinge with hydraulic damping, ADA compliant (requiring maximum 5 lbs of operating force per CBC 11B-309.4); Locinox Mammoth Heavy Duty "Mammoth180" or accepted equal.
 - b. For gates up to 440 lbs and 6 and 1/2 -feet wide: Heavy-duty self-closing hinge with hydraulic damping, ADA compliant (requiring maximum 5 lbs of operating force per CBC 11B-309.4); Locinox Mammoth Ultra Heavy Duty "Mammoth-HD" or accepted equal.
4. Panic Hardware:
 - a. Panic bar requiring maximum 5 lbs of operating force per CBC 11B-309.4; "Von Duprin 98/99 – AX series" push pads, strike plates, and receiver brackets" or accepted equal.
 - b. Pull Handle, Strike Plate, Guard Plate, and Mounting Plate shall be compatible with panic bar system, and be provided by Von Duprin, or accepted equal.
5. Accessible Pull Handle:
 - a. Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist, requiring maximum 5 lbs of operating force per CBC 11B-309.4.
 - b. One of the following to be selected by District Representative:
 - 1) Standard Operation: Von Duprin 996L
 - 2) Night Latch: Von Duprin 996LNL
 - 3) Blank Escutcheon: Von Duprin 996L-BE
 - 4) Dummy Trim: Von Duprin 996L-DT
6. Gate Latch Hardware:
 - a. Gate latch hardware shall be sized to match receiving fence/gate post size.
 - b. Provide and attach welded accessible pull handle where specified.
 - c. Fulcrum gate latch, Model "#STRONG-ARM-SNG" by DAC Industries, available from Hoover Fence Co., (800) 355-2335.

2.03 ADDITIONAL MATERIALS AND COMPONENTS

- A. Concrete: Minimum Class B, 28-day compressive strength of 2,500 psi as specified in Section 32 32 15 - Landscape Concrete.

- B. Privacy Slats: Tubular PVC, UV-light stabilized, flame resistant, self-locking, sized to fit specified mesh opening, and providing full privacy; "Fin/Slat 1000" by Master Halco, or equal.
 - 1. Color: As selected by Owner's Representative from reviewed submittals.
- C. Galvanizing-Repair Paint: Minimum 82 percent zinc-dust-content paint for regalvanizing welds in galvanized steel, complying with FS DOD-P-21035a; "Z.R.C. Cold Galvanizing Compound" by ZRC Worldwide, "Cold Galv Primer" by Valspar, or equal.
- D. Distance Banners, Wind Screen, Signage and all other Applicable Attachments:
 - 1. Refer to Section 32 33 00, "Site Furnishings" for product information. Windscreen shall be affixed to chain-link fencing as indicated on Drawings with galvanized "hog rings" or acceptable equal. Install hog ring in each corner of windscreen and at 4 feet o.c. maximum spaced evenly along top and bottom of fence fabric. Other products shall be attached at each grommet location and per manufacturers recommendations. Grommets shall be located in thicker seamed areas. No attachment grommets in a single layer of fabric will be allowed.
- E. Top of Fence Protective Cap: Attach with heavy duty zip ties, color matched.

2.04 FABRICATION

- A. Welding: Welds shall be shop fabricated prior to galvanizing unless otherwise acceptable to Owner's Representative and where field welding is unavoidable.
- B. Repair zinc coating damaged after fabrication with specified repair paint in accordance with ASTM A780, AHDGA publication, "Recommended Practice for Touch-up of Damaged Galvanized Coatings," and manufacturer's recommendations for application of repair paint.
- C. Steel Framework: System shall comply with the following minimum requirements.
 - 1. Posts, Rails, Braces, and Gate Frames: Type I galvanized steel pipe as specified.
 - 2. End, Corner, and Pull Posts for the Following Fabric Heights: As noted on the Drawings.
 - 3. Line or Intermediate Posts for the Following Fabric Heights: As noted on the Drawings.
 - 4. Top, Bottom and Horizontal Intermediate Rails: 1.66 inch outside diameter (1-5/8 inch outside diameter).
 - 5. Gate Posts: Single gate leaf, and one leaf of a double gate installation, for nominal gate widths as follows: As noted on the Drawings.
 - 6. Gate Frames: Single or double gate for nominal gate widths as follows:
 - a. 6 Feet to 10 Feet: 1.90 inch outside diameter (1-7/8 inch outside diameter).
 - b. Under 6 Feet: 1.66 inch outside diameter (1-5/8 inch outside diameter).

PART 3 - EXECUTION

3.01 PREPARATION

- A. Prior to excavation, layout all fencing locations for review and acceptance by Owner's Representative.
- B. Do not begin installation and erection before final grading is completed, unless otherwise permitted.

3.02 ERECTION

- A. General: Erect chain link fence and related items in accordance with ASTM F567, in strict conformance with reviewed and accepted shop drawings, and manufacturer's recommendations.
- B. Set all posts straight, plumb, and true to line.

1. Set line posts at equal spacing not to exceed 8 feet on centers, in concrete footings not less than 10 inches around and 36 inches deep.
 2. Set terminal posts at corners, ends, and gates, in concrete footings not less than 12 inches around and 36 inches deep.
 3. Slope tops of concrete footings so as to provide drainage away from posts.
- C. Excavation: Drill or hand-excavate holes for posts to diameter and spacing indicated in firm, undisturbed or compacted soil.
1. Unless noted otherwise, excavate holes for each post to minimum diameter recommended by fence manufacturer, but not less than 4 times largest cross section of post.
 2. Unless noted otherwise, excavate hole depths approximately 3 inches lower than post bottom, with bottom of posts set not less than 36 inches below finish grade surface.
- D. Setting Posts: Center and align posts in holes 3 inches above bottom of excavation. Space chain link posts maximum 8 feet on center unless noted otherwise. Surface mount posts with mounting plates where indicated. Fasten with lag bolts and shields.
- E. Top Rails: Run rail continuously through line posts caps, bending to radius for curved runs and at other posts termination into rail end attached to posts or post caps fabricated to receive rail. Provide expansion couplings as recommended by fencing manufacturer.
- F. Bottom Rails: Install bottom rails between posts with fittings and accessories as shown in Drawings, as applicable.
- G. Brace Assemblies: Install braces so posts are plumb when diagonal rod is under proper tension.
- H. Tension Wire: As applicable, install at bottom of fabric (and at top if top rail is not specified) as shown in Drawings. Install tension wire before stretching fabric and attach to each post with ties. Secure wire to fabric with 12.5 gauge hog rings at 24 inches on center maximum.
- I. Fabric: Leave approximately 2 inches between finish grade and bottom selvages (1 inch at backstops) unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Install fabric on infield or primary use side of fence, unless noted otherwise, and anchor to framework so that fabric remains in tension after pulling force is released.
- J. Tension Bars: Provide one bar for each gate and end post, and two for each corner and pull post, except where fabric integrally woven into post. Thread through fabric, and secure to end, corner, pull, and gate posts with tension clips spaced not over 15 inches on center.
- K. Tie Wires: Use U-shaped wire of proper length to secure fabric firmly to posts and rails with ends twisted at least 2 full turns. Bend ends of wire to minimize hazard to persons or clothing. Tie fabric to line posts 12 inches maximum on center and to rails and braces 24 inches maximum on center.
- L. Fasteners: Install nuts for tension clips and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts. Cut all bolts within three threads of nut or less.
- M. Field Welding:
1. Field welds shall be completed by a Certified Structural Welder.
 2. Comply with applicable AWS specification for procedures of manual shielded metal arc welding, for appearance and quality of welds, and for methods used in correcting welding work.
 3. Repair zinc coating damaged by field welding as specified for shop welding.
- N. Bolts shall be cut back to within three threads of the nut.

3.03 GATE INSTALLATION

- A. Install gates as shown on the Drawings in accordance with reviewed submittals.
- B. Cut, drill, and fit as required for installation.
- C. Set work accurately in location, alignment, and elevation; plumb, level, and true; and free of rack; measured from established lines and levels.
- D. Adjust items prior to securing in place so as to ensure proper matching of components and correct alignment.
- E. Field weld all gate hinges in place once gates are aligned and approved by owners representative.

3.04 ADJUSTMENT AND TOUCH-UP

- A. Inspect installed work. Verify that gates, controls, and hardware operate properly. Correct deficiencies.
- B. Restore products and finishes damaged during installation and construction period so that no evidence of correction work remains.

END OF SECTION

SECTION 32 32 15
LANDSCAPE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Architecturally exposed formed concrete.
 - 2. Natural site concrete at utility pads.
 - 3. Subgrade, natural, as-cast concrete for seatwalls, retaining, fencing, furnishings and other site improvements.
- B. Related Requirements:
 - 1. Section 31 20 00 - Earth Moving
 - 2. Section 32 13 13 - Concrete Paving
 - 3. Section 32 33 00 - Site Furnishings

1.02 REFERENCES

- A. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Action and Informational Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.
- B. Pre-Installation Meeting: Conduct meeting at Project with Owner's Representative and concrete installer at site to review scope of landscape concrete work and expectations.
 - 1. Meeting shall be scheduled after approval of mockups and sufficiently in advance of commencement of architecturally exposed concrete for the site improvements.
 - 2. Record discussions of conference and any conflict, incompatibility, or inadequacy. Furnish a copy of record to each participant.
- C. Coordination:
 - 1. Coordinate delivery so that mixes may be immediately poured upon arrival at site.
 - 2. Coordinate proper installation of accessories and anchorage embedded in concrete and for the provision of holes, openings, and other penetrations necessary to the execution of the work of other trades.
 - 3. Coordinate mix design and finishing of colored concrete work to assure appearance match with cast-in-place concrete included on the Structural Drawings.

1.04 ACTION SUBMITTALS

- A. Formwork:
 - 1. Show joints, edge profiles, form material, and other items that affect appearance of exposed surface. Indicate specified Class.
 - 2. See Section 32 33 00, "Site Furnishings," for additional requirements.
- B. Reinforcing Steel: Fabricators drawings for steel reinforcing showing complete bending and placing details of reinforcement necessary for location of reinforcement.

- C. Product Data: Manufacturers' current catalog cuts and specifications for the following:
 - 1. Formwork panels and board form liners, if used.
 - 2. Expansion joint filler materials.
 - 3. Color admixtures.
 - 4. Curing compounds.
 - 5. Other items as requested by Owner's Representative.
- D. Samples:
 - 1. Concrete materials as required for testing and inspection.
 - 2. Expansion Joint Sealant: Manufacturer's standard bead samples showing full range of colors available.
 - 3. Concrete Panels: Not less than 12 inches by 12 inches for each selected color and finish texture using concrete mix proposed for this Project.
 - a. Indicate materials and methods used to produce each color and texture.
 - 4. Mockup work shall not commence until a concrete sample panels have been approved.
- E. Concrete Mix: Mix design and certified compressive strength test report for each concrete strength and type indicating additives and maximum aggregate size required. Report shall be prepared and certified by the ready-mix concrete supplier.

1.05 INFORMATIONAL SUBMITTALS

- A. Statement of installer/finisher qualifications if requested by Owner's Representative.
- B. Mill Certificates and Certifications for reinforcing.
- C. Delivery tickets for each load of concrete delivered to the site.
- D. NRMCA Certificate of Conformance: Submit a copy of the NRMCA Certificate of Conformance to the Owner's Testing Agency for the ready-mix plant, equipment, and mix trucks that will supply the concrete for the project.
- E. Record of pre-installation meeting.

1.06 QUALITY ASSURANCE

- A. Codes and Standards: Comply with the applicable provisions of the following codes, specifications and standards, except where more stringent requirements are shown or specified:
 - 1. California Building Code, Title 24, Part 2, Chapter 19A – Concrete.
 - 2. American Concrete Institute (ACI):
 - a. ACI 301: Specifications for Structural Concrete for Buildings
 - b. ACI 303.1: Standard Specification for Cast-In-Place Architectural Concrete.
 - c. ACI 303R: Guide to Cast-In-Place Architectural Concrete.
 - d. ACI 318: Building Code Requirements for Reinforced Concrete.
 - e. ACI 614: Recommended Practice for Measuring, Mixing, and Placing Concrete.
 - 3. Concrete Reinforcing Steel Institute, Manual of Standard Practice.
 - 4. NRMCA - National Ready-Mix Concrete Association, Quality Control Manual – Section 3: Certification of Ready Mixed Concrete Production Facilities.
- B. Contractor shall be responsible for quality of concrete in place and shall bear burden of proof that concrete as placed meets minimum requirements.
- C. Qualifications:
 - 1. Contractors Design Laboratory: When mixes are proportioned by trial batch method, engage a laboratory conforming to ASTM E329 and under direction of a civil engineer licensed in the State of California.

2. **Installer for Formed Surfaces:** An experienced concrete contractor who has specialized experience installing cast-in-place architectural concrete similar in quality level, material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance. Installer shall retain a quality-control inspector, experienced in inspecting cast-in-place architectural concrete, and who is an ACI-certified Concrete Construction Inspector or is certified by ICC, as a Reinforced Concrete Special Inspector.
 3. **Contractor's Testing Agency:** An independent testing agency meeting "Recommended Requirements for Independent Laboratory Qualification," published by American Council of Independent Laboratories and basic requirements of ASTM E329, "Use in the Evaluation of Testing and Inspection Agencies as Used in Construction."
- D. **Concrete Testing:**
1. The Owner may retain, at its expense, a testing laboratory to perform material evaluation tests in accordance with Section 01 45 00 - Quality Control.
 2. Testing may include slump tests and securing samples of concrete, cement, aggregates or other materials for testing. Applicable materials shall be provided by the Contractor at no additional cost to the Owner.
- E. **Mockups:**
1. **General:**
 - a. Mix design shall match that used on accepted sample panels and proposed for use in final construction including cement and color additive.
 - b. Prepare at least one month before start of final concrete work to allow concrete to cure before observation.
 - c. Concrete color and finish for mockup appearance shall match color and finish of accepted sample.
 - d. Build mockups at the location indicated or, if not indicated, as selected by the Owner's Representative.
 - e. Notify Owner's Representative 5 working days in advance of dates and times when mockups will be constructed and layouts will be ready for review.
 - f. Contractor shall allow for preparation of 1 comprehensive mockup and up to 2 flat paving mockups for evaluation and final approval of each concrete.
 - g. Color and texture shall be approved before starting construction.
 - h. Perform specified slip-resistance testing on paving mockups.
 - i. Maintain final accepted mockups in an undisturbed condition as a standard for judging the completed Work.
 - j. Retain samples of sands, aggregates, and color additive used in the mockups for comparison with materials used in final work.
 - k. Demolish and remove mockups when directed if not incorporated into the final work.
 2. **Walls and Steps:**
 - a. **Wall Size:** Minimum 4 feet long by maximum height and include 2 tie holes, horizontal and vertical corner treatment, and specified texture finishes.
 - b. **Stair Size:** Minimum 2 treads and 2 risers by 4 feet long and including safety scoring at nosing.
 3. **Board Formed Concrete:** An on-site mockup is required for the board-formed architectural cast-in-place concrete for verification of concrete appearance using the proposed mix design. Mockup will also be used for final evaluation and approval of appearance, formwork layout, and workmanship
 - a. **Size:** Not less than 4 foot x 4 foot and to include a typical outside corner.
 - b. Form release agent, if required in final construction, shall also be used on mock-up.
 - c. Prepare promptly to allow concrete to cure sufficiently before observation by Owner's Representative.
 - d. Mockup will be evaluated for visual appearance of concrete with and without water repellent and patching methods.
 - e. **Repairs:** Representative areas of concrete shall be intentionally damaged, in the presence of the Owner's Representative, to mimic honeycombing, spalling, and other defects as may be experienced upon stripping of formwork.

- f. Repair it to demonstrate materials and methods proposed for repair of surface blemishes.
 - g. Specific procedures and materials used for patched area shall be thoroughly documented.
 - F. Lines and levels shall be established by a licensed surveyor or registered civil engineer.
 - G. Owner's Representative will review all forms and joint layout prior to casting concrete.
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - A. Coordinate delivery so that mixes may be immediately poured upon arrival at site.
- 1.08 FIELD CONDITIONS
 - A. Maintain control of concrete dust and water. Do not permit adjacent areas to be contaminated.
 - B. For protection of existing trees to remain, see Arborist Report on the Drawings and Section 32 01 90 – Existing Tree Protection and Maintenance.
 - C. Maintain control of concrete dust and water. Do not permit adjacent areas to be contaminated.

PART 2 - PRODUCTS

2.01 BASE MATERIALS

- A. Aggregate: Class 2, 3/4-inch maximum aggregate base, conforming to Section 26 of California Department of Transportation (CDT) "Standard Specifications."

2.02 FORMWORK

- A. General:
 - 1. Comply with ACI 347, "Recommended Practice for Concrete Formwork," for formwork and other form-facing material requirements.
 - 2. Furnish in largest practicable sizes to minimize number of joints unless otherwise shown on the Drawings.
 - 3. Seal joints to prevent leakage of paste using demonstrated effective method that will not affect appearance of finished surface.
 - 4. Forms may be reused at concealed surfaces. Forms shall not be reused for exposed concrete surfaces if there is any evidence of surface wear or defect that would impair the quality of the surface or if their reuse will evident and produce a noticeable variation in the appearance in the completed work.
 - 5. Formwork Surface Class at Exposed Concrete: Class A. In addition to ACI 303.1 limits on form-facing panel deflection, limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, to 1/8 inch.
- B. Forming Materials:
 - 1. Panels at Smooth Concrete: New, manufactured without addition of urea-formaldehyde, minimum 3/4-inch thick, MDO plywood made specifically for forming of Architectural Concrete to achieve joint pattern shown on Drawings or accepted shop drawings; "PureKor MDO Concrete Formply" by Panel Source International, Inc., or equal.
 - 2. Boards, or Form Liners Providing the Appearance of Boards: Made specifically for forming of Architectural Concrete to achieve board pattern and appearance shown on the Drawings and approved mockup.
 - 3. Form Boards: 2 x 8 with resawn face, sized to net 7-1/4 inch width as required for layouts shown on the Drawings.

4. Unexposed Surfaces of Concrete: Plywood, lumber, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
 5. Framing: Contractor option, subject to meeting necessary strengths and surface tolerances.
- C. Form Hardware:
1. Ties:
 - a. Typical: Metal, spreader type, removable to 1-inch from concrete face.
 - b. Exposed Concrete: Fiberglass rod ties, tinted to color to match concrete; "SuperTie" by RJD Industries, Inc., or equal, in tensile strength as selected by form designer.
 2. Wire ties and wood spreaders will not be allowed except that such devices may be permitted for footings, shallow foundations and similar other totally concealed below grade surfaces. Wood spreaders shall not remain in concrete.
- D. Form Release Agents:
1. Concealed Concrete: Contractor option.
 2. Exposed Concrete: Colorless, free from oils, chemically active, guaranteed to provide clean, stain-free concrete release and not to interfere with future applied coatings and finishes.

2.03 REINFORCING

- A. Materials:
1. Reinforcing Steel: Deformed billet steel bars, ASTM A615, Grade 60 for No. 5 and larger, Grade 40 for No. 4 and smaller.
 2. Tie Wire: ASTM A82, black annealed.
 3. Spacers, Bar Supports, and Other Accessories: In accordance with ACI 315. Galvanize metal items exposed to moisture, or use approved other non-corrodible, non-staining supports.
 4. Smooth Dowels for Expansion Joints: ASTM A615, Grade 40 smooth, billet-steel bars, shop painted with iron-oxide zinc-chromate primer.
- B. Reinforcing steel shall be cut and bent cold to exact lengths and shapes to comply with Drawings, reviewed shop drawings, and referenced codes and standards.
- C. Comply with the additional requirement shown on the Drawings.

2.04 CONCRETE MATERIALS

- A. Portland Cement: ASTM C150, Type II, low alkali brand, with a proven history of successful use with proposed aggregates. Cement shall be same brand and from same source throughout the Project.
- B. Hardrock Aggregate: ASTM C33.
- C. Water: Clean, potable concrete mixing water free from injurious amounts of salts, oils, acids, alkalis, organic materials or other deleterious matter.

2.05 CONCRETE ADDITIVES

- A. Pigment for Integrally Colored Site Concrete: ASTM C979, synthetic mineral-oxide pigments or colored water-reducing admixtures, color stable, nonfading, and resistant to lime and other alkalis; "Chromix Admixture for Color-Conditioned Concrete" by L. M. Scofield Co. as specified, or equal.
1. If added to mix at Project site, additive shall be furnished in manufacturer's "Mix-Ready" disintegrating bags.
 2. Dosage Rate: As required to achieve color of approved sample but not exceeding 10 percent of weight of cementitious materials in mix.
 3. Color[s]: [_____].

- B. Waterproofing: Crystalline type; "Xypex Admix C-1000" by Xypex Chemical Corporation, or equal.
- C. Additional Additives: As approved for structural concrete and recommended by concrete mix designer.

2.06 ACCESSORIES

- A. Curing Materials:
 - 1. Liquid Curing Compounds: ASTM C309, Type 1.
 - 2. Sheet Material: Waterproofed Kraft paper, ASTM C17, regular type.
- B. Fiber Expansion Joint Material: Preformed cellular fiber complying with ASTM D1751; 1/2 inch thick unless otherwise indicated; "SealTight Fiber Expansion Joint Filler" by W.R. Meadows or equal precut to proper size.

2.07 CONCRETE MIXING

- A. General:
 - 1. Mix designs for concrete shall be Contractor-designed at its expense. Designs shall be prepared by a qualified agency approved by the Owner's Representative.
 - 2. Use admixtures according to manufacturer's written instructions.
 - 3. Ensure equipment and plant will afford accurate weighing, minimize segregation, and will efficiently handle materials.
 - 4. Deposit concrete into final position within 90 minutes of introduction of cement.
- B. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.
- C. Waterproofing: Crystalline waterproofing powder shall be added to the concrete mix at water features at rate of 3 percent by weight of Portland cement content, unless otherwise recommended by manufacturer for mix design.
 - 1. Waterproofing shall be added to the concrete mix at time of batching.
 - 2. Thorough blending of the admixture throughout the concrete mix to ensure a homogeneous mixture is obtained.
- D. Minimum ultimate compression strength of concrete at 28 days is as follows:

Item	Strength	Maximum slump	Size of aggregate	Cement (# of 94 lb. sacks per yard)	W/C Ratio
Slab-On-Grade	3,000	4 inches	3/4"-1"	5	0.60
Walls and Footings	3,000	4 inches	3/4"-1"	5	0.60

- E. Adjustment to Concrete Mixes:
 - 1. Mix design adjustments may be requested by Contractor when job conditions, weather, test results warrant, or to meet appearance of accepted samples or mockup.
 - 2. Test data for revised mix design shall be submitted to and accepted by Architect before using in work.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Use templates for anchor plates, bolts, inserts and other items embedded in concrete. Accurately secure so that they will not be displaced during placing of concrete.
- B. Piping and Conduit: Do not embed piping, other than electrical conduit at irrigation sleeves, in structural concrete.
 - 1. Locate conduit to maintain strength of structures at maximum. Verify size, length, and location of electrical conduit.
 - 2. Provide sleeves for irrigation lines provided under Section 32 84 00 - Irrigation.
- C. Aggregate Base Course: Compact base course to thickness shown on Drawings in accordance with recommendations of the Geotechnical Engineer.

3.02 INSTALLATION OF FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.
 - 1. Forms shall be tight enough to prevent loss of concrete mortar.
 - 2. Wavy surfaces and bulged vertical or slab surfaces in finished work will be rejected.
- B. Ties for exposed concrete surfaces shall be arranged symmetrically and shall be aligned both vertically and horizontally. Do not stagger.
- C. Extend forms for all exposed concrete at least 6 inches below finish grade.
- D. Do not disturb earth at bottoms of excavations for footings or foundations. Maintain these areas free of water, properly cleaned and leveled off.
- E. Assemble forms so that all construction joints appear only as shown on Drawings and as accepted by Owner's Representative. Incorporate all formwork joints into required reveal and expansion joints. No exposed form joints will be permitted.
- F. Ease all exposed edges, unless otherwise shown on Drawings. Do not chamfer.
- G. Thoroughly clean all formwork prior to pouring concrete. Where no form coating is used, wet down all wood.
- H. Place and secure anchorage devices and other embedded items. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
- I. Leave no wood in concrete, except pressure-treated nailers.

3.03 PLACING REINFORCEMENT

- A. Comply with CRSI's "Manual of Standard Practice" and additional requirements for placing reinforcement specified for structural concrete on the Drawings.
- B. Reinforcement shall be free of paint, oil, dirt, scale, or loose rust or coating that might reduce bond with concrete.

- C. When there has been a delay in placing concrete, reinforcement shall be inspected and, if necessary, cleaned, relocated, and tied at no additional cost to Owner.
- D. Wherever conduits, piping, inserts, sleeves, and similar item interfere with placing of reinforcing steel, obtain Owner's Representative's approval of method of procedure before concrete is placed.
- E. Securely tie and support reinforcement to prevent displacement by construction traffic and during casting of concrete.
- F. Splices not shown on the Drawings shall be accepted by Owner's Representative, in writing.
- G. Unless permitted in writing, reinforcement shall not be bent after being partially embedded in hardened concrete.
- H. Dowels shall be tied securely in place before concrete is deposited.

3.04 PLACING OF CONCRETE

- A. Notify Owner's Representative minimum 5 working days prior to pour.
- B. Preparation:
 - 1. Protect finished surfaces adjacent to areas to receive concrete.
 - 2. Verify that the Project Engineer and City Inspector, if required, have inspected reinforcement.
 - 3. Notify Project Engineer, City Inspector if required, and Contractor's testing laboratory at least two working days before placing concrete.
- C. Placing:
 - 1. Moisten earth, and spray forms and reinforcement with water before placing concrete.
 - 2. Place concrete in continuous operation to permit proper and thorough integration and to complete scheduled placement.
 - 3. Hot-Weather Concreting: Conform to ACI 305 when mean daily temperature rises above 80 degrees F.
 - 4. Use vibrators for thorough consolidation of concrete.
 - a. Provide vibrators at each point of deposit during simultaneous placing to ensure timely consolidation around reinforcement, embedded items, and into corners of forms; ensure availability of spare vibrators in case of failures.
 - b. Do not place vibrators against reinforcement, attach to forms, or use to spread concrete.
 - 5. Distribute concrete in maximum 18-inch layers, unless otherwise accepted.
 - 6. Space points of deposit to eliminate need for lateral flow.

3.05 REMOVING AND REUSING FORMS

- A. Formwork for a given area shall be removed at the same time to enhance uniformity of final appearance.
- B. Formwork that does not support weight of concrete may be removed after cumulatively curing at not less than 50 degrees F for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.
- C. Remove forms for exposed concrete so as to avoid damage to finish. Do not use pinch bars and similar tools for prying against exposed surfaces.
- D. Upon removal of forms, remove bolts, wires, and similar metal items not necessary to finished work to minimum 1 inch from surface. Remove them in such a way as to eliminate danger of rust stains from

form-tie materials or other unprotected ferrous materials embedded in or adjacent to exposed concrete surfaces.

- E. Re-use of forms will only be permitted as specified. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Apply new form-release agent. Align and secure joint to avoid offsets.

3.06 FINISHING FORMED SURFACES

- A. Rough-Formed Finish on Unexposed Concrete: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding ACI 347R.
- B. Formed Finish on Exposed Concrete: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams.
 - 1. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch in height.
 - 2. Finish appearance shall match concrete on Building.
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.
- D. Adjusting:
 - 1. Remove projecting fins, bolts, wire, nails, and similar items not necessary for the work, or cut them back 1 inch from the surface and patch in an inconspicuous manner.
 - 2. Immediately after removal of forms, cut off snap ties extending from the face of concrete to at least 1 inch deep in the concrete. Fill or plug as detailed in Drawings.
 - 3. Remove in its entirety and replace defective concrete work which after corrective patching, rubbing, or similar procedures fail to duplicate the appearance of unpatched work, conform to the standards set forth in these Specifications, or is determined as unacceptable by the Owner's Representative.

3.07 FLATWORK FINISHING

- A. General:
 - 1. Provide each concrete finish where shown in the Drawings.
 - 2. Provide samples and mockups as specified of all concrete finishes for review and acceptance prior to pouring concrete.
- B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats.
- C. Trowel Finish: After applying float finish, apply first trowel finish and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighen until surface is free of trowel marks and uniform in texture and appearance.

3.08 EXPANSION JOINTS

- A. General:
 - 1. Provide construction and expansion joints as shown. Where not shown, coordinate locations with the Owner's Representative.
 - 2. Form construction and isolation joints and tool edges true to line, with faces perpendicular to surface plane of concrete.
 - 3. Use only experienced personnel and forms or templates to achieve consistent lines.

- B. Unless noted otherwise on the Drawings, expansion shall be 1/2-inch wide, the full depth of the concrete section and conforming to Section 51 of the Caltrans "Standard Specifications."
 - 1. Extend joint fillers full width and depth of joint.
 - 2. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
 - 3. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
 - 4. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
 - 5. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
- C. Sealant Filling of Expansion Joints:
 - 1. After the curing period, strip out all depth gauge strips and carefully clean expansion joints.
 - 2. Fill with joint compound in accordance with sealant manufacturer's instructions and ASTM C1193. Avoid spilling compound on adjacent surfaces or overflowing from joint.

3.09 PROTECTION AND CURING

- A. Protection:
 - 1. Protect concrete against rapid drying and damage by rain.
 - 2. Keep concrete moist for at least 7 days.
 - 3. Protect with liquid curing compound, or a covering that will not stain or discolor finished concrete surfaces.
 - 4. Obtain acceptance of proposed method prior to use.
- B. Curing: Cure concrete in accordance with the ACI Manual of Concrete Practice and all applicable requirements for curing and protection of concrete included in Sections 90-7 and 90-8 of the Caltrans "Standard Specifications."
- C. Integral Color Concrete: Cure colored concrete with only products approved by the manufacturer of the integral color pigments.

3.10 FIELD QUALITY CONTROL

- A. Samples: Owner's testing agency will take samples for laboratory testing during the course of the work when required by Code. Other specified and required testing shall be by the Contractor's testing laboratory.
- B. Contractor shall pay for full costs of removal of rejected concrete and its replacement with concrete of specified strength and retesting.

END OF SECTION

SECTION 32 33 00

SITE FURNISHINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Site furnishings and installation accessories as shown on the Drawings including, but not necessarily limited to, the following:
 - a. Bench.
 - b. Picnic Tables.
 - c. Drinking Fountain.
 - d. Trash and recycling receptable.
 - e. Bike racks.
 - f. Pavilions
 - g. Pickleball posts, nets, windscreens, padding, and paddle rack.
 - h. Basketball hoop.
 - i. Cornhole bases.
 - 2. Site Furnishings Product Matrix
- B. Related Requirements:
 - 1. Section 32 12 16 - Asphalt Paving
 - 2. Section 32 13 13 – Concrete Paving

1.02 REFERENCES

- A. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Action and Informational Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.
- B. Scheduling and Sequencing:
 - 1. Do not install site furnishings prior to acceptance by Owner's Representative of area to receive items.
 - 2. Coordinate construction timing of installation of site furnishings in conformance with other work interfacing with installation of the site furnishing items.

1.04 ACTION SUBMITTALS

- A. Shop Drawings: Submit complete shop drawings for all materials or furnishings requiring field or shop fabrication.
- B. Product Data: Manufacturer's catalog cut sheets of materials and equipment to be provided.
 - 1. Include the manufacturer and distributor name, and subcontractor as applicable.
 - 2. Cut sheets clearly describe the specific product by catalog number and that additional non-specified products that may appear on the same cut sheet are crossed out where applicable.
- C. Samples: Colors and finishes for products and furnishings requiring selection by the Owner's Representative.

1.05 INFORMATIONAL SUBMITTALS

- A. Statement of qualifications for manufacturers and installer if requested by the Owner's Representative.

1.06 CLOSEOUT SUBMITTALS

- A. Provide operation and maintenance data for items with operable, movable, or replaceable parts, for items with mechanical connections, and for other items as applicable.
- B. Extended warranties as specified.

1.07 QUALITY ASSURANCE

- A. Furnishings shall be reviewed for conformance with the intent of the Contract Documents and accepted by the Contractor prior to installation.
- B. Site furnishings shall be in a new, "first-class" condition as determined by the Owner's Representative at the time of Final Acceptance.
- C. Field Samples and Mockups: As requested by the Owner's Representative.

1.08 DELIVERY, STORAGE AND HANDLING

- A. General:
 - 1. The Contractor is responsible for coordination of the delivery, acceptance, handling, and storage of site furnishings.
 - 2. Store and handle site furnishings as acceptable to the Owner's Representative and so that work or access of others is not impeded.
 - 3. Protect site furnishings from theft or damage until such items have been accepted by the Owner.
- B. Packaging and Labeling: Furnish materials in manufacturer's unopened, original packaging, bearing original labels showing quantity, description, and name of manufacturer. Verify that materials and components are adequately padded and securely bound in such a manner that no damage occurs to the product during delivery and unloading at the site.
- C. Storage: Damaged materials will be rejected. Remove damaged materials from job site immediately and pay cost of replacement. Determination of damage shall be the sole authority of the Owner's Representative.
- D. Painted Finishes: Provide non-scratching, non-staining, firmly bound covering for shop-painted finishes until installed and accepted.
- E. Protect wood materials from stains.

1.09 WARRANTY

- A. Manufacturers: Provide Owner with manufacturer's written extended product warranties as available for the specified products.

PART 2 - PRODUCTS

2.01 SITE FURNISHINGS - GENERAL

- A. In addition to those described in the following Articles, refer to the Site Furnishing Matrix included at the end of this Section for complete list of items to be provided.

2.02 SITE FURNISHINGS MATRIX

- A. New site furnishings shall be as specified or approved equal. bidder shall submit request for information (RFI) during bidding for review and approval of proposed approved equal furnishing. any approved equal furnishing shall be issued through addendum.

ITEM	DESCRIPTION	MANUFACTURER	MODEL NO.	FINISH/COLOR	DISTRIBUTOR/CONTACT
A.	Bench	Outdoor Creations	427M	Light Sandblast/ Sandstone	(530) 365-6106
B.	Picnic Table	Outdoor Creations	Timber Table Series, 96" #114	Light Sandblast/ Sandstone	(530) 365-6106
C.	Picnic Table ADA	Outdoor Creations	Timber Table Series, 96" #114LE	Light Sandblast/ Sandstone	(530) 365-6106
D.	Drinking Fountain	Most Dependable Fountain	SE 10145 SMFA	Smooth Powder Coat / Blue	(901) 867-0039
E.	Trash/Recycling Receptacle	Forms + Surfaces	SLURB-36RB Urban Renaissance Receptacle with Integrated Recycle Bin, Dome Lid, Side Opening, Updrop Grillwork	Powdercoat / Cobalt Texture color	(800) 451-0410
F.	South Pavilion	Classic Recreation Systems	Northwest 20' x 30' (w/ tongue & groove subroof and wood fascia)	Colors TBD	(707) 538-3800
G.	North Pavilion	Classic Recreation Systems	Oregon 45' (w/ tongue & groove subroof and wood fascia)	Colors TBD	(707) 538-3800
H.	Bike Rack	Dero	Hoop Rack	Powder Coat / Deep Red	(888) 337-6729
I.	Pickleball Post	Jaypro Sports	PPR10BK	Powder Coat / Black	(800) 243-0533
J.	Pickleball Net	Jaypro Sports	PT-21N	Black	(800) 243-0533
K.	Pickleball Windscreen	Putterman Athletics	Tenn-Air Pro	Black	(800) 621-0146
L.	Court Separator Padding	Sportsfield Specialties	BGRPSG	Black	(888) 808-8638
M.	Pickleball Paddle Rack	Boomer Pickleball	HD Paddle Rack	Black	(800) 970-0308
N.	Basketball Hoop	Bison	BA872-BK, Double-Sided Basketball	Powder Coat / Black	(800) 247-7668
O.	Cornhole Base	Outdoor Creations	1510	Smooth/ Sandstone	(530) 365-6106

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Prior to commencement of work described in this Section, carefully inspect installed work, and verify all such work is correct and complete. Immediately notify the Owner's Representative of any discrepancy before proceeding with work.

3.02 INSTALLATION - GENERAL

- A. Conform to layout shown on Drawings. Final placement shall be field verified with the Owner's Representative.
- B. Installation of products shall be as shown in the Drawings, or according to manufacturer's instructions. If discrepancies are found, or if information is lacking, consult with the Owner's Representative prior to beginning the work.
- C. Concrete footings shall conform to requirements of Section 32 32 15 – Landscape Concrete unless noted otherwise.
- D. Furnish anchorage and fastening required for installation to ensure proper fit and accurate placements. Bolts, where exposed, shall be cut back to within three threads of the nut.

3.03 CLEANING AND ADJUSTMENT

- A. Protect furnishings from damage until acceptance of work. Do not remove protective wrappings from furnishings until so instructed by the Owner's Representative.
- B. Clean soiled site furnishings prior to acceptance by Owner.
- C. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by the Owner's Representative.
- D. Replace damaged items to the satisfaction of the Owner's Representative. Replace missing accessories at no cost to Owner.

END OF SECTION

SECTION 32 80 00

IRRIGATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Landscape irrigation system work is shown on the Drawings including, but not necessarily limited to, the following:
 - 1. Water supply to irrigation system.
 - 2. Water backflow prevention and flow sensing system.
 - 3. Automatic irrigation controls and systems.
 - 4. Line voltage connections to the irrigation controllers and low voltage control wiring from controllers to remote control valves.
- B. Work Included Under Other Sections:
 - 1. Irrigation water stub-out.
 - 2. 120 Volt A.C. electrical stub-out for irrigation controller.
 - 3. Irrigation sleeves.
- C. Related Requirements:
 - 1. Section 31 01 90 - Landscape and Site Maintenance
 - 2. Section 31 23 00 - Excavation and Fill
 - 3. Section 32 90 00 - Planting
 - 4. Section 33 11 00 - Domestic Water Utilities

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. D1785 - Standard Specifications Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40 and 80.
 - 2. D2241 - Standard Specifications for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
 - 3. D2464 - Standard Specification for Threaded Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80
 - 4. D2466 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40
 - 5. D2467 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80
 - 6. D2564 - Standard Specifications for Solvent Cements for (PVC) Plastic Pipe and Fittings.
 - 7. D2855 - Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets.
 - 8. F512 - Standard Specification for Smooth-Wall Poly (Vinyl Chloride) (PVC) Conduit and Fittings for Underground Installation.
 - 9. D2672 - Standard Specification for Joints for IPS PVC Pipe Using Solvent Cement.
- B. National Sanitation Foundation (NSF), requirements for Seal of Approval.
- C. Plastics Pipe Institute (PPI), recommendations for hydrostatic design stresses for PVC pipe.
- D. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."
- E. Permits and Fees: Contractor is responsible to obtain all required permits and pay all associated fees unless otherwise noted.

- F. Irrigation Association/American Society of Irrigation Consultants, Landscape Irrigation Best Management Practices, 2014 edition.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Substitutions for specified products shall be submitted for approval in accordance with Section 01 25 00 – Substitution Procedures.
- B. Submittal Procedures: Action and Informational Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.
- C. Coordination, Sequencing, and Scheduling:
 - 1. Contractor shall be solely responsible for coordinating, sequencing and scheduling work with applicable trades and subcontractors so as to ensure proper and timely installation of the irrigation system.
 - 2. The entire irrigation system shall be under full automatic operations for a period of two days prior to beginning of planting. Coordinate with Section 32 90 00 – Planting.
- D. Permits and Fees: Contractor is responsible to obtain all required permits and pay all associated fees unless otherwise noted.

1.04 ACTION SUBMITTALS

- A. Shop Drawings: A diagrammatic drawing of proposed mainline route and equipment locations for approval by the Owner's Representative. The Drawings may be marked and used for marking layout and equipment locations.
- B. Product Data: Manufacturer's literature or cut sheets of products specified and to be incorporated into the irrigation system. Specific products being submitted shall be highlighted or shown on boxes on cut sheets to designate which items are being submitted. Submittals not marked appropriately will be rejected.
- C. Materials List: Prior to installation, submit a materials list. Include manufacturer, model number, and description of all materials and equipment. List shall also include sealants, cements, lubricants and other proprietary items.

1.05 CLOSEOUT SUBMITTALS

- A. Record Drawings as specified.
- B. Maintenance equipment as specified.
- C. Warranties and Guarantees

1.06 RECORD DOCUMENTS

- A. Comply with Section 01 78 39 – Project Record Documents.
- B. Accurately record locations of all piping and equipment that varies from what is shown on the Drawings. Locations are to be clearly dimensioned horizontally to within 1 foot and vertically to within 0.5 feet from a hardscape edge or permanent site feature.
 - 1. The valve size, station number and gallons per minute shall be legible at each valve and shall match how the controller is wired.
 - 2. Additionally, each valve shall be annotated to describe which type of irrigation it is; rotor, rotator, spray, bubbler, drip tubing or other.

3. Symbols for valves shall be annotated as: meter (M), backflow preventer device (BFP), master valve (MV), flow sensor (FS), hydrometer (H), quick coupler valve (QCV).
- C. Contractor shall record and scan and submit PDF files of full size plan set of Record Drawings (As-builts Drawings) to the Owner's representative, and two sets of color coded plans shall be produced, one for placement at or within the irrigation controller cabinet reduced to 11" x 17", and one full size set for submittal to the Owner or stored at another location selected by the Owner's Representative.
 1. Both sets shall have all the irrigation valve zone lateral lines color-coded so as to readily distinguish between adjacent zones.
 2. The color-coded copies shall then be professionally laminated in minimum 5 mil clear plastic.

1.07 QUALITY ASSURANCE

- A. Unless otherwise specified, install all materials in accordance with manufacturer's details, specifications and recommendations.
- B. The Contractor shall be responsible to assure the irrigation installer personally or through an authorized and competent representative, supervises the work and retains the same supervisor on the job from commencement to completion.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Store PVC pipe in a neat and orderly manner fully supported and protected from sunlight.
- B. Equipment and materials shall be delivered, unloaded, and handled so as to protect from damage at all times.

1.09 FIELD CONDITIONS

- A. PVC shall not be cemented during wet conditions at the discretion of the Owner's Representative.
- B. Trench excavation and backfilling shall not be performed during excessively wet conditions at the discretion of the Owner's Representative.
- C. Water Supply: Connections to, or the installation of, the water supply shall be at the locations shown on the Drawings. Minor changes caused by actual site conditions shall be made at no additional expense to Owner.
- D. Discrepancies: In the event of discrepancy, immediately notify the Owner's Representative. Do not proceed with installation or irrigation components or system in areas of discrepancy until discrepancies have been resolved.

1.10 MAINTENANCE EQUIPMENT

- A. Turn-over Materials: Provide 1 each of the following to the Owner's Representative:
 1. One quick coupler attachment key equipped with standard thread hose bib for each 5 quick couplers installed on the project.
 2. One key for locking quick coupler covers for each 5 quick coupler valves installed on the project.
 3. One key for hose bib operation for each 5 hose bibs installed on the project.
 4. One set of keys to irrigation controller and other installed locking cabinets or pedestals.
- B. Full set of remaining nozzles for each rotor sprinkler.

1.11 GUARANTY

- A. Contractor: Provide Owner with a separate written guaranty for the entire irrigation system against defects in installation, workmanship and equipment, for a period of 1 year from the date of Final Acceptance.
- B. Contractor shall make necessary repairs to the system as well as to other work affected by defects in the system during guaranty period. Repairs shall be made at the Contractor's sole expense.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Use only new materials of brands shown on Drawings, specified herein or as acceptable to the Owner's Representative.

2.02 PIPE

- A. General:
 - 1. Plastic pipe shall be extruded of an improved PVC virgin pipe compound in accordance with ASTM D2672, ASTM D2241 or ASTM D1785.
 - 2. Pipe shall be marked continuously with manufacturer's name, nominal pipe size, schedule or class, PVC type and grade, National Sanitation Foundation approval, Commercial Standards designation, and date of extrusion.
- B. Plastic Pipe: Polyvinyl chloride PVC (Type I) 1120.
 - 1. Intermittent-Pressure Lateral Piping: 1120-Schedule 40 PVC plastic pipe with Schedule 40, Type 1, Grade 1, PVC solvent weld fittings.
 - 2. Constant-Pressure Mainline Piping 2 inches and Smaller: Schedule 40 with solvent weld fittings.
 - 3. Constant-Pressure Mainline Piping 2-1/2 Inches and larger: Class 200 SDR-21 or 2-1/2" to 3" Class 315 SDR-14, if requested by Owner, or C900 Class 200 DR-14, if the system is using recycled or well water.
 - 4. Constant-pressure mainline piping 4 inches and larger shall be Class 200 PVC ring-tite with IPS ductile iron fittings and mechanical restraints at all bell fittings and fittings at changes in direction.
 - 5. Constant-pressure mainline piping 3 inches and larger on systems with booster pumps shall be Class 200 PVC ring-tite with IPS ductile iron fittings and mechanical restraints at all bell fittings and fittings at changes in direction.
 - 6. If the system is operated with recycled water, PVC pipe shall be "Purple Pipe." If specified pipe type is not manufactured in purple color, Contractor shall clearly paint/mark pipe with purple paint regularly, along with purple marking tape to indicate recycled water system.

2.03 FITTINGS

- A. PVC Fittings: Polyvinyl chloride (Type I) plastic 1120, Schedule 40 or Schedule 80 where noted on the Drawings.
- B. PVC Nipples: Polyvinyl chloride (Type I) plastic 1120, Schedule 80.
- C. Joint Restraint for Ductile Iron Fittings: Shall be manufactured of ductile iron per ASTM A536. Gripping surfaces shall be machined serrations. As cast gripping surfaces are not permitted.
 - 1. Sizes 1 1/2" to 4": Joint Restraint shall be Knuckle Restraint by The Harrington Corporation or approved equal. Grip Ring shall be one piece residing within a housing that engages the fitting lugs. Grip Ring shall be activated by one bolt.

2. Sizes 4" to 12": Joint Restraint shall be Clam Shell Restraint by The Harrington Corporation or approved equal. Restraint shall not require separate restraining rods. The pipe gripping structure and fitting connection structure shall be integral and one piece.
 3. Flange Bolts are to be 316 Stainless Steel.
- D. HDPE Fittings: shall be manufactured or supplied by The Harrington Corporation (HARCO), Lynchburg, VA or approved equal.
- E. HDPE Fittings: shall be made from PE 4710 resin with a cell classification of 445574C per ASTM D3350.
1. Only "like" DR's are permitted to be butt fused together. No "unlike" DR's are permitted to be butt fused together.
 2. Reductions on Tees: Reducing on Run and/or Branch Tee's shall be such that the size of the "main body" is that of the largest leg of the tee.
 3. Butt Fusion Fittings:
 - a. Molded butt fusion fittings shall be DR 11 per ASTM D3261.
 - b. Fabricated butt fusion fittings shall be per AWWA C906
 - c. Fabricated Tee's and Elbows shall be of DR 9 pipe with ends machined to DR 11.
 - d. Tee's and 90 Degree Bends shall be 3 Segment.
 - e. 45 Degree Bends and bends of lesser angle shall be 2 Segment
 - f. Reducers shall be of DR 11 pipe with ends DR 11.
 - g. Reducers shall be of the "swage reducer" style.
 - h. Branch Saddle Reducing Tees shall be DR 11 pipe and DR 11 Branch Saddles with ends DR 11.
 4. Socket Fusion Fittings are permitted on 2" and smaller lines and shall be DR 11 or "stronger" per ASTM D2683
 5. Polypropylene Compression Fittings: Are permitted on 2" and smaller lines. They must be suitable for use on HDPE pipe per ASTM D3035 (IPS diameter, OD controlled). Fittings shall be long term rated for 230 psi complying with ISO 14236 and meet the dimensional and performance requirements of AWWA C800. Fitting "Bodies" shall be Polypropylene. Fitting "Compression Nuts" shall be Acetal. Joint seal activation shall be accomplished solely by the Compression Nut. Joint "Seals" shall not "interfere" with pipe insertion. No beveling or lubrication of pipe shall be required. Fitting components shall not require dismantling prior to assembly on to pipe. Compression fittings shall be Phimac or approved equal.
 6. Polypropylene Compression Fittings with Female Acme outlets: Philmac service tees and service elbows with 1 1/2" Female Acme thread outlets shall serve compatible swing joint serving irrigation sprinkler heads.
 7. Electrofusion Fittings including Electrofusion Couplings, Electrofusion Branch Saddles, Electrofusion x FNPT Saddles, and Electrofusion Swivel Saddles shall be DR 11 per ASTM F1055. Electrofusion Swivel Saddle shall be as manufactured by The Harrington Corporation or approved equal.
 8. Flange Adapter Systems:
 - a. Flange adapters shall be molded or machined from stock and be SDR 11 complying with ASTM F2880.
 - b. Back Up Rings shall be Ductile Iron per ASTM A536 and DR 11.
 9. Accessories shall be 1/8" Neoprene Gaskets and Grade 5 or stronger, zinc plated Cap Screws or Threaded Rod and Nuts.
 10. Threaded Transitions: HDPE x MNPT Brass or Stainless Steel transitions shall be DR 11. Brass shall be red brass. Stainless Steel shall be grade 304.
 11. Flange Bolts are to be 316 Stainless Steel.
- F. PVC fittings used with UVR pipe shall be Schedule 40 UVR PVC type.

2.04 SWING JOINTS

- A. Swing joints for Rotator and pop-up heads shall be as detailed on the Drawings.
- B. Swing Joints for rotors shall be by LASCO Fittings, Inc. with ASTM F2768 Standard for Swing Joint ACME Threads, or equal.

2.05 VALVES AND SENSORS

- A. General:
 - 1. Each valve shall be installed with unions before and after the valve.
 - 2. Control Valves shall be labeled with tags denoting the associated controllers and station numbers.
 - 3. Gate Valves and Ball Valves:
 - a. Valves shall have a minimum working pressure of not less than 150 psi and shall conform to AWWA standards.
 - b. Provide purple tags on all valves if system is designed for recycled water.
- B. Gate Valves and Ball Valves: As specified on Drawings.
- C. Remote Control Valves: As specified on Drawings.
- D. Quick Coupling Valves: As specified on Drawings. Provide purple lid if system is designed for recycled water.
- E. Drain Valves:
 - 1. Drain Valves shall be 2" Nibco T113 or approved equal.
- F. Isolation Valves for Air/Vacuum Relief
 - 1. Isolation valves for air/vacuum relief shall be bronze ball valves.
- G. Grounding: 5/8"x8' copper grounding rod (one per controller) including #6 solid copper ground wire.

2.06 PLASTIC VALVE BOXES

- A. General:
 - 1. Color of plastic boxes shall be green, unless the irrigation system is designed for recycled water, in which case boxes shall be purple.
 - 2. If black or green valve boxes are required by the Owner for use on recycled water systems, the lids shall be purple or shall have a warning label or nameplate permanently molded into or attached onto the lid with rivets, screws, or bolts.
 - 3. Warning labels shall be as specified on Drawings.
 - 4. Valve boxes shall have locking or bolt down type lids.
 - 5. Markings on valve box covers shall be "heat branded" onto the cover in 1-inch high letters.
 - 6. Manufacturer: Carson Industries as specified and the basis of design, Applied Engineering Inc., NDS, Christy, or equal.
- B. Gate Valves and Ball Valves, Round:
 - 1. Model equivalent to Carson 910-10 with 910-T locking lid.
 - 2. Boxes shall be labeled as "Irrigation – BV" on lid.
- C. Gate Valves and Ball Valves, Rectangular:
 - 1. Valves 1-2 Inches: Model equivalent to Carson 1419-12 with 1419-T locking lid.
 - 2. Valves 2-1/2 Inches and Larger: Model equivalent to Carson 1730-12 with 1730-T locking lid.
 - 3. Boxes shall be labeled as "Irrigation – GV" on lid.
- D. Remote Control Valves, Rectangular:
 - 1. Valves 1 inch and 1-1/2 inches: Model equivalent to Carson 1419-12 with 1419-T locking lid.
 - 2. Valves 2 inches and larger: Model equivalent to Carson 1730-12 with 1730-T locking lid.
 - 3. Boxes shall be labeled as "Irrigation – RCV" on lid.
- E. Quick Coupling Valves, Round:

1. Model equivalent to Carson 910-10 with 910-T locking lid.
2. Boxes shall be labeled as "Irrigation – QC" on lid.

F. Valve Boxes shall have locking or bolt down type lids. Approved box manufactures as equals: Applied Engineering Inc., NDS, Christy, Carson Industries, or equal.

2.07 AUTOMATIC CONTROLLER AND ENCLOSURE

- A. Controller: Manufacturer, model, size, and type as specified on Drawings.
- B. Enclosure: Manufacturer, model, size, and type as specified on Drawings.
- C. Grounding: 5/8"x8' copper grounding rod (one per controller) including #6 solid copper ground wire.

2.08 ELECTRICAL

- A. General:
 1. Electrical equipment shall be NEMA Type 3, waterproofed for exterior installations.
 2. Electrical work shall conform to local codes and ordinances.
 3. Remote control wire shall be UL rated for direct burial.
 4. Where two or more controllers are used, the control wires shall be a different color for each controller. These colors shall be noted on the "Record Drawings" placed in the controller cabinet.
- B. Low Voltage Control Valve Wiring:
 1. Conductors:
 - a. Control Wires: Type UF, 14-gauge wire. Insulating jacket color shall be red.
 - b. Common Wires: Type UF, 12-gauge wire. Insulating jacket color shall be white.
 - c. Spare Control Wires: Type UF, 14-gauge wire, insulating jacket color shall be blue.
 - d. Spare Common Wire: Type UF, 12-gauge wire. Insulating jacket color shall be green.
 2. Splice connectors: 3M DBR-Y6 splice connectors, 3M Scotchcast #3570G-N Connector seal packs, or Spears DS-100 connectors with DS-300 sealant.

2.09 CONNECTING COMPOUNDS

- A. Primer: I Weld-On "P-70" Primer by IPS Corporation.
- B. Cement: Solvent cementing shall be in conformance with ASTM D2564 and ASTM D2855.
 1. Pipe Diameter up to 6 Inches: Weld-On #705 by IPS Corporation, Low VOC PVC solvent cement for Class 200 PVC or schedule 40 PVC.
 2. Pipe Diameter Larger than 6 Inches and Schedule 80 PVC: Weld-On #711 by IPS Corporation, Low VOC PVC solvent cement.
 3. Flexible PVC to Rigid PVC Connections: Weld-On #795 by IPS Corporation, Low VOC PVC solvent cement.

2.10 SPRINKLER HEADS

- A. Rotors, Rotators and Spray Heads: As specified on the Drawings.

2.11 TREE BUBBLERS

- A. Bubbler Nozzle Assemblies: As specified on the Drawings.

2.12 DRIP LINE

- A. Drip line System Components: As described on the Drawings by GPH Irrigation Products, or equal.

- B. End Flush Valve: 1/2-inch PVS full port ball valve connected to 1/2-inch algae resistant PVC flex hose. House in a minimum 12-inch round valve box in accordance with manufacturer's instructions.

2.13 ADDITIONAL MATERIALS

- A. Tape:
 - 1. General:
 - a. On-site buried recycled water piping shall be identified by warning tape with a minimum width of 3 inches reading "caution – recycled water" (in black or white lettering on purple background). Tape shall run continuously on top of main line piping and shall be attached to piping with plastic tape banded around the warning tape and the pipe every 5 feet on center.
 - 2. Pipe Detection Tape: 3-inch-wide, detectable type; "Terra Tape" "Sentry Line Detectable" from Reef Industries, Inc., 713.507.4251; or equal.
 - a. Text: "Caution Water Line Buried Below."
- B. Tracer Wire: Polyethylene insulated, copperclad steel; "SoloShot XTreme Tracer Wire" by Copperhead Industries, LLC. 877-726-5644, or equal.
- C. Sleeves: Class 200 PVC. Install sleeves in locations and at the depths shown on the Drawings. Sleeves shall extend a minimum of 6 inches past the edge of the above hard surface for ease of location.
- D. Teflon Tape: Variety commonly used for wrapping threaded connections.
- E. Valve Tags: Plastic pre-labeled station tags.
- F. Drain Rock: 3/4-inch wash drain rock complying with requirement specified in Section 32 11 00 – Base Courses.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Prior to starting work, test and verify that water pressure levels meet the requirements specified on the Drawings. Notify the Owner's Representative immediately of any discrepancies.
- B. Irrigation Drawings are diagrammatic. Main lines and lateral lines shown parallel in the Drawings may be placed in a common trench, provided that a minimum horizontal distance of 3 inches is maintained between buried lines, as per Drawings.
- C. Sprinkler heads are shown schematically. Suspected discrepancies in coverage or sizes of areas to be irrigated shall be brought to the attention of the Owner's Representative prior to installation. Contractor shall re-direct work to avoid delay while awaiting resolution.

3.02 PREPARATION

- A. Contractor shall make provisions and take necessary precautions to protect existing and completed work or features.
- B. Layout:
 - 1. Prior to installation, the Contractor shall stake out all pressure supply lines, routing and location of backflow preventer, all valves, sprinkler heads, bubblers, drip tubing, and automatic controller for review by the Owner's Representative.

2. Layout irrigation system and make minor adjustments required due to differences between site and Drawings. Where piping is shown on Drawings under paved areas, but running parallel and adjacent to planted areas, install the piping in the planted areas.

3.03 TRENCHING

- A. Conform to Section 31 23 00 – Excavation and Fill.
- B. Excavate trenches with vertical walls, uniform bottom, free of deleterious materials, and wide enough for pipes to lay side by side, fully supported on trench bedding. There shall be a minimum 3-inch clearance between all pipes.
 1. No lines shall be installed parallel to and directly over another line.
 2. When lines must cross, the angle shall be forty-five to ninety degrees, and a minimum of three inch (3") vertical clearance shall be maintained.
- C. Provide minimum coverage depths as follows:
 1. Mainline: 24 inches in landscape areas, 30 inches in sleeves under paving.
 2. Lateral Lines: 18 inches in landscape areas, 30 inches in sleeves under paving.
- D. Hydraulic driving methods shall not be used under paved surfaces.

3.04 PIPE INSTALLATION

- A. Comply with manufacturer's instructions as applicable.
- B. Rubber Ring Seal Joint:
 1. Use factory-made male end or prepare field-cut male end to exact specifications of factory-made end.
 2. Carefully clean bell or coupling and insert rubber ring without lubricant. Position ring carefully according to manufacturer's specifications.
 3. Lubricate male end according to manufacturer's instructions and insert male end to specified depth. Use hands only when inserting PVC pipe.
- C. Thrust Blocks:
 1. Thrust blocks shall be provided on 3 inch and 4-inch main lines where specified and as necessary to resist system pressure on, and pipe movement of, pressurized lines and fittings. Thrust blocks shall be concrete and the size shall be based on an average soil safe bearing load of 3,000 pounds per square foot.
 2. Form thrust blocks in such a manner such that concrete comes in contact only with the fittings, not over the fitting joint. Thrust blocks shall be between solid soil undisturbed and the fitting.
 3. Install thrust blocks as shown in Drawings and as described above.
 4. Main lines of 3 inches and 4 inches with operating pressures of 85 psi or more, and systems with a booster pump, shall have mechanical restraints at all fittings and changes of flow direction.
 5. Main lines 6 inches and larger shall have ductile iron fittings with joint restraints installed at all couplings and changes in flow direction.
- D. Solvent Welded Joints:
 1. Assemble above ground where possible.
 2. Cut square, ream, and thoroughly clean shavings and burs from pipe ends.
 3. Make joint using specified primer and cement, continuously wiping off excess.
 4. Allow 60 minutes of set-up time before handling and 24 hours curing before applying water pressure.
- E. Threaded Joints:
 1. Use Teflon tape on all pressurized, threaded plastic to plastic and plastic to metal joints.
 2. Hand tighten and use only light strap-type friction wrench pressure to complete.

- F. Snake pipe to provide a minimum of 1 additional foot for each 100 feet of pipe to allow for expansion and contraction.
- G. Pipe shall be installed as specified and generally as shown in Drawings.
- H. Cap or plug pipe openings as soon as pipes have been installed to prevent intrusions of debris.
- I. Sleeves:
 - 1. Install pipe sleeves where necessary, where shown and at all points where pipes pass through concrete or masonry. In footings, install sleeving that allows 1-inch minimum clearance around pipes.
 - 2. Each end of sleeve shall extend a minimum of 6 inches beyond edge of paving or structure above. Provide removable non-decaying plug or cap at each end of sleeve, to prevent earth from entering pipe.
- J. Thoroughly flush system prior to installing valves, screens and nozzles.
- K. Install pipe detection tape and tracer wire above mainline.

3.05 EQUIPMENT AND INSTALLATION

- A. Gate Valves and Ball Valves:
 - 1. Install as shown on the Drawings.
 - 2. Valves shall be installed in valve boxes to provide a minimum of 2-inch clearance between the highest point of the valve and the bottom of the valve box lid.
 - 3. Valves shall not be installed in any area that is within the athletic field of play. All valves shall be located within valve boxes set 12 inches from fencing or edge bands as shown.
 - 4. Locate all boxes a minimum of 10 feet from striping of any field of play.
- B. Remote Control Valves:
 - 1. Install as shown in Drawings.
 - 2. Valve boxes shall be set plumb, flush, and square with adjacent structures.
 - 3. Valves shall be installed in valve boxes to provide 2-inch clearance between the highest point of the valve and the bottom of the valve box lid.
 - 4. Install valve tags in an acceptable manner indicating valve station and controller number.
 - 5. Provide 12-inch minimum separation when valve boxes are grouped together, and align in a straight, parallel, even, and orderly manner.
 - 6. Locate all boxes a minimum of 10 feet from striping of any field of play.
 - 7. Locate valves in shrub/ground cover areas whenever possible.
- C. Quick Coupler Valves:
 - 1. Install as shown on the Drawings.
 - 2. Quick coupling valves shall be installed in valve boxes to provide 2-inch clearance between the highest point of the valve cover and the bottom of the valve box lid.
 - 3. Locate all boxes a minimum of 10 feet from striping of any field of play.
 - 4. Quick couplers in synthetic fields shall be located against synthetic turf edgeband and curbs.
- D. Controller:
 - 1. Install as shown in Drawings.
 - 2. Owner's Representative shall determine final approved controller locations.
 - 3. Label cabinet door exterior with permanent, minimum 1-inch tall letter or number of controller designations corresponding with designations on the Drawings and Record Documents.
 - 4. 120 power, pull/splice box, conduit and sweeps from power source to controller shall be provided and installed by an electrical contractor.
 - 5. All above grade conduit shall be steel electrical conduit.
 - 6. Affix reclaimed water warning on controller enclosure (as applicable).

- E. Control Wire:
 - 1. Install control wire along main line, or as shown in Drawings.
 - 2. Connect control wires to controller in sequential arrangement according to identification number in the Drawings. Label each controller station with permanent non-fading labels indicating valve identification number and controlled.
 - 3. Bundle multiple wires with tape or ties at 20-foot intervals maximum. Do not tape wires in sleeves.
 - 4. Make all splices in control valve boxes using only specified connectors.
 - 5. Provide 36-inch wire coil at each remote control valve and at all mainline directional changes.
 - 6. Install 2 spare control wires and one looped spare common wire to run by, and loop into, every remote control valve box of system. Terminate wires inside controller enclosure unconnected and clearly labeled as extra.
 - 7. All wiring under paving shall be installed in a PVC pipe sleeve large enough to allow withdrawal and insertion of individual proposed wires and room for 12 additional wires.
 - 8. Control wire under 2,000 feet in length shall be 14 gauge.
 - 9. If control wire run is over 2,000 feet, shall be 12 gauge.
 - 10. Two Wire decoder cable up to 10,000 feet from controller to decoder shall be 14 gauge.
 - 11. Two Wire decoder cable over 10,000 and up to 15,000 feet from controller to decoder shall be 12 gauge.
 - 12. Distance between Two Wire Decoder and Solenoid shall be in accordance with manufacturer's specifications.
 - 13. Install terminus ends of two wire cable with 36-inch loop in 8-inch round valve box and record location of each box on the Record Drawings.
 - 14. Install Two Wire Lightning Diffusers per manufacturer's details and recommendations.
- F. Rotor, rotator and Spray Heads:
 - 1. Install as shown in Drawings.
 - 2. Install plumb with finish grade.
 - 3. Thoroughly flush all lines prior to installing nozzles.
- G. Tree Bubbler Assemblies:
 - 1. Install in perforated pipe sump as shown on the Drawings.
 - 2. Coordinate installation with planting operations to ensure timely and proper placement of heads.
- H. Shrub Bubbler Assemblies
 - 1. Install as shown on the Drawings.
- I. Drip Tubing:
 - 1. Install as shown on the Drawings.

3.06 FIELD QUALITY CONTROL

- A. General:
 - 1. Notify Owner's Representative for the following reviews, with minimum 2 working days' notice:
 - a. Pressure testing mains prior to installing heads.
 - b. Coverage test prior to planting turf shrubs and or groundcover.
 - c. Pre-maintenance observation prior to acceptance of installed irrigation system.
 - d. Final observation prior to release of project to Owner.
 - 2. Contractor shall provide all equipment and personnel required to conduct tests.
 - 3. Provide up-to-date Project Record Drawings at each review.
 - 4. If Owner's Representative is called out for review prior to the system being ready as specified, the contractor shall be back charged for the full cost of the review time, report, and travel.
- B. Pressure Tests:
 - 1. Testing shall occur with trenches open. Small amounts of backfill between fittings shall be allowed to prevent pipe displacement. All fittings shall be visible prior to testing.

2. Test all pressure supply lines under a minimum hydrostatic pressure of 125 psi. Pipe shall hold pressure for a period of 6 consecutive hours with no more than 5 psi loss in order to pass test.
 3. Lateral lines shall be tested under full line pressure for a period of 1 hour prior to backfilling. Cap all heads and center load pipe between fittings prior to testing.
 4. Correct all deficiencies revealed by tests to the satisfaction of the Owner's Representative.
- C. System Flushing:
1. After lateral lines, swing joints and sprinkler heads are in place and connected, and prior to installation of sprinkler nozzles, thoroughly flush all lines with water to completely clean lines of debris.
 2. Install sprinkler filters and nozzles only after lines have been flushed to the satisfaction of the Owner's Representative.
- D. Coverage Tests:
1. Perform coverage tests after systems are completed and operational, after finish grading as specified in Section 32 90 00 - Planting has been completed, but prior to any planting, in the presence of the Owner's Representative.
 2. Correct all deficiencies to the satisfaction of the Owner's Representative prior to planting.
 3. No overspray or runoff of recycled water is allowed on any non-approved use area.

3.07 BACKFILLING

- A. General:
1. Backfill only after specified tests have been performed and accepted.
 2. Clean trenches of debris and deleterious material before backfilling.
 3. Backfill as shown on the Drawings with native material granular in nature and free from deleterious material rocks and clods 2" or larger.
 4. Install pipe detection tape over entire run of mainline as shown in Drawings.
 5. Compact trenching to 95 percent relative density under pavement and 85 percent relative density within planting areas.
 6. Dress off and compact trench surfaces with finish grade in a manner to ensure no settling of trenches will occur. If settling occurs, contractor is to bring in additional topsoil, recompact and grade to be flush with adjacent finish grade.
 7. Comply with additional requirements specified in Section 31 23 00 – Excavation and Fill.

3.08 ADJUSTING

- A. Adjust and balance system to eliminate overspray, fogging or misting and as directed by Owner's Representative.

3.09 DEMONSTRATION

- A. Instruct Owner's personnel in complete and proper operation and maintenance of system prior to Final Acceptance.

3.10 MAINTENANCE

- A. Contractor shall service and maintain irrigation system during specified Landscape Maintenance Period as specified in Section 31 01 90 - Landscape and Site Maintenance.
- B. The entire irrigation system shall be under fully accepted automatic operations for a period of 2 days prior to commencement of planting.
- C. Final Acceptance and start of guaranty period shall occur no later than the end of the specified Landscape Maintenance Period.

3.11 FINAL REVIEW

- A. Provide Owner's Representative with Record Documents and other specified closeout submittals prior to Final Review.

END OF SECTION

SECTION 32 90 00

PLANTING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Landscaping as shown on the Drawings including, but not be limited to the following:
 - 1. Soil preparation.
 - 2. Fine grading of landscape areas.
 - 3. Turf planting.
 - 4. Plant material.
 - 5. Turf Establishment Period.
 - 6. Landscape Maintenance Period.
- B. Related Requirements:
 - 1. Section 02 41 13 - Site Clearing and Demolition.
 - 2. Section 31 01 90 - Landscape and Site Maintenance.
 - 3. Section 32 80 00 – Irrigation.

1.02 REFERENCES

- A. American Joint Committee on Horticulture Nomenclature (AJCHN): Standardized Plant Names.
- B. American Association of Nurserymen, Inc. (AAN): American Standard for Nursery Stock.
- C. Sunset Western Garden Book, Lane Publishing Company.
- D. Agricultural Code of California.
- E. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Action and Informational Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.
- B. Coordination:
 - 1. Irrigation and drainage systems shall be inspected and tested before start of any Work of this Section. Before covering subsurface drains and any subsurface drainage weeps, Contractor shall inspect and be responsible for their performance.

1.04 ACTION SUBMITTALS

- A. Plant Materials and Products:
 - 1. Thirty days prior to planting, submit 4 copies of documentation that plants specified have been ordered. Include names and addresses of suppliers.
 - 2. Substitutions: If substitutions are required, they shall be brought to the attention of the Owner's Representative, at time of submittal. Refer to Section 01 25 00 – Substitution Procedures for additional requirements.
- B. Product Data:

1. Manufacturer's descriptive literature for products proposed for use.
2. Certified chemical analysis of the following:
 - a. Fertilizers.
 - b. Herbicides.
- C. Samples: Submit 4 samples of the following in minimum 1-quart size "zip-lock" plastic bag:
 1. Soil amendment. Include current evaluation and sieve analysis.
 2. Bark mulch top dress.
 3. Topsoil, as applicable. Include current fertility and structure analyses.

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements:
 1. Perform work in accordance with all applicable laws, codes, and regulation required by authorities having jurisdiction over such work and provide for all review and permits required by Federal, State, and local authorities in furnishing, transporting, and installing materials.
 2. Certificates of review required by law for transportation shall accompany invoice for each shipment of plants. File copies of certificates with the Owner's Representative after acceptance of material. Review by Federal or State governments at place of growth does not preclude rejection of plants at project site.
 3. Control of Work: Comply with Section 5 of the Standard Specifications.
 4. Control of Materials: Comply with Section 6 of the Standard Specifications.
- B. Contractor shall employ on-site supervisor at all times during execution of the planting. Supervisor shall be thoroughly familiar and experienced with the materials and products being installed and proper methods of their installation. Notify the Owner's Representative immediately of changes in supervisory personnel.
- C. Products and materials shall be new, first quality, and acceptable to the Owner's Representative.
- D. Tree, Shrubs and Plants: Provide trees, shrubs and plants of quantity, size, genus, species and variety shown and scheduled for landscape work and complying with recommendations and requirements of ANSI Z60.1 "American Standard for Nursery Stock." Provide healthy, vigorous stock, grown in a recognized nursery in accordance with good horticultural practice and free of disease, insects, larvae, and other defects such as girdling or bound roots, knots, sunscald, injuries, abrasions, and disfigurement.
- E. Analysis and Standards: Package standard products with manufacturers certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.
- F. Quality Review: The Owner's Representative will review trees and shrubs before planting for compliance with specified requirements for genus, species, variety, size and quantity. Owner's Representative retains right to further review trees and shrubs for size and condition of root systems, trunks, stems branches or structure, buds, and other required features, and to disqualify unsatisfactory or defective material at any time during the progress of work. Remove disqualified trees or shrubs immediately from project site and replace with materials acceptable to Owner's Representative.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. General:
 1. Ship plant material and seed with certificates of inspection required by governing authorities. Comply with regulations applicable to plant materials.
 2. Handle and store all products of this Section in such a manner as to protect them from damage at all times.
 3. Storage of products on-site shall be coordinated by the contractor in an orderly manner so as not to unnecessarily impede the work or reasonable use of project site.

- B. Plants:
 - 1. Delivery: Coordinate with Owner's Representative. Provide proper identification for landscape labor force and vehicles at all times while on site.
 - 2. Storage: Coordinate with Owner's Representative. Provide exposure as required by plant variety and provide wind protection for all plants. Water regularly to maintain thorough moisture in root zone. Temporary, automatic irrigation system will be required at discretion of Owner's Representative if extended storage period becomes necessary. Protect dark colored plant containers from direct exposure to the sun.
 - 3. Labeling: At least one plant of each variety or type shall be legibly labeled at all times clearly indicating correct plant name as indicated on Drawings. Labels shall be durable with waterproof ink.
- C. Fertilizers:
 - 1. Deliver in original, unopened containers with original labels intact and legible which state the guaranteed chemical analysis.
 - 2. Fertilizer, lime, soil sterilant, and all other potentially toxic products shall not be stored with any other landscape materials.
- D. Bulk Material:
 - 1. Coordinate delivery and storage of bulk material with Owner's Representative.
 - 2. Confine materials to neat piles in areas acceptable to the Owner's Representative.

1.07 FIELD CONDITIONS

- A. Planting operations shall not be conducted under the following conditions, subject to the discretion of the Owner's Representative:
 - 1. Freezing weather.
 - 2. Excessive heat.
 - 3. High winds.
 - 4. Excessively wet conditions.

1.08 WARRANTY

- A. Contractor shall warrant work executed and all materials provided or used under this Section shall be free of defects and poor workmanship for a period of 1 year after Final Acceptance.
- B. Contractor shall warrant plant materials shall be in a healthy and thriving condition 1 year after Final Acceptance, unless it can be proven that the unhealthy or non-thriving material is due to causes other than the Contractor's materials or workmanship.
 - 1. Replace dead plants and plants not in vigorous condition immediately upon notification by Owner's Representative during Warranty Period.
 - 2. Replaced plants shall be subsequently guaranteed by the Contractor for an additional year following date of replacement.
 - 3. Repair defective materials and work shall be acceptable to the Owner's Representative.

1.09 TURF ESTABLISHMENT PERIOD

- A. Turf Establishment period shall include complete rooting of turf and at least 2 mowings as specified herein, prior to the commencement of the specified Landscape Maintenance Period.

1.10 MAINTENANCE PERIOD

- A. Refer to Section 31 01 90 - Landscape and Site Maintenance for information.

PART 2 - PRODUCTS

2.01 TOPSOIL

- A. Topsoil shall be clean on-site material that has been previously stripped from the top 6 inches of original grade or import material as applicable. Acceptable topsoil shall be free from rocks, stones, rubble, and clay clods over 1.5 inches in diameter, roots, toxins, and other deleterious materials.
- B. Topsoil shall be clean on-site material that has been previously stripped from the top 4 inches of grade after initial 2-inch stripping of organics. Acceptable topsoil shall be free from rocks, stones, rubble, and clay clods over 1.5 inches in diameter, roots, toxins, and any other deleterious materials.
- C. Imported topsoil shall have an agricultural suitability test by a qualified soils laboratory, dated within 30 days of purchase.
 - 1. Import topsoil proposed for use shall be submitted to the Owner's Representative for review and acceptance prior to delivery to the Project site.
 - 2. Submit samples and current soil fertility and structure analyses in the quantity specified.

2.02 FERTILIZERS

- A. General:
 - 1. Fertilizers shall be of an acceptable brand with a guaranteed chemical analysis as required by USDA regulations.
 - 2. Fertilizers shall be dry and (except plant tabs) free flowing.
- B. Pre-Plant Fertilizer: Shall be of the following chemical analysis:

Nitrogen:	6 percent.
Phosphoric Acid:	20 percent
Soluble Potash:	20 percent
- C. Post-Plant Fertilizer: Shall be of the following chemical analysis:

Nitrogen:	16 percent
Phosphoric Acid:	6 percent
Soluble Potash:	8 percent
- D. Plant Tabs: 7-gram tabs designed for 12-month slow release with the following chemical analysis by weight; "Gro-Power" or equal:

Nitrogen:	12 percent
Phosphoric Acid:	8 percent
Soluble Potash:	8 percent
Humus:	20 percent
Humic Acid:	4 percent
Sulfur:	3.5 percent
Iron:	2 percent
Micronutrients	

2.03 SOIL ADDITIVES

- A. Soil Amendments: Organic Humus Compost
 - 1. Fully composted aerobic humus compost without presence of decomposition products. The organic matter content shall be at least 50% on a dry weight basis. Humus material shall have an acid-soluble ash content of no less than 6% and no more than 20%.
 - 2. The pH of the material shall be between 6% and 7.5%.
 - 3. The salt content shall be less than 10 millimho/cm @ 25° C in a saturated paste extract.

4. Boron content of the saturated extract shall be less than 1.0 parts per million.
5. Silicon content (acid-insoluble ash) shall be less than 50%.
6. Calcium carbonate shall not be present if to be applied on alkaline soils.
7. Types of acceptable products are composts, manures, mushroom composts, straw, alfalfa, peat mosses etc. low in salts, low in heavy metals, free from weed seeds, free of pathogens and other deleterious materials.
8. Composted wood products are conditionally acceptable [stable humus must be present]. Wood based products are not acceptable which are based on red wood or cedar.
9. Sludge-based materials are not acceptable.
10. Carbon:nitrogen ratio is less than 25:1.
11. The compost shall be aerobic without malodorous presence of decomposition products
12. The maximum particle size shall be 0.5 inch, 80% or more shall pass a No. 4 screen for soil amending.
13. Maximum total permissible pollutant concentrations in amendment in parts per million on a dry weight basis:

Arsenic	20	Lead	200	Silver	10
Cadmium	15	Mercury	10	Vanadium	500
Chromium	300	Molybdenum	20	Zinc	200
Cobalt	50	Nickel	100		
Copper	100	Selenium	50		

14. Soil Amendments for consideration are listed below:

- a. Soil Amendment: "Super Humus" Compost available from BFI Organics Inc., 1995 Oakland Road, San Jose, CA, 408-262-1401;
- b. "Organic Compost" available from Z-Best Products Inc. 705 Los Esteros Road, San Jose CA, 408-934-6152;
- c. Forest Floor Humus
Aguñaga Fertilizer
(949) 786-9558
- d. Washed Steer Humus/WCP33
Earthworks
(951) 782-0260
- e. Garden Humus
Agromin
(805) 432-5265
- f. Superior Compost
Whittier Fertilizers
(562) 699-3461
- g. Humic Compost
Agri Service
(760) 643-4041
- h. Or approved equal.

Soil amendment submittal shall include sieve analysis as well as an agronomic soil analysis using a saturation extraction test. prepared by a qualified soil lab. Upon direction of owner's representative, contractor to provide, at contractor's sole cost, updated testing results for review and approval that are dated within 1 month of submittal date and prior to delivery of product to site.

- B. Soil Conditioner: 4 percent sulfur; "Gro-Power Plus (5-3-1) by Gro-Power Inc., 800-473-1307, or equal.
- C. Soil Sulphur: Agricultural grade, 99 percent pure, pelletized or granular form, not powdered.
- D. Iron Sulphate: Non-staining iron with micro-nutrients, soil penetrant, trace minerals, and humic acids; "Gro-Power Premium Green" by Gro-Power Inc., 800-473-1307, or equal.

2.04 MULCH TOP DRESS FOR PLANTING AREAS

- A. Material: Medium-sized, 3/4 inch to 2 inches, decorative chipped wood, homogenous in appearance, free of deleterious and inorganic material, sticks, shredded, stringy, and fibrous materials; "Golden Nuggets" from Sun Up, 800-222-255; "MBC Red" from My Bark Company, Inc., 209-786-4042; or equal.

2.05 PLANTS

- A. General:
 - 1. Plants shall conform to the species and minimum sizes shown on the Drawings.
 - 2. Quantities shown on the Drawings are for the Contractors convenience only. Contractor shall provide plant material to fulfill the intent of the Planting Plan at the discretion of the Owner's Representative.
- B. Condition: Plants shall conform to the following minimum requirements:
 - 1. Nursery grown unless otherwise specified.
 - 2. Supplied in appropriate container, balled and burlapped, or bare root as specified on Drawings.

2.06 TURF SOD

- A. Harvest and Delivery:
 - 1. Harvest from source and deliver to project site within 24 hours.
 - a. Deliver only as much sod as can be installed in one day's work.
 - b. Sod not transplanted within this time period shall be reviewed prior to installation.
 - 2. Comply with requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in Turfgrass Producers International's (TPI) "Guideline Specifications to Turfgrass Sodding."
 - 3. Protect sod from breakage and drying.
- B. Sod shall be as follows:
 - 1. Bluegrass and Rye grass blend with the following seed count percentage:
 - a. 80 Percent Bluegrass.
 - b. 20 Percent Rye grass.
 - 2. Sod shall have a 1/2 inch cut or thickness.
 - 3. Sod shall be large roll cut.
 - 4. Sod shall have a peat or sand / peat base.
- C. Source: Delta Bluegrass, West Coast Turf, Pacific Sod, or equal.

2.07 HERBICIDES

- A. Pre-Emergent: "Ronstar-G" pelletized, "Surflan" liquid, or equal.
- B. Other Herbicides: Submit for review and accepted by Owner's Representative prior to use.

2.08 ADDITIONAL MATERIALS

- A. Water: Clean, fresh, and free of substances or matter which could inhibit vigorous growth of plants.
- B. General: Products and materials shall be new, first quality as acceptable to the Owner's Representative.

- C. Tree Stakes and Ties: As shown and specified on the Drawings.
- D. Header Board: As shown and specified on the Drawings.
- E. Root Barriers: Model #UB 24-2 "Universal Barrier" by Deep Root Partners L.P, 800-458-7668, or equal.
- F. Weed Barrier: "Pro Weed Barrier" Model 24003080 DeWitt Co., Sikeston MO, 800-888-9669, or equal.
 - 1. Roll Size: 12 feet by 250 feet.
 - 2. Anchorage: 8 inch jute staples.

PART 3 - EXECUTION

3.01 TOPSOIL INSTALLATION

- A. Subgrade soil shall be cut or filled to the depth required such that after placement of required amount of topsoil and specified preparation procedures have been accomplished, specified finish grades will be attained.
- B. Subgrade soil shall be cross-ripped as specified.
- C. Planting areas shall contain a minimum of 6 inches of acceptable topsoil applied as applicable and where required. Only previously accepted topsoil shall be installed.
- D. Refer to Section 31 20 00 – Earth Moving for rough grading information.

3.02 PREPARATION

- A. Make provisions and take necessary precautions to protect existing and new improvements from damage during execution of planting work.
- B. Initial Preparations:
 - 1. Prior to beginning of planting, thoroughly cross-rip, with second rip shall be performed at 90 degrees to first rip, planting area soil to a depth of twelve 12 inches.
 - 2. Remove all rocks, sticks, clods, debris, and other deleterious materials over one-half (1/2) inch in diameter from top 6 inches of soil.
 - 3. Float, rake, and roll all planting areas as necessary to establish smooth, clean, non-yielding planting beds.
 - 4. Prevent erosion of the soil between completion of soil preparation and planting.
- C. Concrete Mowbands and Wood Header Boards: Install in accordance with the Drawings and repeat specified initial preparations as necessary.

3.03 SOIL PREPARATION AND FINISH GRADES

- A. Soil Preparation:
 - 1. Thoroughly roto-till the following additives into the top 6 inches of planting area soil at the following rates per 1,000 square feet:
 - a. Soil Amendment: 6 Cubic Yards.
 - b. Soil Conditioner: 200 Pounds.
 - c. Pre-Plant Fertilizer: 35 Pounds.
 - d. Soil Sulfur: 20 Pounds.

2. The above additive recipe shall be used by Contractor for establishing the cost of soil additives in the Contract sum.
 - a. A site specific fertility test will be performed by the Owner's Representative at the Owner's cost after rough grading and applicable topsoil placement or replacement operations are complete.
 - b. The results of the testing will be reviewed by the Owner Representative and confirmation of the amendment additives ratio will be provided to the Contractor.
 - c. The Contract sum will be modified, in accordance with the procedures for changes in the work included in the Contract, if there is a variance from the above additives or quantities.
 3. After additives are fully incorporated into the soil, the Owner's Representative will perform further testing at the Owner's expense to verify conformance with the newly recommended materials and quantities. If deficiencies are found, the Contractor shall be solely responsible for the cost of adding deficient material as necessary and re-testing required to verify conformance.
 4. The Contractor shall notify the Owner's Representative a minimum of 2 working days prior to the completion of finish grading and soil preparation operations so that fertility testing can be arranged. Contractor shall also schedule 7 working days after soil samples have been taken to allow for receipt and evaluation of soil tests with no cost or delay to the project.
 5. The above additive recipe shall be used by Contractor for establishing the cost of soil additives in the Contract sum.
 - a. A site specific fertility test shall be performed by the Contractor after rough grading and applicable topsoil placement or replacement operations are complete. Soil shall be sent to testing agency shown below, or as approved by Owner's Representative, for tests.
 - 1) Testing agencies are as follows:
 - a) Wallace Laboratories, El Segundo, CA, (310) 615-0116. Contact: Garn Wallace.
 - b) WayPoint Analytical, Anaheim, CA, (714) 282-8777.
 - b. The results of the testing will be reviewed by the Owner Representative and direction for amendment additives ratio will be provided.
 - c. The Contract sum will be modified, in accordance with the procedures for changes in the work included in the Contract, if there is a variance from the above specified additives or quantities.
 6. After additives are fully incorporated into the soil, the Contractor shall perform further testing to check conformance with the newly recommended materials and quantities. If deficiencies are found, the Contractor shall be solely responsible for the cost of adding deficient material as necessary and re-testing required to verify conformance.
 7. Contractor shall also schedule 7 working days after soil samples have been taken to allow for receipt and evaluation of soil tests at no cost or delay to the project.
- B. Planting Area Finish Grades:
1. After tilling in additives and re-compaction to 85 percent relative compaction, rake planting areas smooth and set finish grades as follows.
 2. After soil preparation, finish grades of planting areas shall be 1 inch below adjacent paving, headers, utility boxes, irrigation boxes, and other in-grade items. Finish grade slopes shall be consistent.
 3. Drainage structures, including catch basins, area drains, and concrete swales, shall be flush with finish grade to allow for proper drainage. Soil shall be sloped consistently from spot elevations provided to drain.
 4. In planting areas to receive mulch, depth of mulch shall taper within 3 feet of paving edge to a depth from 3 inches to 1 inch at edge of pavement.
 5. Irrigation head elevation relative to finish grade shall be installed as shown.
 6. After sand channel drainage system, finish grade shall be re-established.
 7. Infield fines and warning tracks shall be graded to be flush with depth of sod soil. If sod is at 3/4 inches, then that will be the difference of the sod subgrade to the infield fines finish grade prior to placement of the sod.

3.04 SOD INSTALLATION

- A. General:
 - 1. Soil preparation and fine grading shall be as specified.
 - 2. Prior to sod installation, roll turf bed until a smooth, firm surface with uniform grade has been produced.
 - 3. The turf bed shall be reviewed and accepted by the Owner's Representative prior to sod installation.
- B. Placement:
 - 1. Sod shall be unrolled into place with careful attention to tight joints with no overlapping or stretching.
 - 2. Stagger the joints in each new row like rows of bricks with a minimum 18 inch minimum stagger. Use a sharp knife for shaping around trees, flower beds or borders. Immediately after placement, soak sod areas with water.
 - 3. Roll sod after watering to smooth out bumps and air pockets, and roll again if sod is not even.
 - 4. Water frequently for the first 10 to 14 days with enough water to saturate soil to a depth of 4 inches.
 - 5. Do not allow sod dry out.
- C. Provide and install temporary fencing around completed sod areas if not protected by other fencing. Use 6 foot high temporary fence for protection.
- D. Refer to Section 31 0190 – Landscape and Site Maintenance for mowing and maintenance procedures. As applicable, the Contractor shall remove sod, re-grade any areas that have been rutted from mowers or otherwise damaged, and replace sod to the satisfaction of the Owner's Representative.
- E. Until project Final Acceptance, should it become evident that certain sod areas have not grown, re-sod the areas immediately with sod of the same type as originally used and maintain as specified.

3.05 TURF ESTABLISHMENT PERIOD

- A. Prior to commencement of specified maintenance period, turf shall be completely germinated and established, and a minimum of 2 mowings shall have taken place as follows:
 - 1. First mowing shall take place when turf has reached a height of 3 inches and turf shall be mown to 2 inches. Submit written request to the Owner's Representative for acceptability of initiating first mowing.
 - 2. Thereafter, turf shall be mown weekly until turf is sod-like in appearance and quality, and all other contract requirements shall be fulfilled prior to allowing the maintenance period to commence.
 - 3. Contractor will receive a written notice of acceptance of turf establishment and to commence with landscape maintenance period.
 - 4. Owner's Representative will approve any phasing of turf areas to commence into the maintenance period. Areas may be approved in stages but will require contiguous areas of turf that are completely established.

3.06 TREE, SHRUB AND GROUND COVER PLANTING

- A. These areas shall receive specified topsoil and soil amendments prior to commencing with tree, shrub and ground cover planting.
- B. Layout: Coordinate layout of plants with Owner's Representative for review and acceptance.
- C. Plant Pit Excavation:

1. Excavate pits to sizes indicated in Drawings.
 2. Thoroughly scarify all sides of plant pits to remove "auger slick" and encourage root penetration.
- D. Set trees and shrubs in pit on tamped backfill base as per Details. Set plumb and face for best appearance. Thoroughly scarify all plant root balls to eliminate any circling roots and to encourage root growth. Set plant so root crown will level with or be slightly above surrounding grade after settlement.
- E. Backfilling:
1. Backfill mix for 1 gallon size and larger shall consist of 100 percent native site soil with plant tabs added per manufacturer's recommendations.
 2. Tamp backfill mix under and around root balls.
 3. Flood plant pit when half backfilled; allow to drain.
 4. Complete backfilling. Tamp as necessary, do not over compact.
- F. Palm Pit Backfilling:
1. Fill the hole with washed plaster sand.
 2. Water in as you fill hole with sand to wash the material around the exposed roots.
 3. Avoiding leaving any air pockets or voids that will allow the roots to dry out.
 4. The sand backfill should ensure good drainage plus provide rigidity so you may not have to brace the tree.
- G. Watering:
1. Thoroughly water plants immediately after planting.
 2. Construct water basins as specified in Drawings.
- H. Finish Grade Restoration: Restore finish grades by hand raking. Dispose of excess subgrade soil.

3.07 TREE STAKING

- A. Stake trees as shown in the Drawings.
- B. Set stakes plumb, without damage to rootball and sufficiently deep to provide necessary support.
- C. Tree ties shall be tied loosely enough to allow movement, yet taut enough to support tree.

3.08 HERBICIDE APPLICATION

- A. Apply in accordance with manufacturers' recommendations.
- B. Apply pre-emergent herbicide to soil prior to placement of bark mulch top-dress.

3.09 MULCH TOP DRESS

- A. Install weed barrier in all planters to receive mulch. Weed barrier is to be installed prior to mulch installation and after acceptance of finish grade operations. Install with stakes 24" on-center.
- B. Apply 3 inches of specified bark mulch top dress to all non-turf and hydroseeded planting areas and other areas as may be specified in the Drawings.
- C. Rake mulch top dress evenly to create a uniform surface and pull bark mulch top dress away from trunks or stalks of plants 1 to 2 inches.
- D. Mulch shall dictate finish grade in planting areas.

3.10 INSTALLATION OF ADDITIONAL MATERIALS

- A. Header Board: Install as shown on the Drawings.
- B. Root Barriers: Install as shown on the Drawings.

3.11 FIELD QUALITY CONTROL

- A. New turf areas shall be fenced off during turf establishment and specified Landscape Maintenance Period subject to the discretion of the Owner's Representative.
- B. The Owner's Representative will review and accept the following prior to the Contractor proceeding with subsequent work:
 - 1. Preparation: At completion of finish grading and prior to planting, grading tolerances and soil preparation will be checked for conformance to Contract Documents.
 - 2. Layout of plants, header board, and other major items shall be as directed and accepted by the Owner's Representative.
 - 3. Pre-Maintenance Review: At completion of planting, work shall be reviewed for conformance with Contract Documents. Acceptance shall mark beginning of the specified maintenance period. If acceptance is not given, a punch-list of items requiring attention will be issued to the Contractor. One more review will be allowed after Contractor certifies in writing that the punch-list has been completed. Punch-list shall be completed to the satisfaction of the Owner's Representative prior to commencement of the Specified Maintenance Period.
- C. Costs incurred from repeat reviews required due to Contractor not being prepared and other non-conformance with Contract Documents will be back charged to the Contractor.

END OF SECTION

33 11 00

DOMESTIC WATER UTILITIES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Domestic water and fire system work is shown on the Drawings including, but is not necessarily limited to, the following:
 - 1. Intermediate staking and layout for domestic water system.
 - 2. Pipes, fittings, valves, valve boxes, connections, and fire hydrants for systems.
 - 3. Field testing and disinfection.
- B. Related Requirements:
 - 1. Section 32 11 00 - Base Courses
 - 2. Section 32 23 00 - Excavation and Fill
 - 3. Section 32 80 00 - Irrigation
 - 4. Section 32 90 00 - Planting

1.02 REFERENCES

- A. American Water Works Association: Current edition of Standards as specified.
- B. California Plumbing Code: Current Edition.
- C. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Action and Informational Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.
- B. Sequence and Scheduling:
 - 1. Refer to other Contract Documents, determine the extent and character of related work, and properly coordinate work specified herein with that described elsewhere to produce a complete, operational installation.
 - 2. Contractor shall be solely responsible for coordinating, sequencing, and scheduling work with other trades and subcontractors to insure proper and timely performance of the work under this Section.

1.04 ACTION SUBMITTALS

- A. Product Data: Manufacturer's "cut-sheets" for products proposed for use.

1.05 INFORMATIONAL SUBMITTALS

- A. Certification that ductile iron pipe supplied for this Project has been manufactured in compliance with all requirements of AWWA C151.
- B. Certification that PVC pipe supplied for this project has been manufactured in compliance with all requirements of AWWA C900.

1.06 CLOSEOUT SUBMITTALS

- A. Project Record Drawings that provide accurately record locations of utilities remaining, re-routed utilities, new utilities, and newly discovered utilities by horizontal dimensions, elevations, inverts, and slope gradients. Comply with additional requirements specified in Section 01 78 39 – Project Record Documents.
- B. Warranty as specified.
- C. Results of field testing of completed system.
- D. Certificate of Compliance for disinfection.

1.07 QUALITY ASSURANCE

- A. Unless otherwise specified, install materials in accordance with manufacturer's recommendations.
- B. Contractor shall make necessary repairs to the domestic water system and other work affected by defects in the system through project Final Acceptance and specified warranty period. Repairs shall be made at the Contractor expense and at no additional cost to Owner.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Store pipe in a neat and orderly manner fully supported and protected from sunlight.
- B. Do not dump pipe off truck. Pipes are to be delivered, unloaded and handled so as to prevent damaging the material.

1.09 FIELD CONDITIONS

- A. PVC pipe shall not be cemented during wet conditions as determined by the Owner's Representative.
- B. Trench excavation and backfilling shall not be executed during excessively wet conditions as determined by the Owner's Representative.

1.10 WARRANTY

- A. Contractor: Provide Owner with a special written 1-year warranty covering entire water system against defects in installation, workmanship, and equipment from date of final acceptance.
 - 1. Contractor shall make necessary repairs to the system as well as to other work affected by defects in the system during warranty period.
 - 2. Repairs shall be made at the Contractor's sole expense.

1.11 MAINTENANCE

- A. Service: Contractor shall service and maintain domestic water system as necessary until project final acceptance.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

- A. General:

1. Pipe materials for domestic and fire water lines shall be in conformance with the California Plumbing Code and local governing agencies.
 2. Plans and details, if shown, are schematic in nature and do not necessarily identify all fittings and appurtenances required to provide a complete installation. The Contractor is responsible for providing complete and functional systems.
 3. Materials and procedures not specifically addressed herein shall comply with the appropriate AWWA standard.
 4. Materials proposed for use shall be in a new, "first class" condition unless otherwise noted.
- B. Water Lines 3 Inches and Greater Diameter:
1. Ductile Iron Pipe (DIP): Cement lined, of domestic manufacturer complying with ANSI/AWWA C151/A21.5, minimum Class 52; "Tyton Joint" by U.S. Pipe, Pacific States, or acceptable equal.
 - a. Cement mortar lining shall comply with ANSI/AWWA C104/A21.4.
 - b. Buried ductile iron pipe and fittings shall be wrapped in an 8-mil thick polyethylene film sleeve.
 2. Polyvinyl Chloride Pipe (PVC): Conform to AWWA C900, Class 200, of domestic manufacture, and meeting cast iron outside diameter sizes; C900 Series North American Specialty Products, JM Eagle, or acceptable equal.
 - a. Pipe shall be furnished with integral bells.
 - b. Spigot end pipe with separate double hub couplings is not acceptable.
- C. Water Lines 2 Inches and Smaller Diameter: One of the following.
1. Annealed (soft) Type "K" copper (Cu).
 2. Polyvinyl chloride (PVC) conforming to ASTM D1785, Schedule 80 PVC, of domestic manufacture, and meeting cast iron outside diameter sizes; ASTM D1785 Series North American Specialty Products, JM Eagle, or acceptable equal.
 - a. Pipe shall be furnished with integral bells.
 - b. Spigot end pipe with separate double hub couplings is not acceptable.
- D. Couplings and Sleeves:
1. General:
 - a. Couplings and sleeves shall be a minimum of 200-psi working pressure-rated unless except as otherwise noted.
 - b. Couplings and sleeves shall be mechanical joint type.
 - c. Couplings, sleeves, and accessories shall be of domestic manufacture; "Trim Tyton" by U.S. Pipe, Union Foundry, Tyler Pipe and Couplings, or acceptable equal.
 2. DIP and PVC Pipe 3 Inches thru 12 Inches:
 - a. Unless otherwise noted, couplings and sleeves for DIP and PVC shall be ductile iron conforming to AWWA C153, and shall be 350 psi working pressure rated.
 - b. Unless otherwise noted, flanges on all DIP spools shall conform to ANSI/AWWA C115/A21.15.
 3. PVC Pipe 2 1/2 Inches and Smaller: Schedule 40, solvent-weld PVC socket couplings.
 4. Copper Tubing: "Mueller 110" compression connections by Mueller Company Ltd., or acceptable equal.
- E. Gate Valves:
1. Use gate valves designed for a working pressure of not less than 150 psi.
 2. Provide connections as required for the piping in which they are installed.
 3. Provide an arrow on the operating nut or wheel, cast in metal, indicating direction of opening.
- F. Thrust Blocks: Class "A" concrete construction with dimensions conforming to the California Plumbing Code.
- G. Valve Boxes:
1. Size: 10 inches round boxes for gate valves.
 2. Box lid shall be labeled with "water" and shall be bolted down.

3. Boxes located in landscape areas shall be round plastic; Carson Model 910-10 with 910-4 lid, or equal.
 4. Boxes located in paving shall be concrete with concrete lid.
- H. Pipe Detection Tape: 3 inch wide, detectable type; "Terra Tape" "Sentry Line Detectable" from Reef Industries, Inc., 713.507.4251; or equal.
1. Text: "Caution Water Line Buried Below."
- I. Tracer Wire: Polyethylene insulated, copperclad steel; "SoloShot XTreme Tracer Wire" by Copperhead Industries, LLC. 877-726-5644, or equal.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Prior to starting work, test and verify that water pressure levels meet the domestic water system requirements. Notify the Owner's Representative immediately of any discrepancies and re-direct work to avoid delay.
- B. The utility plan and the piping details on the Drawings are diagrammatic. Pipe lines shown parallel in the Drawings may be placed in a common trench, provided that a minimum horizontal distance of 6 inches is maintained between buried lines, except for sanitary sewer lines, which require 10 feet horizontal clearance.

3.02 HANDLING

- A. Handle pipe accessories so as to ensure delivery to the trench in sound, undamaged condition.
- B. Use pinch bars or tongs for aligning or turning the pipe only on the bare end of the pipe.
- C. Thoroughly clean interior of pipe and accessories before lowering pipe into trench. Keep clean during laying operations by plugging or other acceptable method.
- D. Before installation, inspect each piece of pipe and each fitting for defects.
- E. Replace material found to be defective, both before or after laying, with sound material meeting the specified requirements and without additional cost to the Owner.
- F. Rubber gaskets: Store in a cool dark place until just prior to time of installation.

3.03 PIPE CUTTING

- A. Cut pipe neatly and without damage to the pipe.
- B. Unless otherwise recommended by the pipe manufacturer, cut pipe with mechanical cutter only.
- C. Use wheel cutters when practicable.
- D. Cut pipe square, and remove all burrs prior to use.

3.04 TRENCHING

- A. Conform to requirements specified in Section 31 23 00 – Excavation and Fill and the following.

- B. Excavate trenches with vertical sides uniform bottom, free of deleterious materials, and wide enough for pipes to lay side by side, fully supported on bottom.
 - 1. No lines shall be installed parallel to and directly over another line.
 - 2. When lines must cross, the angle shall be 45 to 90 degrees, and a minimum of 6 inch vertical clearance shall be maintained.
- C. Provide minimum coverage for pressurized service as follows:
 - 1. Landscape Areas: 24 inches.
 - 2. Paved Areas: 30 inches.

3.05 PLACING AND LAYING

- A. General:
 - 1. Lower pipe and accessories into trench by means recommended by the manufacturer.
 - 2. Except where necessary in making connections to other lines, lay pipe with the wide bell end opening facing source.
 - 3. Rest the full length of each section of pipe solidly on the pipe bed, with recesses excavated to accommodate wells, couplings, and joints.
 - 4. Replace pipe that has been disturbed after laying.
 - 5. Do not lay pipe in water, or when trench conditions are unsuitable for the work. De-water trench until jointing is completed.
 - 6. Securely close open ends of pipe and valves when work is not in progress.
 - 7. Where any part of coating or lining is damaged, repair at no additional cost to the Owner.
 - 8. Follow manufacturer's detailed instructions in installing and assembling pipe.
- B. Plastic Pipe:
 - 1. Position pipe and fittings in trench in a manner that identifying markings will be readily visible for inspection.
 - 2. Cutting and joining:
 - a. Protect against abrasion from serrated holding devices.
 - b. Remove burrs and glosses from surfaces to be jointed; use abrasive paper, file, or steel wool.
 - c. Remove dirt, dust, and moisture by wiping clean with dry cloth.
 - 3. Align pipe system components without strain.
 - 4. Support plastic pipe in trenches with a 2 inch minimum layer of bedding Provide a minimum 3 inch bedding sand cover. Allow no rocks, debris, or potentially damaging substances within 6 inches of plastic pipe in trenches.
- C. Connections: Use appropriate fittings to suit the actual condition where connections are made between new work and service points.

3.06 JOINTING

- A. Mechanical Joints and Push-On Type Joints: Install in accordance with AWWA C600, modified as necessary by the recommendation of the manufacturer, to provide for special requirements of specified pipe.
- B. Make connections between different types of pipe and accessories with transition fittings.
- C. Rubber Gaskets:
 - 1. Handle and install in strict accordance with the recommendations of the manufacturer.
 - 2. Lubricants for gaskets shall be manufactured by or approved by the pipe manufacturer for use under the conditions found in the field.

3.07 SETTING VALVES AND VALVE BOXES

- A. Center valve boxes on the valves, setting plumb.
- B. Tamp earth fill around each valve box to a distance of four feet on all sides, or to be undisturbed trench face if less than four feet.
- C. Tighten mechanical joints, and fully open and close each valve to assure that all parts are in working condition.

3.08 THRUST BLOCKS

- A. Provide and install thrust blocks in accordance with California Plumbing Code requirements and installation guidelines.

3.09 TESTING, INSPECTING, AND DISINFECTION

- A. General:
 - 1. Do not allow or cause the work of this Section to be covered up or enclosed until after it has been completely inspected, tested, and has been accepted by the Owner's Representative and governing authorities when applicable.
 - 2. Perform tests and disinfection in a manner acceptable to governmental agencies having jurisdiction.
- B. Testing:
 - 1. Except for joint material setting, or where concrete reaction backing necessitates a five day delay, pipelines joints, or couplings may be subjected to hydrostatic pressure, inspected, and tested for leakage at any time after partial completion of backfill.
 - 2. Testing of water service shall be in accordance with the requirements of AWWA C600 for hydrostatic testing.
 - 3. Contractor shall keep records of each piping test, including date and time of test, name of witnessing Owner Representative, test pressure, description of piping tested, and clarifying comments including those related to leaks and repairs made.
 - 4. Tests shall last 4 hours and be tested at 200 psi.
- C. Disinfection:
 - 1. Before acceptance of the domestic water system, disinfect each unit of completed service line in accordance with AWWA C601 and criteria of the local governing jurisdiction.
 - 2. Proposed method for disinfection shall be submitted to the Owner's Representative for review and acceptance.
 - 3. Furnish two copies of a Certificate of Compliance to the Owner.

3.10 BACKFILLING

- A. Backfill only after specified tests have been performed and accepted.
- B. Clean trenches of debris and deleterious material before backfilling.
- C. Backfill, as specified or shown in Drawings, shall be free from deleterious material.
- D. Compact trenching to 95 percent relative compaction under pavement and 85 percent relative compaction within planting areas.
- E. Trench surfaces shall be flush with finish grade. Trench settlements shall be corrected by the Contractor at no additional cost to the Owner.

- F. Install pipe detection tape and reinforced tracer wire above pressurized lines.

3.11 DEMONSTRATION

- A. Contractor shall instruct Owner's personnel in complete and proper operation of domestic water system per prior to Contract closeout.

3.12 FINAL REVIEW

- A. Provide Owner's Representative with specified closeout submittals prior to Final Review.

END OF SECTION

SECTION 33 30 00

SANITARY SEWERAGE UTILITIES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Site sanitary sewerage and related work as shown on the Drawings and specified including, but is necessarily limited to, the following:
 - 1. Sanitary sewerage system installation for drinking fountains.
- B. Related Requirements:
 - 1. Section 31 20 00 - Earth Moving
 - 2. Section 31 23 00 - Excavation and Fill
 - 3. Section 32 11 00 - Base Courses
 - 4. Section 32 32 15 - Landscape Concrete
 - 5. Section 32 33 00 - Site Furnishings
 - 6. Section 33 11 00 - Domestic Water Utilities

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. C700 Standard Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated.
 - 2. D3034: Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
- B. American Water Works Association (AWWA):
 - 1. C110: Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In. (76 mm Through 1,219 mm) for Water.
 - 2. C111: Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
 - 3. C151: Ductile-Iron Pipe, Centrifugally Cast, for Water.
- C. California Plumbing Code, current edition, Sections as specified.
- D. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."
- E. "The Greenbook: Standard Specifications for Public Works Construction," current edition.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Action and Informational Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.
- B. Sequencing and Scheduling:
 - 1. Refer to all other Contract Documents, determine the extent and character of related work, and properly coordinate work specified herein with work included under other Sections to produce a complete, operational installation.
 - 2. Contractor shall be solely responsible for coordinating, sequencing, and scheduling work with applicable trades and subcontractors to insure proper and timely performance.

1.04 ACTION SUBMITTALS

- A. Product Data: Manufacturers' data sheets for the following:
 - 1. Piping materials and fittings.
 - 2. Special pipe couplings.
 - 3. Precast concrete cleanout boxes and box covers.

1.05 INFORMATIONAL SUBMITTALS

- A. Design Mix Reports and Calculations: Submit for each class of cast in place concrete.
- B. Field Test Reports: Indicate and interpret test results for compliance with specified performance.

1.06 QUALITY ASSURANCE

- A. Control of Work: Conform to Section 5 of the Standard Specifications.
- B. Control of Materials: Conform to Section 6 of the Standard Specifications.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store pipe neat and orderly stacked and blocked to prevent damage. Cracked, checked, spalled or otherwise damaged pipe shall be removed from site.
- B. Use of chain slings shall not be permitted.
- C. Pipe, fittings, precast sections, cast iron fittings, covers and all other materials shall be carefully handled at all times.
- D. All pipelines and fittings shall be kept clean and closed during construction.

1.08 FIELD CONDITIONS

- A. Make provisions to take the necessary precautions to protect existing work from damage during execution of this work.
- B. Work of this Section shall not be executed when site conditions are detrimental to quality of work as determined by the Owner's Representative.
- C. PVC pipe shall not be solvent welded during wet conditions.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

- A. General: Pipe and fittings shall be clearly and permanently marked to identify manufacturer, type, class, or schedule and NSF approval as applicable.
- B. Polyvinyl Chloride Pipe (PVC) and Fittings: SDR 26 bell and spigot, Type I PVC 1120, and complying with ASTM D3034.
- C. Ductile Iron Pipe (DIP) Joints and Fittings: Class 50, rubber gasket push-on type, in compliance with AWWA C151, C111, and C110.

- D. Vitrified Clay Pipe (VCP) and Fittings: Extra strength, unglazed for socket and spigot joint, complying with ASTM C700.

2.02 STRUCTURES

- A. Clean Outs: As detailed on Drawings and as follows.
 - 1. Non-Vehicular Travel Areas: Christy "F8" by Oldcastle Precast clean out boxes, or equal.
 - 2. Vehicular Travel Areas: Christy "G5" Oldcastle Precast clean out boxes, or equal.

2.03 MISCELLANEOUS MATERIALS

- A. Crushed Rock: 3/4-inch bedding rock as specified in Section 32 11 00 – Base Courses.
- B. Mortar: Conform to applicable sections of the Standard Specifications. Mixture shall be a 1:2 Portland cement to sand mixture with a minimum of water.
- C. PVC Solvent Cement: Conform to pipe manufacturer's recommendations.
- D. PVC Primer: Conform to pipe and solvent cement manufacturer's recommendations.
- E. Reinforcing Bars: Refer to Section 32 32 15 – Landscape Concrete.
- F. Minor concrete shall comply with Section 32 32 15 – Landscape Concrete and applicable sections of the Standard Specifications.

PART 3 - EXECUTION

3.01 PIPE LAYING

- A. General:
 - 1. The Owner's Representative will review and accept pipe prior to installation.
 - 2. Pipe shall be installed in conformance with Section 31 23 00 – Excavation and Fill.
 - 3. Sanitary sewer installations shall be reviewed and accepted by the Owner's Representative prior to backfilling.
- B. Pipe:
 - 1. Pipe shall be laid in trench to specified lines and grades fully and evenly supported layer of bedding material as specified and identified on the Drawings. Excavate bedding so bell fittings are clear from soil 6 inches on each side of joint and to a depth sufficient to avoid contamination of joint. Refer to Drawings for additional information.
 - 2. Pipe shall be laid beginning at the outlet and proceeding with each bell end opening facing upgrade.
 - 3. Cut pipe square and ream to remove burrs prior to use.
 - 4. Connections:
 - a. Thoroughly clean and dry all components to be joined.
 - b. Apply primer and sufficient cement to coat joint surfaces of both components and fill gaps but not in excess.
 - c. Join pipe, wipe off excess cement, and fully support pipe until joint has cured.
- C. Provide sleeving where shown, and where pipes penetrate walls, using schedule 40 PVC pipe minimum 1/4-inch diameter larger than pipe or other method acceptable to the Owner's Representative.

3.02 STRUCTURES AT GRADE

- A. General:
 - 1. Set rim or cover elevations to specified grades.
 - 2. Adjust as required to set flush with proposed grades and pavement sections.
- B. Clean Outs:
 - 1. Excavate as required.
 - 2. Set on firm unyielding base. Set on compacted select backfill material unless otherwise indicated.

3.03 SANITARY SEWER CONNECTIONS

- A. Sanitary sewer connections to existing sewer mains shall be made watertight, straight, and true to line, grade and "crown to crown" unless noted otherwise.

3.04 FIELD QUALITY CONTROL

- A. The Owner's Representative shall review and accept work at the following stages:
 - 1. Excavated trench with bedding in place prior to any pipe being laid.
 - 2. Pipe laid prior to backfilling. Any pipe covered prior to acceptance shall be uncovered for review and re-backfilled at contractor's expense.
- B. The Contractor shall furnish the necessary labor, equipment and materials necessary to perform air tests of the completed sewerage project before the system is placed in operation or connected to other lines.
- C. In no case shall the Contractor place the newly constructed sewer in operation without acceptance by the Owner's Representative.

3.05 PIPELINE TESTING AND FLUSHING

- A. New sections of sanitary sewer main shall be air tested using the following procedures:
 - 1. Test is conducted between 2 consecutive manholes, or as directed by the Owner's Representative.
 - 2. The test section of the sewer line is plugged at each end. One of the plugs used at the manhole must be tapped and equipped for the air inlet connection for filling the line from the air compressor.
 - 3. Service laterals, stubs and fittings into the sewer test section should be properly capped or plugged and carefully braced against the internal pressure to prevent air leakage by slippage and blowouts.
 - 4. Connect air hose to tapped plug selected for the air inlet. Then connect the other end of the air hose to the portable air control equipment which consists of valves and pressure gauges used to control the air entry rate to the sewer test section, and to monitor the air pressure in the pipe line. More specifically, the air control equipment includes a shut-off valve, pressure regulating valve, pressure reduction valve and a monitoring pressure gage having a pressure range from 0-5 psi. The gage shall have minimum divisions of 0.10 psi and an accuracy of 0.40 psi.
 - 5. Connect another air hose between the air compressor, or other source of compressed air, and the air control equipment. This completes the test equipment set-up. Test operations may commence.
 - 6. Supply air to the test section slowly, filling the pipeline until a constant pressure of 3.5 psi is maintained. The air pressure must be regulated to prevent the pressure inside the pipe from exceeding 5.0 psi.
 - 7. When constant pressure of 3.5 psi is reached, throttle the air supply to maintain the internal pressure above 3.0 psi for at least 5 minutes. This time permits the temperature of the entering air to equalize with the temperature of the pipe wall. During this stabilization period it is advisable to check all capped and plugged fittings with a soap solution to detect any leakage at these connections. If leakage is detected at any cap or plug, release the pressure in the line and tighten all leaky caps and plugs. Then start the test operation again by supplying air. When it is

- necessary to bleed off the air to tighten or repair a faulty plug, a new 5-minute interval shall be allowed after the pipeline has been refilled.
8. After the stabilization period, adjust the air pressure to 3.5 psi and shut-off or disconnect the air supply. Observe the gage until the air pressure reaches 3.0 psi. At 3.0 psi commence timing with a stopwatch which is allowed to run until the line pressure drops to 2.5 psi at which time the stopwatch is stopped. The time required, as shown on the stopwatch, for a pressure loss of 0.5 psi is used to compute the air loss.
 9. If the time, in minutes and seconds, for the air pressure drop from 3.0 to 2.5 psi is greater than that shown in the following table for the designated pipe size, the section undergoing test shall have passed and shall be presumed to be free of defects. The test may be discontinued at that time.
 10. If the time, in minutes and seconds, for the 0.5 psi drop is less than that shown in the following table for the designated pipe size, the section of the pipe shall not have passed the test; therefore, adequate repairs must be made and the line retested.

Requirements for Air Testing:		
Pipe size in Inches	Time	
	Minutes	Seconds
4	2	32
6	3	50
8	5	06
10	6	22
12	7	39
14	8	56
15	9	35
16	10	12
18	11	34
20	12	45
21	13	30
For larger diameter pipe use the following: Minimum time in seconds = 462 x pipe diameter in feet		

11. For 8 inch and smaller pipe, only: If, during the five-minute saturation period pressure drops less than 0.5 psi after the initial pressurization and air is not added, the pipe section undergoing test shall have passed.
12. Multi-Pipe Sizes: When the sewer line undergoing test is 8 inches or large diameter pipe and includes 4 inch or 6 inch laterals, the figures in the Table for uniform sewer main sizes will not give reliable or accurate criteria for the test. Where multi-pipe sizes are to undergo the air test, compute the average size in inches which is then multiplied by 38.2 seconds. The results will give the minimum time in seconds acceptable for a pressure drop of 0.5 psi for the averaged diameter pipe.
13. Adjustment Required for Groundwater:
 - a. An air pressure correction is required when the ground water table is above the sewer line being tested. Under this condition, the air test pressure must be increased 0.433 psi for each foot the ground water level is above the invert of the pipe.
 - b. Where ground water is encountered or is anticipated to be above the sewer pipe before the air testing will be conducted, the following procedure shall be implemented at the time the sewer main and manholes are constructed.
 - 1) Install a pipe nipple, threaded one or both ends and approximately 10 inches long, through the manhole wall directly on top of one of the sewer pipes entering the manhole with threaded end of nipple extending inside the manhole.
 - 2) Seal pipe nipple with a threaded cap.
 - 3) Immediately before air testing, determine the ground water level by removing the threaded cap from the nipple, blowing air through the pipe nipple to remove any obstructions, and then connecting a clear plastic tube to the pipe nipple.
 - 4) Hold plastic tube vertically permitting water to rise in it to the groundwater level.

- 5) After water level has stabilized in plastic tube, measure vertical height of water, in feet, above invert of sewer pipe.
- 6) Determine air pressure correction, which must be added to the 3.0 psi normal starting pressure of test, by dividing the vertical height in feet by 2.31. The result gives the air pressure correction in pounds per square inch to be added.

Example: If the vertical height of water from the sewer invert to the top of the water column measures 11.55 feet, the additional air pressure required would be:

$$(11.55) / (2.31) = 5.0 \text{ psi}$$

Therefore, the starting pressure of the test would be 3.0 plus 5 or 8.0 psi, and the 0.5-pound drop becomes 7.5 psi. There is no change in the allowable drop (0.5 psi) or in the time requirements established for the basic air test.

- B. After the line has passed the air test, it shall be balled and flushed with water to clean. A metal screen shall be used downstream at the point of connection to the existing system to collect and remove rock and other debris that is flushed out during cleaning.

END OF SECTION

SECTION 33 40 00

STORM DRAINAGE UTILITIES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Storm drainage system improvements and related work as shown on the Drawings and specified including, but is necessarily limited to, the following:
 - 1. Pipe and fittings.
 - 2. Nonpressure transition couplings.
 - 3. Pressure pipe couplings.
 - 4. Expansion joints and deflection fittings.
 - 5. Cleanouts.
 - 6. Drains.
 - 7. Encasement for piping.
 - 8. Channel drainage systems.
 - 9. Catch basins.
 - 10. Stormwater inlets.
 - 11. Stormwater detention structures.
 - 12. Pipe outlets.
 - 13. Dry wells.

- B. Related Requirements:
 - 1. Section 31 20 00 - Earth Moving
 - 2. Section 31 23 00 - Excavation and Fill
 - 3. Section 32 11 00 - Base Courses
 - 4. Section 32 32 15 - Landscape Concrete
 - 5. Section 32 33 00 - Site Furnishings
 - 6. Section 33 10 10 - Reclaimed Water Systems
 - 7. Section 22 11 00 - Domestic Water Utilities

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. C478: Standard Specification for Circular Precast Reinforced Concrete Manhole Sections.
 - 2. C923: Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.
 - 3. D2321-20: Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
 - 4. D2412-21: Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.
 - 5. D2729-21: Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
 - 6. D3034-21: Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
 - 7. D3350-21: Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
 - 8. D4101-11: Standard Specification for Polypropylene Injection and Extrusion Materials.

- B. California Building Code, Current Edition.

- C. State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures: Action and Informational Submittals shall be submitted in accordance with Section 01 33 00 - Submittal Procedures.
- B. Coordinate work of this section with all other work contained in the Contract Documents.

1.04 ACTION SUBMITTALS

- A. Shop Drawings:
 - 1. Manholes: Include plans, elevations, sections, details, frames, ladder, and covers.
 - 2. Catch basins, stormwater inlets, and dry wells. Include plans, elevations, sections, details, frames, covers, and grates.
- B. Product Data: Manufacturer's cut-sheets of products to be used.

1.05 INFORMATIONAL SUBMITTALS

- A. Profile Drawings: Show system piping in elevation. Draw profiles at horizontal scale of not less than 1-inch equals 50 feet (1:500) and vertical scale of not less than 1-inch equals 5 feet (1:50). Indicate manholes and piping. Show types, sizes, materials, and elevations of other utilities crossing system piping.
- B. Field Test Reports indicating and interpreting test results for compliance with performance.

1.06 CLOSEOUT SUBMITTALS

- A. Record Drawings:
 - 1. Accurately record location of new piping, drain structures, and connections to existing systems using horizontal dimensions, elevations, inverts, and slope gradients as applicable.
 - 2. Comply with the additional requirements of Section 01 78 39 – Project Record Documents.

1.07 QUALITY ASSURANCE

- A. Control of Work: Conform to Section 5 of the Standard Specifications.
- B. Control of Materials: Conform to Section 6 of the Standard Specifications.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Store pipe neatly and orderly, stacked and blocked to prevent damage. Cracked, checked, spalled, or otherwise damaged pipe and precast concrete units shall be removed from site.
- B. Use of chain slings shall not be permitted.
- C. Piping, fittings, and related materials shall be carefully handled. Comply with manufacturer's rigging instructions for precast items. Use of chain slings is not be permitted.
- D. All pipelines, fittings and drainage structures shall be kept clean and closed during construction.

1.09 FIELD CONDITIONS

- A. Make provisions for, and take the necessary precautions to, protect existing and new work from damage during entire life of project.

- B. Work of this Section shall not be executed when site conditions are detrimental to quality of work as determined by the Owner's Representative.
- C. Do not interrupt service to facilities occupied or used by Owner without the Owner's written permission.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

- A. General:
 - 1. Pipe and fittings shall be clearly and permanently marked to identify manufacturer, type, class, or schedule and NSF approval as applicable.
 - 2. Unless otherwise noted, Contractor has option of using either CHDPE or PVC pipe as specified.
- B. Corrugated High Density Polyethylene (CHDPE) Pipe: Dual wall, perforated and solid with an integrally formed smooth waterway; "N-12" drainage pipe by Advanced Drainage Systems, Inc., 510-913-2211, or equal.
 - 1. Nominal sizes shall have a full circular cross-section, with an outer corrugated pipe wall and an essentially smooth inner wall (waterway).
 - 2. Corrugations may be either annular or spiral.
 - 3. Sizes shall conform to the AASHTO classification "Type S."
 - 4. Pipe manufacturer for this specification shall comply with the requirements for test methods, dimensions, and markings found in AASHTO Designations M252 and M294.
 - 5. The minimum parallel plate stiffness values when tested in accordance with ASTM D2412 shall be as follows:

Diameter	Pipe Stiffness
4 inch (100 mm)	50 psi (340 kPa)
6 inch (150 mm)	50 psi (340 kPa)
8 inch (200 mm)	50 psi (340 kPa)
10 inch (250 mm)	50 psi (340 kPa)
12 inch (300 mm)	50 psi (340 kPa)
15 inch (375 mm)	42 psi (290 kPa)

- 6. Fittings: Virgin PE compounds conforming with the requirements of ASTM D3350, cell class 324420C, and supplied or recommended by the pipe manufacturer.
 - a. The fittings shall not reduce or impair the overall integrity or function of the pipeline.
 - b. Common Corrugated Fittings:
 - 1) Couplers, reducers, and other in-line joint fittings.
 - 2) "Tees", "wyes", end caps, and other branch or complimentary assembly fittings.
 - c. Acceptable Installation Methods: Snap-on, screw-on, bell and spigot, and wrap around.
 - d. Couplings shall provide sufficient longitudinal strength to preserve pipe alignment and prevent separation at the joints.
 - e. Where designated on the Drawings and as required by the manufacturer, a neoprene or rubber gasket shall be supplied.
- C. Smooth Polyvinyl Chloride Pipe (PVC) and Fittings: SDR 26, spigot end, Type I PVC 1120, NSF approved, and complying with ASTM D3034.
- D. Smooth Polyvinyl Chloride (PVC) Perforated Drain Pipe and Fittings: Bell and non-pressure rated PVC SDR 35 pipe with two rows of perforations 120 degrees apart on bottom of pipe 5 inches on center, conforming with ASTM D2729 or ASTM D3034 and Section 68 of the Standard Specifications.

- E. Reinforced Concrete Pipe (RCP) and Fittings: Conform to Section 65 of the Standard Specifications and AASHTO M 170 Class III, unless otherwise shown on the Drawings.

2.02 DRAINAGE STRUCTURES

A. Precast Catch Basins/Drain Inlets:

1. General:
 - a. Grates in paved areas shall conform to ADA Standards for Accessible Design.
 - b. All catch basins to have locking mechanism or screw down grate to frame.
 - c. Provide two grade rings at each catch basin.
2. Square Basin Product Matrix:

ITEM	DESCRIPTION	MANUFACTURER	MODEL NO.	GRATE INFORMATION
A.	12" Concrete Basin	Oldcastle Precast, or equal. (Contact Number: 888-965-3220)	1212CB	Galvanized Steel cross bars, ADA compliant (pedestrian applications), meeting AASHTO H-20 loading (vehicular applications), locking bolts included
B.	18" Concrete Drain Inlet	Oldcastle Precast, or equal. (Contact Number: 888-965-3220)	DI-1818	Hot-dipped galvanized, ADA compliant (pedestrian applications), ADA compliant meeting AASHTO H-20 loading (vehicular applications), bicycle-proof grates for all applications, locking bolts included.
C.	24" Concrete Drain Inlet	Oldcastle Precast, or equal. (Contact Number: 888-965-3220)	DI-2424	Hot-dipped galvanized, ADA compliant (pedestrian applications), ADA compliant meeting AASHTO H-20 loading (vehicular applications), bicycle-proof grates for all applications, locking bolts included.
D.	36" Concrete Drain Inlet	Oldcastle Precast, or equal. (Contact Number: 888-965-3220)	DI-3636	Hot-dipped galvanized, ADA compliant (pedestrian applications), ADA compliant meeting AASHTO H-20 loading (vehicular applications), bicycle-proof grates for all applications, locking bolts included.
E.	48" Concrete Drain Inlet	Oldcastle Precast, or equal. (Contact Number: 888-965-3220)	DI-4848	Hot-dipped galvanized, ADA compliant (pedestrian applications), ADA compliant meeting AASHTO H-20 loading (vehicular applications), bicycle-proof grates for all applications, locking bolts included.

B. Overflow Risers:

1. General:
 - a. Grates shall conform to plans/details.
 - b. Overflow risers to have locking mechanism or screw down grate to frame.
2. Structure:
 - a. Precast frame: 24-inch Overflow Risers: "RBT 2412" as supplied by Oldcastle Precast, 888-965-3220, or equal.
 - b. Reinforced Concrete Pipe: 24-inch Standard reinforced class III concrete pipe, cut to size per plans
 - c. Grating: Manhole Ring and lockable Beehive Grate MH25BH by Olympic Foundry or approved equal.

C. PVC Catch Basins: Nyloplast, 866-888-8479, or equal.

1. Basin Bodies: PVC.
2. Connection to corrugated pipes shall be made with flexible rubber gasket meeting requirements of ASTM F477.
3. Casting shall be ductile iron.
4. Flashboards shall be constructed of a corrosion-resistant material.

5. Inlet and Outlet Size: As indicated on the Drawings.
- D. Extensions: Provide box extensions, junction boxes and grade rings compatible with structures as necessary to finish at the proper elevation and to facilitate future elevation adjustments as noted below.
- E. Clean Outs: As shown or noted in the Drawings.
- F. French Drain: As shown or noted in the Drawings.
- G. IDrop Inlet: 12 inches, Model #1240 by NDS, Inc., 888-825-4716, or equal.
- H. Drinking Fountain Drain: Square with cast iron body and bronze grate; Z415 Series floor drain Model Z415SH by Zurn, or equal.
 1. Size: 8 inches by 8 inches.
- I. Drywell: Manufacturer and product as indicated on the Drawings. "Flo-Well" Model FWAS24 WH by NDS, Inc., 888-825-4716, or equal.

2.03 ADDITIONAL MATERIALS

- A. Permeable Rock Beneath Synthetic Turf Area: As specified in Section 32 18 14 – Synthetic Turf Base.
- B. Drain Rock:

1. Shall be 3/4-inch x 1/2-inch crushed virgin, un-recycled, washed rock, meeting the following general gradation requirements:

Sieve Size	Percent Passing
1"	100
3/4"	90-100
1/2"	10-40
3/8"	0-15
#4	0-5

2. Soft rock materials, including sandstone, limestone, and shale, are not suitable. Rock supplier shall certify that all supplied rock will be void of this type of rock.
3. Supplier: Stevens Creek Quarry, Inc., Cupertino, or TMT Enterprises, Inc., San Jose, or equal.

- C. Pea Gravel:

1. Pea gravel shall conform to the following gradation requirements:

U.S. Standard Sieve Mesh	Allowable Range Percent Retained on Sieve
1/2 inch (12.5 mm)	95% passing
1/4 inch (6.3 mm)	45% passing
10 mesh (2.0 mm)	No more than 10% passing
18 mesh (1.0 mm)	No more than 5% passing

2. Supplier: Harbor Sand & Gravel, Redwood City, TMT Enterprises, Inc., San Jose; or equal.

- D. Sand for Perforated Drain Pipe (Slit Sand) Applications: Washed sand that meets USGA Greens Specifications with the following characteristics and sieve range.

1. Characteristics:
 - a. 100 percent passing a #4 screen and no more than 4 percent passing a #200 screen.
 - b. A total silt and clay percent of no more than 5 percent.
 - c. Crushed or naturally angled sand. Rounded silica sand is not permitted.
2. Sieve Range:

Classification	Sieve Number	Particle Size (mm)	Allowable Range (Percent Retained on Sieves by weight)
Fine Gravel	10	>2.00	
V. Coarse Sand	18	1.00 – 2.00	0% to 10%
Coarse Sand	35	0.5 – 1.0	82% to 100%
Medium Sand	60	0.25 – 0.5	
Fine Sand	140	0.1 – 0.25	
V. Fine Sand	270	0.05 – 0.1	0% to 8%
Silt & Clay	--	<0.05	
Note: 50 percent to 75 percent of particles shall be within diameter of 0.25 to 0.75 mm.			

3. Product and Supplier: The following, or equal.
 - a. "G-8 Sand" by Brown Sand, Inc., 209-234-1500.
 - b. TMT Enterprises, Inc. Contact: Matt Moore 408-432-9040.

E. Sand Bedding for Storm Drain Piping: Sand conforming to Section 19-3.02F(2) of the Standard Specifications.

F. French drains and Vertidrain shall have a backfill with one of the following general characteristics:

1. USGA Root Zone Sand,
 - a. 65 percent USGA Root Zone sand conforming to the following sieve range:

Sieve Size	USGA Spec
	Individual % Retained
#4 (4.75mm)	0
#10 (2mm)	0-10% Combined
#18 (1mm)	
#35 (0.5mm)	Minimum 60% Combined
#60 (.25mm)	
#100 (.15mm)	20% Maximum
#140 (.1mm)	5% Maximum Combined
#270 (.05mm)	
Silt (.05-.002mm)	5% Maximum
Clay (<.002mm)	3% Maximum

- b. 15 percent Coconut Coir Fiber.
- c. 15 percent AXIS Calcined Diatomaceous Earth.
- d. 5 percent Worm Castings.

2. Supplier: 'Terra Vida French Drain Backfill Mix' by TMT Enterprises. Contact: Matt Moore 408-432-9040

G. Top Dress Sand

1. Sand conforming to the following sieve range:

Sieve Size	USGA Spec
	Individual % Retained
#4 (4.75mm)	0
#10 (2mm)	0
#18 (1mm)	<5
#35 (0.5mm)	Minimum 60% Combined
#60 (.25mm)	
#100 (.15mm)	20% Maximum
#140 (.1mm)	5% Maximum Combined
#270 (.05mm)	
Silt (.05-.002mm)	3% Maximum Combined
Clay (<.002mm)	

2. Supplier: 'G-8 Top Dress Sand' by TMT Enterprises. Contact: Matt Moore (408) 432-9040

- H. Permeable Filter Fabric : Mirafi 140N, or equal.
- I. Filter Fabric Fasteners: Metal clip type staple.
- J. Mortar: A 1:2 Portland cement to sand mixture with a minimum of water conform to the applicable sections of the Standard Specifications.
- K. Structural Adhesives for Manholes, Catch Basins, and Junction Boxes: "Ram-Nek" by Henry Company, 800-523-0268, or equal as available.
- L. Reinforcing Bars: As specified in Section 32 32 15 – Landscape Concrete.
- M. Minor Concrete: Comply with requirements of Section 32 32 15 – Landscape Concrete.

PART 3 - EXECUTION

3.01 EARTHWORK

- A. Excavation, trenching, and backfilling are specified in Section 31 20 00 - Earth Moving.

3.02 PIPING INSTALLATION

- A. General:
- Pipe shall be installed per manufacturers' instructions and in conformance with the Contracts Documents.
 - Installation of thermoplastic pipe shall be in accordance with ASTM D2321.

- B. CHDPE Pipe:
 - 1. Pipe shall be installed with a minimum cover under the H-20 live load equal to 12 inches to the top of subgrade elevation.
 - 2. Minimum compaction for pipe subject to H-20 live load is 90 percent in accordance with Section 19, Standard Specifications.
 - 3. CHDPE pipe shall be laid and jointed in accordance with generally accepted practice and the following provisions to provide the required work.
- C. Flat Panel Piping:
 - 1. Install per the layout indicated on the Drawings and in strict compliance with Manufacturer's written recommended installation instructions.
 - 2. Contractor shall exercise caution to not crush or damage the piping during installation of the permeable rock base.

3.03 INSTALLATION OF DRAINAGE STRUCTURES

- A. General: Set rim or cover elevations to specified grades utilizing a minimum of two grade rings (or extensions) at top of drainage structure to facilitate potential elevation adjustments in the future.
- B. Catch Basins: Install as shown in the Drawings and as follows:
 - 1. Excavate as required.
 - 2. Set on firm, unyielding base. Set on compacted select backfill material if directed by Owner's Representative.
 - 3. Prefabricated units not having a bottom shall be set on a poured-in-place concrete slab with smooth trowel finish. Mortar and properly seal unit to slab, making a watertight connection.
 - 4. Install pipe inlets and outlets to specified elevations. Grout and/or seal all joints to a watertight condition with material per manufacturer's recommendation.
- C. Cleanouts: Install as shown in the Drawings.
- D. French Drains: Install per drawings. Contractor shall use a roller to compact the sand to 85-88% compaction and leave the sand in the trench areas $\frac{1}{4}$ - $\frac{1}{2}$ " high to allow for anticipated settling.
- E. Trench Drains: Install as shown in the Drawings and in accordance with the manufacturer's written recommendations.
- F. Drywells, Drinking Fountain Drains, Atrium Drains and Drop Inlets: Install as shown in the Drawings and in accordance with the manufacturer's written recommendations.
- G. Vertical Drains:
 - 1. The trench excavations for the vertical drain shall be to the lines and grades shown in the Drawings. Over excavation in the bottom of the excavations shall be backfilled to the proper grade with excavated material prior to the placement of the drainage system.
 - 2. Fittings shall be installed in accordance with the manufacturer's recommendations. Use two-inch polyethylene tape provided by manufacturer to seal the filter fabric to the fittings and preclude intrusion of backfill between the core and filter fabric.
 - 3. No excavated material shall be used as backfill around geocomposite unless approved by the Owner's Representative. Do not use backfill that contains rocks, pieces of pavement or debris with a dimension greater than 1 inch.

3.04 IDENTIFICATION

- A. Materials and their installation are specified in Section 31 20 00 - Earth Moving. Arrange for installation of green warning tape directly over piping and at outside edge of underground structures.

- B. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.05 FIELD QUALITY CONTROL

- A. The Owner's Representative shall review and accept work at the following stages:
 - 1. Excavated trench with bedding in place prior to any pipe being laid.
 - 2. Pipe laid prior to backfilling. Pipe covered prior to review and acceptance shall be uncovered and re-backfilled at Contractor's expense.
 - 3. Drainage device location and pipe connection.
 - 4. New drainage system shall be flood tested and clean of debris.

END OF SECTION