CITY OF GUADALUPE
CALIFORNIA

303 OBISPO SITE IMPROVEMENTS EV/BUS CHARGING FACILITIES PROJECT

NOTICE TO CONTRACTORS

AND

SPECIAL PROVISIONS

CITY PROJECT NO. 2025-06

303 SITE IMPROVEMENTS – EV/BUS CHARGING FACILITY PROJECT

MANDATORY PRE-BID MEETING ..... **10 AM on August 19, 2025**
DEADLINE FOR SUBMISSION OF QUESTIONS: ..... End of day, August 29, 2025
BID OPENING DATE: ..... 3 PM on September 9, 2025

Jeff van den Eikhof
City Engineer

07/21/2025
Date

LICENSE REQUIREMENT: .....**Class A** License at the time of the award.
TIME OF CONTRACT: .....**75** working days after the date of notice to proceed
LIQUIDATED DAMAGES:.....**$1,000/day**

For use in connection with the Standard Specifications Dated 2018 and Standard Plans Dated 2018 of the California Department of Transportation, and the Labor Surcharge and Equipment Rental Rates in effect on the date the work is accomplished.

303 SITE IMPROVEMENTS – EV/BUS CHARGING FACILITY PROJECT

CONTRACT DOCUMENTS, SPECIAL PROVISIONS and TECHNICAL SPECIFICATIONS

Approved By

07/21/2025

Jeffrey A. van den Eikhof, City Engineer
Registered Civil Engineer, C59920

INDEX OF DOCUMENTS

CITY OF GUADALUPE, CA

NOTICE INVITING BIDS

CITY OF GUADALUPE PROJECT NO. 2025-06

PROPOSALS FOR THE WORK DESCRIBED AND SHOWN ON THE PLANS ENTITLED:

303 SITE IMPROVEMENTS – EV/BUS CHARGING FACILITY PROJECT

Will be received at the offices of the Building Department, City of Guadalupe, 918 Obispo Street, Guadalupe, California 93434, until **3:00 PM, September 9, 2025**, at which time they will be publicly opened and read at the same address**.**

GENERAL WORK DESCRIPTION: The project is the construction of an electric vehicle / electric bus charging facility at the City's corporation yard located at 303 Obispo Street, Guadalupe, CA. The work involves earthwork, concrete and asphalt paving, fencing and gates, installation of electrical charging facility, coordination with PG&E, and other items as specified in the Contract Documents.

WORK SCHEDULE: Work must be completed within **75** working days from the Notice to Proceed. Recoating work is currently occurring on a water tank on site. The contractor must coordinate activities with the water tank recoating project.

CONTRACT DOCUMENTS: Contract documents (Plans, Notice to Contractors, Special Provisions, Proposal, and Sample Contract) or other related information are available for review online at https://cityofguadalupe.org. and at City Hall, 918 Obispo Street, Guadalupe, California, 93434.

QUESTIONS: Questions must be submitted no later than the End of the day, August 29, 2025**,** to allow sufficient time for response. All questions shall be submitted by email to the City Engineer at jeff@eikhofdesigngroup.com.

MANDATORY PRE-BID MEETING: A mandatory pre-bid meeting will be held at 10 AM on August 19, 2025, at the City Corporation Yard located at 303 Obispo Street in Guadalupe, CA.

PROPOSALS: Proposals must include all work described in the Contract Documents. Proposals must be made on the proposal forms furnished in the Contract Documents. All other proposal forms will be rejected. Attention to prospective bidders is called to Section 2, "Proposal Requirements and Conditions," within the Contract Documents, for full direction as to bidding and other items.

Notice is given to all bidders that no more than 50% of the work, as defined by the contract price, may be done by subcontractors.

Notice is also hereby given that all Bidders may be required to furnish a sworn statement of their financial responsibility, technical ability, and experience before an award is made to any particular Bidder.

The successful Contractor will be required to obtain a business license from the City and pay related fees.

The right is reserved by the City of Guadalupe to reject any or all Bids, to evaluate the Bids submitted, waive any minor irregularities, and award the contract to the lowest responsible Bidder. The City further reserves the right to waive any informalities or minor irregularities in the Bid.

BONDS: Each proposal must be accompanied by cash, a certified or cashier's check, or bidder's bond of the prescribed form and made payable to the City of Guadalupe for an amount equal to at least ten percent (10%) of the amount bid, such guaranty to be forfeited, should the bidder to whom the contract is awarded fail to furnish the required bonds and to enter into a contract with the City within ten (10) days after awarding of the contract.

The successful contractor will be required to furnish three (3) acceptable surety bonds: one for faithful performance, one for labor and materials, and the other for maintenance following construction. Each bond is to be executed in

a sum equal to one hundred percent (100%) of the contract price except that the maintenance bond shall be for ten percent (10%) of the contract price and shall remain in effect for one year following acceptance of the project for final payment.

LICENSE REQUIREMENTS: In accordance with provisions of California Public Contract Code Section 3300, the City has determined that the **Contractor shall possess a valid Class A license at the time of award.** The Contractor shall be properly licensed at the time the contract is awarded. No contract will be awarded from a Contractor who has not been licensed in accordance with the provisions of Chapter 9 of Division 3 of the Business and Professions Code.

In addition, the following conditions apply:

- No contractor or subcontractor may be listed on a bid proposal for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1777.1(a)]. Proof of the contractor or subcontractor's current registration to perform public work pursuant to Labor Code section 1725.5 will be required as part of the bid proposal.

- No contractor of subcontractor may be awarded a contract for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

- This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

STANDARD SPECIFICATIONS: The Standard Specifications for this project are contained in the 2018 edition, including all supplementary documents of the Caltrans Standard Specifications.

PREVAILING WAGE RATES: Pursuant to Section 1773 of the Labor Code, the general prevailing wage rates in the County of Santa Barbara, in which the work is to be done, has been determined by the Director of the California Department of Industrial Relations in accordance with Section 1770 of the Labor Code. These wages are set forth in the General Prevailing Wage Rates for this project, available from the California Department of Industrial Relations' Internet web site at http://www.dir.ca.gov.

Future effective general prevailing wage rates, which have been predetermined and are on file with the California Department of Industrial Relations, are referenced but not printed in the general prevailing wage rates.

The Contractor will be required to maintain and distribute certified payroll records in compliance with Section 1776 of the California Labor Code.

RETENTION: Five (5) percent of the invoiced amount shall be retained until 30 calendar days after the Notice of Completion is recorded by the County of Santa Barbara. The Contractor may elect to receive 100 percent of payments due under the Contract Documents from time to time, without retention from any portion of the payment by the City, by depositing securities of equivalent value with the City in accordance with the provisions of Section 22300 of the California Public Contract Code. Such securities, if deposited by the Contractor, shall be valued by the City, whose decision on an evaluation of the securities shall be final. Securities eligible for investment under this provision shall be limited to those listed in Section 22300 and Section 16430 of the California Government Code.

Dated at City of Guadalupe, County of Santa Barbara, California this _____ day of _____, 20___.

By

_____
City Clerk
City of Guadalupe, CA

PROPOSAL

TO

THE CITY OF GUADALUPE

FOR

303 SITE IMPROVEMENTS – EV/BUS CHARGING FACILITY PROJECT

CITY PROJECT NO. 2025-06

NAME OF BIDDER _____

BUSINESS P.O. BOX _____

CITY, STATE, ZIP _____

BUSINESS STREET ADDRESS_____

CITY, STATE, ZIP _____

TELEPHONE NO.:_____

FAX NO.: _____

EMAIL ADDRESS: _____

LICENSE NUMBER AND TYPE: _____

DIR NUMBER: _____

The work for which this Proposal is submitted is for construction in accordance with the Special Provisions (including the payment of not less than the State General Prevailing Wage Rates or the Federal minimum wage rates when set forth herein), the Plans described below, including any addenda thereto, the contract annexed hereto, and also in accordance with the Caltrans Standard Specifications dated 2018, and the City of Santa Maria Standard Specifications (adopted by the City of Guadalupe on June 23, 2009, pursuant to Resolution No. 2009-24) insofar as the same may apply, specifications which may be referred to in the Special Provisions or project plans, and the Labor Surcharge And Equipment Rental Rates in effect on the date the work is accomplished.

The Technical Specifications for the work to be done are entitled:

CITY OF GUADALUPE, CALIFORNIA;

303 SITE IMPROVEMENTS – EV/BUS CHARGING FACILITY PROJECT

The Bidder's attention is directed to Section 2, "Proposal Requirements and Conditions," of the Contract Documents.

The undersigned as Bidder declares that he/she has carefully examined the location of the proposed work above described, read and examined the Contract Documents, and Addendum/Addenda (List Addenda Received: ____, ____, ____, ____) therefore, read the Notice to Contractors, the Proposal Requirements, including the Caltrans Standard Specifications, and hereby proposes and agrees, if this Proposal is accepted by the City, to furnish all materials and services required to do all the work required to complete the said construction in accordance with the Contract Documents in the time stated herein, for the unit prices given below:

BID SCHEDULE

ITEM NO.	BID ITEMS	PAYMENT REFERENCE	TOTAL QUANTITIES	UNIT	UNIT PRICE	TOTAL COST
BASE BID						
1	Mobilization	10-2.02	1	LS		
CIVIL						
2	Siltation Fences	015723	500	LF		
3	Concrete Washout	015723	1	EA		
4	Construction Entrance	015723	2	EA		
5	Check Dams	015723	7	EA		
6	Street Sweeping and Vacuuming	015723	1	LS		
7	Storm Drain Inlet Protection	015723	10	EA		
8	Site Clearing	311000	1	LS		
9	Earth Moving** (Cumulative)	312000	475	CY		
10	Asphalt Paving	321216	13,000	SF		
11	Concrete Paving	321313	1,300	SF		
12	Concrete Curbs	321613	500	LF		
13	Pavement Markings	321723	100	LF		
14	Gate Operators	323111	2	EA		
15	Chain Link Fences and Gates	323113	320	SF		
16	Storm Drainage Utility Pipe	334000	200	LF		
17	Plastic Drain Grates	334000	4	EA		
18	Ductile Iron Drain Grates	334000	2	EA		
19	Bioretention Basin	334726	530	SF		
ELECTRICAL						
20	Common Electrical Work	260500	1	LS		
21	Low Voltage Electrical Copper Conductors	260519	1	LS		
22	Electrical Connectors	260519	1	LS		
23	Electrical Equipment Labeling	260519	1	LS		
24	Conductor Insulation Testing	260519	30	LF		
25	Cu Ground Rod Installation	260526	3	EA		
26	Ufer Ground Installation	260526	1	EA		
27	Ground Resistance Testing	260526	3	EA		
28	PVC Schedule 40 Conduit	260533	1	LOT		
29	PVC Schedule 80 Conduit	260533	1	LOT		
30	Galvanized Rigid Steel Conduit	260533	1	LOT		

ITEM NO.	BID ITEMS	PAYMENT REFERENCE	TOTAL QUANTITIES	UNIT	UNIT PRICE	TOTAL COST
31	Electrical Metallic Tubing	260533	1	LOT		
32	Flexible Metal Conduit	260533	1	LOT		
33	Liquid Tight Flexible Metal Conduit	260533	1	LOT		
34	Electrical Outlet Boxes	260533	1	LOT		
35	Electrical Junction and Pull Boxes	260533	1	LOT		
36	Conduit Fittings	260533	1	LOT		
37	Conduit Stubs	260533	1	LOT		
38	Concrete Pads	260533	3	EACH		
39	Trenching and Backfilling	260533	1	LOT		
40	Sawcutting / Patching	260533	1	LOT		
41	Electric Utility Company Work	260546.13	1	LS		
42	480V to 208V 150KVA Step Down Transformer	262200	1	EA		
43	277/480V, 800AMP Main Electric Service Equipment	262413	1	EA		
44	120/208V, 400AMP Distribution Panelboard	262416	1	EA		
45	Wood Backboard Installation – complete	262416	1	EA		
46	WIU GFCI Receptacle	262726	1	EA		
47	Site Lighting Fixture Type S1	265600	1	EA		
48	Site Lighting Fixture Type S2	265600	2	EA		
49	Site Lighting Fixture Type S3	265600	1	EA		
50	Exterior Lighting Control Timeclock and Photocell	265600	1	EA		
51	Lighting Acceptance Testing	265670	1	LS		
52	EV Charging Station Connections	Dwg. E-101	5	EA		
53	Gate Operator Equipment Connections	Dwg. E-101	2	EA		
54	11” x 17” Concrete Pullbox	Dwg. E-101	2	EA		
55	PG&E Concrete Transformer Pad	Dwg. E-101	1	EA		
56	PG&E Primary Conduits	Dwg. E-101	250	LF		
57	PG&E Secondary Conduits	Dwg. E-101	220	LF		
58	Concrete Pole Base	Dwg. E-101	4	EA		
					TOTAL BASE BID (ITEMS 1 THROUGH 13)	

*Payment references are per specifications provided and per civil engineering plans by Ashley & Vance Engineering, Inc. dated 7/18/2025 and electrical engineering plans by Thoma Electric, Inc. dated 4/21/2025.

** Estimated earthwork quantities are based on the approximate difference between existing grades and proposed finished grades or pavement subgrades, as indicated on the plans, and should vary according to these factors and losses.

TOTAL BASE BID IN WORDS:

Total Base Bid Amount shall be shown in both words and figures.

The award of the contract, if it be awarded, will be to the lowest responsible bidder whose proposal complies with all the requirements prescribed. Bids will be compared by the Total Mathematical Bid as determined by the Engineer. The Total Mathematical Bid is the summation of all required bid items, excluding bid alternates. Bid items are calculated by multiplying the Engineers Estimate quantities by the unit bid prices. In the case of a discrepancy between the Total Mathematical Bid and the total bid written above, the Total Mathematical Bid shall govern.

The bidder to whom the contract is awarded agrees to enter into a contract with the City of Guadalupe within **fifteen (15) days** after the date of the Notice of Award, and to commence work within **ten (10) working days** after the date of the Notice To Proceed, and to diligently prosecute the work to completion within the Time of Contract shown on the cover of the Project Manual.

The undersigned understands and agrees that the City of Guadalupe will not be responsible for any errors or omissions on the part of the undersigned in preparing and submitting this Proposal.

_____

Signature Title

_____

Date

LIST OF SUBCONTRACTORS

303 SITE IMPROVEMENTS – EV/BUS CHARGING FACILITY PROJECT

Pursuant to Section 4100 of the Public Contracts Code and section 2-1.10 of the standard specifications, the Bidder is required to furnish the following information for each Subcontractor performing more than 1/2 percent (0.5%) of the total base bid. Do not list alternative subcontractors for the same work. Subcontracting must not total more than fifty percent (50%) of the submitted bid except as allowed in Section 5-1.13A of the standard specifications.

For Streets & Highways projects, subcontractors performing less than ten thousand dollars ($10,000) worth of work need not be mentioned. Subcontractors must be registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 to be listed.

NOTE: If there are no subcontractors, write "NONE" and submit with bid.

Name Under Which Subcontractor is Licensed	License Number / DIR Number	Address and Phone Number of Office, Mill or Shop	Specific Description of Subcontract	% of Total Base Bid

NOTE: This form may be reproduced and attached behind this page to list more subcontractors.

PUBLIC CONTRACT CODE

Public Contract Code Section 10285.1 Statement

In conformance with Public Contract Code Section 10285.1 (Chapter 376, Stats. 1985), the bidder hereby declares under penalty of perjury under the laws of the State of California that the bidder has ___ , has not ___been convicted within the preceding three years of any offenses referred to in that section, including any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any state or Federal antitrust law in connection with the bidding upon, award of, or performance of, any public works contract, as defined in Public Contract Code Section 1101, with any public entity, as defined in Public Contract Code Section 1100, including the Regents of the University of California or the Trustees of the California State University. The term "bidder" is understood to include any partner, member, officer, director, responsible managing officer, or responsible managing employee thereof, as referred to in Section 10285.1.

Note: The bidder must place a checkmark after "has" or "has not" in one of the blank spaces provided. The above Statement is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Statement. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

Public Contract Code Section 10162 Questionnaire

In conformance with Public Contract Code Section 10162, the Bidder shall complete, under penalty of perjury, the following questionnaire:

Has the bidder, any officer of the bidder, or any employee of the bidder who has a proprietary interest in the bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or a safety regulation?

Yes _____ No _____

If the answer is yes, explain the circumstances in the following space.

PUBLIC CONTRACT CODE 10232 STATEMENT

In conformance with Public Contract Code Section 10232, the Contractor, hereby states under penalty of perjury, that no more than one final unappealable finding of contempt of court by a federal court has been issued against the Contractor within the immediately preceding two-year period because of the Contractor's failure to comply with an order of a federal court which orders the Contractor to comply with an order of the National Labor Relations Board.

Note: The above Statement and Questionnaire are part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Statement and Questionnaire.

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

NONCOLLUSION DECLARATION

(Title 23 United States Code Section 112 and Public Contract Code Section 7106)

To the CITY of GUADALUPE

In conformance with Title 23 United States Code Section 112 and Public Contract Code 7106 the bidder declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false 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 the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Note: The above Non-collusion Affidavit is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute the signature of this Non-collusion Affidavit.

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

CONTRACTOR'S LICENSING STATEMENT

I declare under penalty of perjury under the laws of the State of California that the following is true and correct. Executed in the City of Guadalupe this _____ day of_____, 20___.

The undersigned is licensed in accordance with the laws of the State of California providing for the registration of the Contractors, License No. _____, Expiration Date_____.

Business Name (DBA): _____

Owner/Legal Name: _____

Indicate One: ☐ Sole-proprietor ☐ Partnership ☐ Corporation

List Partners/Corporate Officers:

_____
Name Title

_____
Name Title

_____
Name Title

_____
Name Title

Business Address: _____

City, State, ZIP Code _____

Mailing Address: _____

City, State, ZIP Code _____

Phone Number: _____

Fax Number: _____

Email Address: _____

DIR Number: _____

Signature of Bidder _____

_____
(Print Name and Title of Bidder)

WORKERS' COMPENSATION INSURANCE CERTIFICATE

The Contractor shall execute the following form as required by the California Labor Code, Section 1861:

I am aware of the provisions of Section 3700 of the Labor Code 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 of this Contract.

_____ _____

(Date) (Contractor)

By:_____
(Signature)

By:_____
(Title)

Attest:

By:_____
(Signature)

By:_____
(Title)

BIDDER'S BOND

We, _____

_____ as Principal, and

_____

as Surety are bound unto the City of Guadalupe, State of California, hereafter referred to as "Obligee", in the penal sum of ten percent (10%) of the total amount of the bid of the Principal submitted to the Obligee for the work described below, for the payment of which sum we bind ourselves, our heirs, executors and administrators, successors or assigns, jointly and severally,

THE CONDITION OF THIS OBLIGATION IS SUCH, THAT:

WHEREAS, the Principal is submitted to the Obligee, for the 303 OBISPO SITE IMPROVEMENTS – EV/BUS CHARGING FACILITIES PROJECT

NOW, THEREFORE, if the Principal is awarded the contract and, within the time and manner required under the specifications, after the prescribed forms are presented to him for signature, enters into a written contract, in the prescribed form, in conformance with the bid, and files two bonds with the Obligee, one to guarantee faithful performance of the contract and the other to guarantee payment for labor and materials as provided by law, then this obligation shall be null and void; otherwise, it shall remain in full force.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including a reasonable attorney's fee to be fixed by the court.

Dated: _____, 20___.

_____

_____

_____
Principal

_____
Surety

By _____
Attorney-in-fact

CERTIFICATE OF ACKNOWLEDGEMENT

State of California
City/County of _____ SS

On this _____ day of _____ in the year 20___ before me

_____, personally appeared _____,
Attorney-in-fact

personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to this instrument as the attorney-in-fact of _____, and acknowledged to me that he (she) subscribed the name of the said company thereto as surety, and his (her) own name as attorney-in-fact.

(SEAL) _____
Notary Public

NOTE: At the discretion of the City the low and second low bidders may be required to complete and return the "Contractor's and Subcontractor's Statement Of Experience and Financial Condition" forms provided herein prior to determination regarding bid award.

CONTRACTOR'S AND SUBCONTRACTOR'S STATEMENT OF EXPERIENCE AND FINANCIAL CONDITION

_____ A Corporation

1. Name:_____ _____ A Co-Partnership
(Name Must Correspond with Contractor's License In Every Detail)

_____ An Individual

_____ Combination

2. Principal Office:_____
(Street and P.O. Box) (City) (State) (Zip Code)

3. Telephone (_____) _____

The Signatory of this questionnaire guarantees the truth and accuracy of all statements and of all answers to interrogatories hereinafter made.

NOTE: When the word "you" or "your" is used herein, it shall mean you, your firm, your corporate officers, partners, principals or proprietors.

4. Names of Corporate Officers, Partners, Principals, Proprietors:

NAME	POSITION	PERCENTAGE OF STOCK

5. List Any Subsidiaries or Affiliated Companies:

EXACT NAME	TYPE OF BUSINESS	OWNERSHIP

6. Name, Address, and Telephone No. of Bank:

Total Line of Credit	How Secured	Interest Rate
$_____		_____

7. How much of your line of credit is currently available? $_____

8. Name of Loan Officer:_____

(List additional bank(s) on next page, if applicable)

9. Are you licensed as a Contractor to do business in California?

Yes___ No___ License No._____ Type

Classification (Type) of Specialty Contractor

10. How many years has your organization been in business as a contractor under your present business name and license number? _____ years.

11. How many years' experience in_____ construction work has your organization had?

12. Has your firm or any of its principals ever petitioned for bankruptcy? _____ If answer is "Yes," enter the date(s)

13. Has your firm or any of its principals defaulted so as to cause a loss to surety? If the answer is "Yes," enter the date(s), name and address of surety and details.

14. Show the projects (10 maximum) your organization has completed during the last three years in the following tabulation; be specific as to the nature of the work your firm actually performed.

(Use as many spaces as required to complete your answer)

YEAR COMPLETED	TYPE OF WORK (be specific)	VALUE OF WORK PERFORMED	CITY AND STATE CONTACT PERSON/PHONE

15. Have you been assessed liquidated damages for any project in the past three years?

If yes, explain.

16. Have you been in litigation on a question relating to your performance on a contract during the past three years?_____ If yes, explain.

_____

_____

_____

17. Have you failed to complete a contract? _____. If so, give details:

_____

_____

_____

18. In what other lines of business pertaining to this Statement do you have a financial interest?

_____

_____

_____

19. Name the persons with whom you have been associated in business as partners or joint venture in each of the last five years.

_____

_____

_____

20. What is the construction experience of the principal individuals of your present organization?

Individual's Name	Present Position or Office In Your Organization	Years of Construction Experience	Magnitude and Type of Work

21. List 10 subcontractors with whom you have worked in the last two years:

NAME	ADDRESS	TELEPHONE

NAME	ADDRESS	TELEPHONE

22. List the names of three Architects or Engineers whose jobs you have worked on in the past two years:

Name of Architect Or Engineer	Telephone

23. Please attach a balance sheet and profit and loss statement prepared by a Certified Public Accountant or a Public Accountant.

24. List and explain all contingent liabilities._____

_____

_____

25. Explain any Stop Notice(s) filed against you in the past three years.

Date	By Whom	How Resolved	Why Filed

List your five major suppliers of equipment, supplies and materials:

NAME	**ADDRESS**

FAITHFUL PERFORMANCE BOND

WHEREAS, the City Council of the City of Guadalupe, State of California, and _____ (hereinafter designated as the "principal") have entered into an agreement whereby principal agrees to install and complete certain designated public improvements, which said agreement, dated _____, 20____, and identified as 303 OBISPO SITE IMPROVEMENTS – EV/BUS CHARGING FACILITIES PROJECT, is hereby referred to and made a part hereof; and

WHEREAS, said principal is required under the terms of said agreement to furnish a bond for the faithful performance of said agreement.

NOW, therefore, we, the principal and _____, as surety, are held and firmly bound unto the City of Guadalupe hereinafter called "City," in the penal sum of _____Dollars ($_____) lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, successors, executors, administrators, jointly and severally, firmly by these presents.

The condition of this obligation is such that if the above bounded principal, his or its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and provisions in the said agreement and any alteration thereof made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless City, its officers, agents, and employees as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

As a part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees, including reasonable attorney's fees, incurred by City in successfully enforcing such obligation, all to be taxed as costs and included in any judgment rendered.

The surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the agreement or to the work to be performed there under or the specifications accompanying the same shall in any manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the agreement or to the work or to the specifications.

IN WITNESS WHEREOF, this instrument has been duly executed by principal and surety above named, on _____, 20___.

APPROVED AS TO FORM:

By: _____
City Attorney

ADDRESS OF CONTRACTOR FOR SERVICE OF DOCUMENTS UNDER BOND AND UNDER-TAKING LAW:

_____ (SEAL)
Principal

_____ (SEAL)

_____
Signature of Principal Title

ADDRESS OF SURETY FOR SERVICE OF DOCUMENTS UNDER BOND AND UNDERTAKING LAW

_____ (SEAL)

_____ (SEAL)
Surety

_____
Signature for Surety Title

LABOR AND MATERIAL BOND

WHEREAS, the City Council of the City of Guadalupe, State of California and _____ (hereinafter designated as "principal") have entered into an agreement whereby principal agrees to install and complete certain designated public improvements, which said agreement, dated _____, 20___, and identified as 303 OBISPO SITE IMPROVEMENTS – EV/BUS CHARGING FACILITIES PROJECT, is hereby referred to and made a part hereof; and

WHEREAS, under the terms of said agreement, principal is required before entering upon the performance of the work, to file a good and sufficient payment bond with the City of Guadalupe to secure the claims to which reference is made in Title 15 (commencing with Section 3082) of Part 4 of Division 3 of the Civil Code of the State of California.

NOW, THEREFORE, said principal and the undersigned as corporate surety, are held firmly bound unto the City of Guadalupe and all contractors, subcontractors, laborers, material, men and other persons employed in the performance of the aforesaid agreement and referred to in the aforesaid Code of Civil Procedure in the sum of _____Dollars ($_____), for materials furnished or labor thereon of any kind, or for amounts due under the Unemployment Insurance Act with respect to such work or labor, that said surety will pay the same in amount not exceeding the amount hereinabove set forth, and also in case suit is brought upon this bond, will pay, in addition to the face amount thereof, costs and reasonable expenses and fees, including reasonable attorney's fees, incurred by City in successfully enforcing such obligation, to be awarded and fixed by the court, and to be taxed as costs and to be included in the judgment therein rendered.

It is hereby expressly stipulated and agreed that this bond shall inure to the benefit of any and all persons, companies and corporations entitled to file claims under Title 15 (commencing with Section 3082) of Part 4 of Division 3 of the Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond.

Should the condition of this bond be fully performed, then this obligation shall become null and void, otherwise it shall be and remain in full force and effect.

The surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of said agreement or the specifications accompanying the same shall in any manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension, alteration or addition.

IN WITNESS WHEREOF, this instrument has been duly executed by the principal and surety above named, on _____, 20__.

APPROVED AS TO FORM:

By: _____
City Attorney

ADDRESS OF CONTRACTOR FOR SERVICE OF DOCUMENTS UNDER BOND AND UNDERTAKING LAW:

_____ (SEAL)
Principal

_____ (SEAL)

_____
Signature of Principal Title

ADDRESS OF SURETY FOR SERVICE OF DOCUMENTS UNDER BOND AND UNDERTAKING LAW

_____ (SEAL)

_____ (SEAL)
Surety

_____
Signature for Surety Title

GUARANTEE AND DEFECTIVE MATERIAL BOND

WHEREAS, the City Council of the City of Guadalupe, State of California and _____ (hereinafter designated as "principal") have entered into an agreement whereby principal agrees to install and complete certain designated public improvements, which said agreement, dated _____, 20___, and identified as 303 OBISPO SITE IMPROVEMENTS – EV/BUS CHARGING FACILITIES PROJECT, is hereby referred to and made a part hereof; and

WHEREAS, said principal is required under the terms of said agreement to furnish a bond for the one-year maintenance of public improvements of said agreement.

NOW, therefore, we, the principal and _____, as surety, are held and firmly bound unto the City of Guadalupe hereinafter called "City," in the penal sum of _____ dollars ($_____) lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, successors, executors and administrators, jointly and severally, firmly by these presents.

The condition of this obligation is such that if the above bounded principal, his or its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and provisions in the said agreement and any alteration thereof made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless City, its officers, agents, and employees as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

As a part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees, including reasonable attorney's fees, incurred by City in successfully enforcing such obligation, all to be taxed as costs and included in any judgment rendered.

The surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the agreement or to the work to be performed there under or the specifications accompanying the same shall in any manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the agreement or to the work or to the specifications.

IN WITNESS WHEREOF, this instrument has been duly executed by the principal and surety above named, on _____, 20___.

ADDRESS OF CONTRACTOR FOR SERVICE OF DOCUMENTS UNDER BOND AND UNDER-TAKING LAW:

_____ (SEAL)
Principal

_____ (SEAL)

_____
Signature of Principal Title

ADDRESS OF SURETY FOR SERVICE OF DOCUMENTS UNDER BOND AND UNDERTAKING LAW

_____ (SEAL)

_____ (SEAL)
Surety

_____
Signature for Surety Title

SAMPLE AGREEMENT

AGREEMENT FOR CONTRACTOR SERVICES
BETWEEN
THE CITY OF GUADALUPE
AND

THIS AGREEMENT FOR CONTRACTOR SERVICES (the "Agreement") is made and entered into this ___ day of _____20xx, by and between the CITY OF GUADALUPE, a municipal corporation ("City") and, _____a California _____ ("Contractor").

In consideration of the mutual covenants and conditions set forth herein, the parties agree as follows:

Section 1. Term of Agreement. Subject to the provisions of Section 19 (Termination of Agreement) of this Agreement, the term of this Agreement shall be for a period of one (1) year from the date of execution of this Agreement, as first shown above. Such term may be extended upon written agreement of both parties to this Agreement.

Section 2. Scope of Services. Contractor agrees to perform the services set forth in Exhibit A (Scope of Services) and made a part of this Agreement.

Section 3. Additional Services. Contractor shall not be compensated for any services rendered in connection with its performance of this Agreement which are in addition to or outside of those set forth in this Agreement or listed in Exhibit A unless such additional services are authorized in advance and in writing by the City Council or City Administrator of City. Contractor shall be compensated for any such additional services in the amounts and in the manner agreed to by the City Council or City Administrator.

Section 4. Compensation and Method of Payment.

(a) Subject to any limitations set forth in this Agreement, City agrees to pay Contractor the amounts specified in Exhibit A (Compensation) and made a part of this Agreement.

(b) Each month Contractor shall furnish to City an original invoice for all work performed and expenses incurred during the preceding month. The invoice shall detail charges by the following categories: labor (by subcategory), travel, materials, equipment, supplies, sub-contractor contracts and miscellaneous expenses. City shall independently review each invoice submitted by Contractor to determine whether the work performed and expenses incurred are in compliance with the provisions of this Agreement and Scope of Services. In the event that no charges or expenses are disputed, the invoice shall be approved and paid according to the terms set forth in subsection (c). In the event City disputes any charges or expenses, City shall return the original invoice to Contractor

with specific items in dispute identified for correction and re-submission. All undisputed charges shall be paid in accordance with this Agreement and Scope of Services.

(c) Except as to any charges for work performed or expenses incurred by Contractor, which are disputed by City, City will cause Contractor to be paid within thirty (30) days of receipt of Contractor's invoice.

(d) Payment to Contractor for work performed pursuant to this Agreement shall not be deemed to waive any defects in work performed by Contractor.

(e) Contractor shall have the right to suspend services if not paid in accordance with this Agreement.

Section 5. Inspection and Final Acceptance. City may inspect and accept or reject any of Contractor's work under this Agreement, either during performance or when completed, if the work is found to be defective or not in compliance with the defined Scope of Services. Acceptance of any of the Contractor's work by City shall not constitute a waiver of any of the provisions of this Agreement, including but not limited to, Sections 15 and 16, pertaining to indemnification and insurance, respectively. Contractor agrees to cooperate in any such inspection.

Section 6. Ownership of Documents. All original maps, models, designs, drawings, photographs, studies, surveys, reports, data, notes, computer files, files and other documents prepared, developed or discovered by Contractor in the course of providing any services pursuant to this Agreement shall become the sole property of City and may be used, reused or otherwise disposed of by City without the permission of the Contractor. Reuse of any materials outside the scope of this Agreement shall be at the sole risk of the City.

Section 7. Contractor's Books and Records.

(a) Contractor shall maintain any and all documents and records demonstrating or relating to Contractor's performance of services pursuant to this Agreement. Contractor shall maintain any and all ledgers, books of account, invoices, vouchers, canceled checks, or other documents or records evidencing or relating to work, services, expenditures and disbursements charged to City pursuant to this Agreement. Any and all such documents or records shall be maintained in accordance with generally accepted accounting principles and shall be sufficiently completed and detailed so as to permit an accurate evaluation of the services provided by Contractor pursuant to this Agreement. Any and all such documents or records shall be maintained for three (3) years from the date of execution of this Agreement and to the extent required by laws relating to the audits of public agencies and their expenditures.

(b) Any and all records or documents required to be maintained pursuant to this section shall be made available for inspection, audit and copying, upon reasonable notice during regular business hours, upon written request by City or its designated representative. Copies of such documents or records shall be provided directly to the City for inspection, audit and copying when it is practical to do so; otherwise, unless an

alternative is mutually agreed upon, such documents and records shall be made available at Contractor's address indicated for receipt of notices in this Agreement. The City shall compensate the Contractor for all costs associated with providing these materials to the City.

(c) Where City has reason to believe that any of the documents or records required to be maintained pursuant to this section may be lost or destroyed due to dissolution or termination of Contractor's business, City may, by written request, require that custody of such documents or records be given to the requesting party and that such documents and records be maintained by the requesting party. Access to such documents and records shall be granted to City, as well as to its successors-in-interest and authorized representatives.

Section 8. Status of Contractor.

(a) Contractor is and shall at all times during the terms of this Agreement remain a wholly independent Contractor and not an officer, employee or agent of City. Contractor shall have no authority to bind City in any manner, nor to incur any obligation, debt or liability of any kind on behalf of or against City, whether by contract or otherwise, unless such authority is expressly conferred under this Agreement or is otherwise expressly conferred in writing by City.

(b) The personnel performing the services under this Agreement on behalf of Contractor shall at all times be under Contractor's exclusive direction and control. Neither City nor any elected or appointed boards, officers, officials, employees or agents of City, shall have control over the conduct of Contractor or any of Contractor's officers, employees or agents, except as set forth in this Agreement. Contractor shall not at any time or in any manner represent that Contractor or any of Contractor's officers, employees or agents are in any manner officials, employees or agents of City.

(c) Neither Contractor nor any of Contractor's officers, employees or agents shall obtain any rights to retirement, health care or any other benefits which may otherwise accrue to City's employees. Contractor expressly waives any claim Contractor may have to any such rights.

Section 9. Standard of Performance. Contractor represents and warrants that it has the qualifications, experience and facilities necessary to properly perform the services required under this Agreement in a thorough, competent and professional manner. Contractor shall at all times faithfully, competently and to the best of its ability, experience and talent, perform all services described herein. In meeting its obligations under this Agreement, Contractor shall employ, at a minimum, generally accepted standards and practices utilized by persons engaged in providing services similar to those required of Contractor under this Agreement.

Section 10. Compliance With Applicable Laws, Permits and Licenses. Contractor shall keep itself informed of and comply with all applicable federal, state and local laws, statutes, codes, ordinances, regulations and rules in effect during the term of this

Agreement applicable to Contractor. Contractor shall obtain any and all licenses, permits and authorizations necessary to perform the services set forth in this Agreement. Neither City, nor any elected or appointed boards, officers, officials, employees or agents of City, shall be liable at law or in equity as a result of any failure of Contractor to comply with this section.

Section 11. Nondiscrimination. Contractor shall not discriminate, in any way, against any person on the basis of race, color, religious creed, national origin, ancestry, sex, age, disability, marital status or sexual orientation in connection with or related to the performance of this Agreement.

Section 12. Unauthorized Aliens. Contractor hereby promises and agrees to comply with all of the provisions of the Federal Immigration and Nationality Act, 8 U.S.C.A. sections 1101, et seq., as amended, and in connection therewith, shall not employ unauthorized aliens for the performance of work and/or services covered by this Agreement, and should any liability or sanctions be imposed against City for such use of unauthorized aliens, Contractor hereby agrees to and shall reimburse City for the cost of all such liabilities or sanctions imposed, together with any and all costs, including attorney's fees, incurred by City.

Section 13. Conflicts of Interest. Contractor will comply with all conflict of interest laws and regulations including, without limitation, the City's Conflict of Interest Code (on file in the City Clerk's Office). All officers, employees and/or agents of Contractor who will be working on behalf of the City pursuant to this Agreement, may be required to file Statements of Economic Interest. Therefore, it is incumbent upon the Contractor or Contracting firm to notify that City of any staff changes relating to this Agreement.

A. In accomplishing the scope of services of this Agreement, all officers, employees and/or agents of Contractor(s), unless as indicated in Subsection B, will be performing a very limited and closely supervised function, and, therefore, unlikely to have a conflict of interest arise. No disclosures are required for any officers, employees, and/or agents of Contractor, except as indicated in Subsection B.

_____
Initials

B. In accomplishing the scope of services of this Agreement, Contractor(s) will be performing a specialized or general service for the City, and there is substantial likelihood that the Contrator's work product will be presented, either written or orally, for the purpose of influencing a governmental decision. As a result, the following Contractor(s) shall be subject to Disclosure Category "1" of the City's Conflict of Interest Code.

Section 14. Confidential Information; Release of Information.

(a) All information gained or work product produced by Contractor in performance of this Agreement shall be considered confidential, unless such information is in the public domain or already known to Contractor. Contractor shall not release or disclose any such information or work product to persons or entities other than City without prior written authorization from the City Administrator, except as may be required by law.

(b) Contractor, its officers, employees, agents or subcontractors, shall not, without prior written authorization from the City Administrator or unless requested by the City Attorney of City, voluntarily provide declarations, letters of support, testimony at depositions, responses to interrogatories or other information concerning the work performed under this Agreement. A response to a subpoena or court order shall not be considered "voluntary" provided Contractor gives City notice of such court order or subpoena.

(c) If Contractor, or any officer, employee, agent or subcontractor of Contractor, provides any information or work product in violation of this section, then City shall have the right to reimbursement and indemnity from Contractor for any damages, costs and fees, including attorney's fees, caused by or incurred as a result of Contractor's conduct.

(d) Contractor shall promptly notify City should Contractor, its officers, employees, agents or sub contractors be served with any summons, complaint, subpoena, notice of deposition, request for documents, interrogatories, request for admissions or other discovery request, court order or subpoena from any party regarding this Agreement and the work performed thereunder. City retains the right, but has no obligation, to represent Contractor or be present at any deposition, hearing or similar proceeding. Contractor agrees to cooperate fully with City and to provide City with the opportunity to review any response to discovery requests provided by Contractor. However, this right to review any such response does not imply or mean the right by City to control, direct, or rewrite said response. Contractor shall be compensated for all costs associated with complying with this section.

Section 15. Indemnification.

(a) City and its respective elected and appointed boards, officials, officers,

agents, employees and volunteers (individually and collectively, "Indemnitees") shall have no liability to Contractor or any other person for, and Contractor shall indemnify, defend, protect and hold harmless Indemnitees from and against, any and all liabilities, claims, actions, causes of action, proceedings, suits, damages, judgments, liens, levies, costs and expenses of whatever nature, including reasonable attorney's fees and disbursements (collectively, "Claims") which Indemnitees may suffer or incur or to which Indemnitees may become subject by reason of or arising out of any injury to or death of any person(s), damage to property, loss of use of property, economic loss or otherwise occurring as a result of or allegedly caused by Contractor's performance of or failure to perform any services under this Agreement or by the negligent or willfully wrongful acts or omissions of Contractor, its agents, officers, directors, sub contractors or employees, committed in performing any of the services under this Agreement.

(b) If any action or proceeding is brought against Indemnitees by reason of any of the matters against which Contractor has agreed to indemnify Indemnitees as provided above, Contractor, upon notice from City, shall defend Indemnitees at Contractor's expense by counsel acceptable to City, such acceptance not to be unreasonably withheld. Indemnitees need not have first paid for any of the matters to which Indemnitees are entitled to indemnification in order to be so indemnified. The insurance required to be maintained by Contractor under Section 16 shall ensure Contractor's obligations under this section, but the limits of such insurance shall not limit the liability of Contractor hereunder. The provisions of this section shall survive the expiration or earlier termination of this Agreement.

(c) The provisions of this section do not apply to Claims occurring as a result of the City's sole negligence or willfully wrongful acts or omissions.

(d) City agrees to indemnify Contractor for any such neglect or willfully wrongful acts committed by City or its officers, agents or employees.

Section 16. Insurance. Contractor agrees to obtain and maintain in full force and effect during the term of this Agreement, insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work provided by Contractor, its agents, representatives or employees in performance of this Agreement. Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A-:VII. All insurance policies shall be subject to approval by City as to form and content. These requirements are subject to amendment or waiver, if so approved in writing by City Administrator. Contractor agrees to provide City with copies of required policies upon request. Prior to the beginning of and throughout the duration of the Work, Contractor and its subcontractors shall maintain insurance in conformance with the requirements set forth below. Contractor will use existing coverage to comply with these requirements. If that existing coverage does not meet the requirements set forth herein, Contractor agrees to amend, supplement or endorse the existing coverage to do so. Contractor acknowledges that the insurance coverage and policy limits set forth in this section constitute the minimum amount of coverage required. Any insurance proceeds available to Contractor or its subcontractors in excess of the limits and coverage identified in this Agreement and which is applicable to a given loss, claim or demand, will be equally available to CITY.

Contractor shall provide the following types and amounts of insurance. Without limiting Contractor's indemnification of CITY, and prior to commencement of Work, Contractor shall obtain, provide and maintain at its own expense during the term of this Agreement, policies of insurance of the type and amounts described below and in a form satisfactory to CITY:

A. Minimum Scope of Insurance: Coverage shall be at least as broad as:

(1) Insurance Services Office Form Commercial General Liability coverage (Occurrence Form CG 0001).

(2) Insurance Services Office Form No. CA 0001 covering Automobile Liability, including code 1"any auto" and endorsement CA 0025, or equivalent forms subject to written approval of City.

(3) Workers' Compensation insurance as required by the Labor Code of the State of California and Employers' Liability insurance and covering all persons providing services on behalf of the Contractor and all risks to such persons under this Agreement, along with a waiver of subrogation endorsement.

(4) Errors and omission liability insurance appropriate to the Contractor's profession.

B. Minimum Limits of Insurance: Contractor shall maintain limits of insurance no less than:

(1) General Liability Insurance: Contractor shall maintain commercial general liability insurance with coverage at least as broad as Insurance Services Office form CG 00 01, in an amount not less than $3,000,000 per occurrence, $6,000,000 general aggregate, for bodily injury, personal injury, and property damage, and a $6,000,000 completed operations aggregate. The policy shall provide or be endorsed to provide that CITY and its officers, officials, employees, agents, and volunteers shall be additional insureds under such policies. This provision shall also apply to any excess/umbrella liability policies. The policy must include contractual liability that has not been amended. Any endorsement restricting standard ISO "insured contract" language will not be accepted. This insurance and any umbrella or excess liability insurance shall be maintained for a minimum of three years or as long as there is a statutory exposure to completed operations claims, with the City and its officers, officials, employees, and agents continued as additional insured.

(2) Automobile Liability: Contractor shall maintain automobile insurance at least as broad as Insurance Services Office form CA 00 01 covering bodily injury and property damage for all activities of the Contractor arising out of or in connection with Work to be performed under this Agreement, including coverage for any owned, hired, non-owned or rented vehicles, in an amount not less than $1,000,000 combined single limit for each accident.

(3) Workers' Compensation and Employer's Liability: Contractor shall maintain Workers' Compensation Insurance (Statutory Limits) and Employer's Liability Insurance (with

limits of at least $1,000,000) for Contractor's employees in accordance with the laws of the State of California, Section 3700 of the Labor Code. In addition, Contractor shall require each subcontractor to similarly maintain Workers' Compensation Insurance and Employer's Liability Insurance in accordance with the laws of the State of California, Section 3700 for all of the subcontractor's employees. Contractor shall submit to CITY.

(4) Errors and Omissions Liability: $1,000,000 per claim as appropriate for the profession.

(5) Umbrella or excess liability insurance (if needed): Contractor shall obtain and maintain an umbrella or excess liability insurance that will provide bodily injury, personal injury and property damage liability coverage at least as broad as the primary coverages set forth above, including commercial general liability, automobile liability, and employer's liability. Such policy or policies shall include the following terms and conditions:

- A drop-down feature requiring the policy to respond in the event that any primary insurance that would otherwise have applied proves to be uncollectable in whole or in part for any reason;
- Pay on behalf of wording as opposed to reimbursement;
- Concurrency of effective dates with primary policies;
- Policies shall "follow form" to the underlying primary policies; and
- Insureds under primary policies shall also be insureds under the umbrella or excess policies.

(6) Pollution liability insurance. Environmental Impairment Liability Insurance shall be written on a Contractor's Pollution Liability form or other form acceptable to CITY providing coverage for liability arising out of sudden, accidental and gradual pollution and remediation. The policy limit shall be no less than $1,000,000 dollars per claim and in the aggregate. All activities contemplated in this Agreement shall be specifically scheduled on the policy as "covered operations." The policy shall provide coverage for the hauling of waste from the project site to the final disposal location, including non-owned disposal sites.

C. Other Provisions: Insurance policies required by this Agreement shall contain the following provisions:

(1) Notice of Cancellation: Each insurance policy required by this Agreement shall be endorsed and state the coverage shall not be suspended, voided, canceled by the insurer or other party to this Agreement, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested has been given to City.

(2) Primary/noncontributing: Coverage provided by Contractor shall be primary and any insurance or self-insurance procured or maintained by CITY shall not be required to contribute with it. The limits of insurance required herein may be satisfied by a combination of primary and umbrella or excess insurance. Any umbrella or excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and non-

contributory basis for the benefit of CITY before the CITY's own insurance or self-insurance shall be called upon to protect it as a named insured.

(3) City's Rights of Enforcement: In the event any policy of insurance required under this Agreement does not comply with these requirements or is canceled and not replaced, CITY has the right but not the duty to obtain the insurance it deems necessary and any premium paid by CITY will be promptly reimbursed by Contractor or CITY will withhold amounts sufficient to pay premium from Contractor payments. In the alternative, CITY may cancel this Agreement.

(4) Waiver of Subrogation: All insurance coverage maintained or procured pursuant to this agreement shall be endorsed to waive subrogation against CITY, its elected or appointed officers, agents, officials, employees and volunteers or shall specifically allow Contractor or others providing insurance evidence in compliance with these specifications to waive their right of recovery prior to a loss. Contractor hereby waives its own right of recovery against CITY, and shall require similar written express waivers.

(5) Enforcement of Contract Provisions (non estoppel): Contractor acknowledges and agrees that any actual or alleged failure on the part of the CITY to inform Contractor of non-compliance with any requirement imposes no additional obligations on the CITY nor does it waive any rights hereunder.

(6) Requirements not Limiting: Requirements of specific coverage features or limits contained in this Section are not intended as a limitation on coverage, limits or other requirements, or a waiver of any coverage normally provided by any insurance. Specific reference to a given coverage feature is for purposes of clarification only as it pertains to a given issue and is not intended by any party or insured to be all inclusive, or to the exclusion of other coverage, or a waiver of any type. If the Contractor maintains higher limits than the minimums shown above, the CITY requires and shall be entitled to coverage for the 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.

(7) Prohibition of Undisclosed Coverage Limitations: None of the coverages required herein will be in compliance with these requirements if they include any limiting endorsement of any kind that has not been first submitted to CITY and approved of in writing.

(8) Separation of Insureds: A severability of interests provision must apply for all additional insureds ensuring that Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the insurer's limits of liability. The policy(ies) shall not contain any cross-liability exclusions.

(9) Pass through Clause: Contractor agrees to ensure that its subconsultants, subcontractors, and any other party involved with the project who is brought onto or involved in the project by Contractor, provide the same minimum insurance coverage and endorsements required of Contractor. Contractor agrees to monitor and review all such coverage and assumes all responsibility for ensuring that such coverage is provided in conformity with the requirements of this section. Contractor agrees that upon request, all agreements with consultants, subcontractors, and others engaged in the project will be submitted to CITY for review.

(10) City's Right to Revise Requirements: The CITY reserves the right at any time during the term of the contract to change the amounts and types of insurance required by giving the Contractor a ninety (90) day advance written notice of such change. If such change results in substantial additional cost to the Contractor, the CITY and Contractor may renegotiate Contractor's compensation.

(11) Self-insured Retentions: Any self-insured retentions must be declared to and approved by CITY. CITY reserves the right to require that self-insured retentions be eliminated, lowered, or replaced by a deductible. Self-insurance will not be considered to comply with these specifications unless approved by CITY.

(12) Timely Notice of Claims: Contractor shall give CITY prompt and timely notice of claims made or suits instituted that arise out of or result from Contractor's performance under this Agreement, and that involve or may involve coverage under any of the required liability policies.

(13) Additional Insurance: Contractor shall also procure and maintain, at its own cost and expense, any additional kinds of insurance, which in its own judgment may be necessary for its proper protection and prosecution of the Work.

Section 17. Assignment. The expertise and experience of Contractor are material considerations for this Agreement. City has an interest in the qualifications of and capability of the persons and entities who will fulfill the duties and obligations imposed upon Contractor under the Agreement. In recognition of that interest, Contractor shall not assign or transfer this Agreement or any portion of this Agreement or the performance of any of Contractor's duties or obligations under this Agreement without the prior written consent of the City Council. Any attempted assignment shall be ineffective, null and void, and shall constitute a material breach of this Agreement, entitling City to any and all remedies at law or in equity, including summary termination of this Agreement. City acknowledges, however, that Contractor, in the performance of its duties pursuant to this Agreement, may utilize sub contractors.

Section 18. Continuity of Personnel. Contractor shall make every reasonable effort to maintain the stability and continuity of Contractor's staff assigned to perform the services required under this Agreement. Contractor shall notify City of any changes in Contractor's staff assigned to perform the services required under this Agreement, prior to any such performance.

Section 19. Termination of Agreement.

(a) City may terminate this Agreement, with or without cause, at any time by giving thirty (30) days' written notice of termination to Contractor. In the event such notice is given, Contractor shall cease immediately all work in progress.

(b) Contractor may terminate this Agreement at any time upon thirty (30) days' written notice of termination to City.

(c) If either Contractor or City fail to perform any material obligation under this

Agreement, then, in addition to any other remedies, either Contractor or City may terminate this Agreement immediately upon written notice.

(d) Upon termination of this Agreement by either Contractor or City, all property belonging exclusively to City which is in Contractor's possession shall be returned to City. Contractor shall furnish to City a final invoice for work performed and expenses incurred by Contractor, prepared as set forth in Section 4 of this Agreement. This final invoice shall be reviewed and paid in the same manner as set forth in Section 4 of this Agreement.

Section 20. Default. In the event that Contractor is in default under the terms of this Agreement, the City shall not have any obligation or duty to continue compensating Contractor for any work performed after the date of default and may terminate this Agreement immediately by written notice to Contractor.

Section 21. Excusable Delays. Contractor shall not be liable for damages, including liquidated damages, if any, caused by delay in performance or failure to perform due to causes beyond the control of Contractor. Such causes include, but are not limited to, acts of God, acts of the public enemy, acts of federal, state or local governments, acts of the City, court orders, fires, floods, epidemics, strikes, embargoes, and unusually severe weather. The term and price of this Agreement shall be equitably adjusted for any delays due to such causes.

Section 22. Cooperation by City. All public information, data, reports and maps as are existing and available to City as public records, and which are necessary for carrying out the work as outlined in Exhibit A, shall be furnished to Contractor in every reasonable way to facilitate, without undue delay, the work to be performed under this Agreement.

Section 23. Notices. All notices required or permitted to be given under this Agreement shall be in writing and shall be personally delivered, or sent by telecopier or United States mail, postage prepaid, addressed as follows:

To City: City Administrator
City of Guadalupe
918 Obispo Street
Guadalupe, CA 93434

To Contractor:

Notice shall be deemed effective on the date personally delivered or transmitted by facsimile or, if mailed, three (3) days after deposit of the same in the custody of the United States Postal Service.

Section 24. Authority to Execute. The person or persons executing this Agreement on behalf of the Contractor represents and warrants that they have the authority to so execute this Agreement and to bind Contractor to the performance of its obligations hereunder.

Section 25. Binding Effect. This Agreement shall be binding upon the heirs, executors, administrators, successors and assigns of the parties.

Section 26. Modification of Agreement. No amendment to or modification of this Agreement shall be valid unless made in writing and approved by the Contractor and by the City Council. The parties agree that this requirement for written modifications cannot be waived and that any attempted waiver shall be void.

Section 27. Waiver. Waiver by any party to this Agreement of any term, condition or covenant of this Agreement shall not constitute a waiver of any other term, condition or covenant. Waiver by any party of any breach of the provisions of this Agreement shall not constitute a waiver of any other provision, nor a waiver of any subsequent breach or violation of any provision of this Agreement. Acceptance by City of any work or services by Contractor shall not constitute a waiver of any provisions of this Agreement.

Section 28. Law to Govern; Venue. This Agreement shall be interpreted, construed and governed according to the laws of the State of California. In the event of litigation between the parties, venue in state trial courts shall lie exclusively in the County of Santa Barbara. In the event of litigation in a U.S. District Court, venue shall lie exclusively in the Central District of California, in Los Angeles.

Section 29. Attorney's Fees, Costs and Expenses. In the event litigation or other proceeding is required to enforce or interpret any provision of this Agreement, the prevailing party in such litigation or other proceeding shall be entitled to any award of reasonable attorney's fees, costs and expenses, in addition to any other relief to which it may be entitled.

Section 30. Entire Agreement. This Agreement, including the attached exhibits, is the entire, complete, final and exclusive expression of the parties with respect to the matters addressed therein and supersedes all other agreements or understandings, whether oral or written, or entered into between Contractor and City prior to the execution of this Agreement. No statements, representations or other agreements, whether oral or written, made by any party which are not embodied herein shall be valid and binding. No amendment to this Agreement shall be valid and binding unless in writing duly executed by the parties or their authorized representatives.

Section 31. Severability. If a term, condition or covenant of this Agreement is declared or determined by any court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions of this Agreement shall not be affected thereby, and the Agreement shall be read and construed without the invalid, void or unenforceable provision(s).

Section 32. Preparation of Agreement. This Agreement is the product of negotiation and preparation by and among the parties and their respective attorneys. The parties, therefore, expressly acknowledge and agree that this Agreement shall not be deemed prepared or drafted by one party or another, or any party's attorney, and will be construed accordingly.

CITY:

CITY OF GUADALUPE

By:_____
Ariston Julian, Mayor

APPROVED AS TO FORM:

_____
Philip Sinco, City Attorney

CONTRACTOR:

By:_____

Title:_____

By:_____

Title:_____

SPECIAL PROVISIONS

SECTION 1
SPECIFICATIONS AND PLANS

1-1 SPECIFICATIONS AND PLANS.

The work embraced herein shall be done in accordance with the Standard Specifications dated 2018, the Standard Plans dated 2018, of the State of California, Department of Transportation (Caltrans), and the City of Santa Maria Standard Specifications and Standard Plans (adopted by the City of Guadalupe on June 23, 2009, pursuant to Resolution No. 2009-24), insofar as the same may apply and in accordance with the Plans and Special Provisions.

In case of conflict between the Standard Specifications and these special provisions, these special provisions shall take precedence over and be used in lieu of such conflicting portions.

Any discrepancies found between the Plans and specifications and site conditions or any inconsistencies or ambiguities in the Plans or specifications shall be immediately reported to the Engineer in writing, who shall promptly correct such inconsistencies or ambiguities in writing. Work done by the Contractor after his discovery of such discrepancies, inconsistencies, or ambiguities shall be done at the Contractor's risk.

1-2 DEFINITIONS AND TERMS.

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

A. **Bid**. An offer to furnish the necessary services and materials to perform the work called for by the Contract Documents.

B. **Bidder**. Any individual, firm or corporation submitting a proposal for the work contemplated, acting directly or through a duly authorized representative.

C. **Proposal**. The offer of the Bidder for the Work when made out and submitted on the prescribed Proposal Form, properly signed and guaranteed.

D. **Proposal Guaranty**. The cash, check or Bidder's Bond accompanying the Proposal submitted by the Bidder as a guarantee that the Bidder will enter into a Contract with the City for the construction of the Work if awarded to him.

E. **Work**. All work specified, indicated, shown or contemplated in the Contract to construct the improvements, including all alterations, amendments or extensions thereto made by Change Orders or other written orders by the City Engineer.

F. **City**. The City of Guadalupe, California, as created by law, and its authorized representatives.

G. **Contract**. Written and executed contract between the City and the Contractor.

H. **Contract Documents**. The Notice to Bidders, Proposal, Bid Sheet(s), Certification of Affirmative Action Program, Contractor's Licensing Statement, List of Subcontractors, Bid Security, Non-Collusion Affidavit, Agreement, Faithful Performance Bond, Labor and Materials Bond, Maintenance Bond, Worker's Compensation Certificate, Notice of Award, Notice to Proceed, Plans and Special Provisions, any addenda and bulletins issued during the bidding period, and all Change Orders amending or extending the work contemplated and which may be required to complete the work in a substantial and acceptable manner.

I. **Plans**. The official plans, typical cross-sections, general cross-sections, working drawings and supplemental drawings, or reproductions thereof, approved by the City Engineer, which show the location, character, dimensions and details of the work to be done, and which are to be considered as a part of the Contract supplementary to the Special Provisions.

J. **Special Provisions**. The Special Provisions are specific clauses setting forth conditions or requirements peculiar to the particular work called for by the Plans.

K. **City Standard Specifications and Drawings**. Where reference is made to the City Standard Specifications and Drawings, the reference shall be to the City of Santa Maria Public Works Department Standard Specifications and Drawings (adopted by the City of Guadalupe on June 23, 2009, pursuant to Resolution No. 2009-24).

L. **Standard Specifications**. Where reference is made to the Standard Specifications, the reference shall be to the State of California Department of Transportation Standard Specifications, 2018, or the latest edition thereof.

M. **Standard Plans**. Where reference is made to the Standard Plans, the reference shall be to the State of California Department of Transportation Standard Plans, 2018, or the latest edition thereof.

N. **Days**. Unless otherwise designated, days as used in the Contract Documents will be understood to mean working days.

O. **Liquidated Damages**. The amount prescribed in the Specifications to be paid to the City, or to be deducted from any payments due or to become due Contractor, for each day's delay in completing the Work beyond the time allowed in the Specifications.

P. **City Engineer**. The City Engineer of the City of Guadalupe, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties delegated to them.

Q. **Inspector**. An authorized representative of the City of Guadalupe assigned by the City to make inspection of work performed or material supplied by Contractor.

R. **Superintendent**. The executive representative of Contractor present on the work at all times during progress, authorized to receive and fulfill instructions from the City Engineer.

S. **Design Engineer**. That individual or firm responsible for the design of the project, when the design is not by the City Engineer.

T. **Legal Holidays**.

January 1 (New Year's Day)
Third Monday in January (Martin Luther King Day)
Third Monday in February (Presidents' Day)
Last Monday in May (Memorial Day)
July 4 (Independence Day)
First Monday in September (Labor Day)
November 11 (Veterans' Day)
Thanksgiving Day
Friday following Thanksgiving Day
December 24 (Christmas Eve)
December 25 (Christmas Day)

Any public holiday(s) which the President, Governor, or City Council of the City of Guadalupe may proclaim. When a holiday falls on a Saturday, the preceding Friday shall be observed. When a holiday falls on a Sunday, the following Monday shall be observed.

Where State Agencies, State Departments or State Officers are referred to in the above-mentioned Standard Specifications and Standard Plans, the comparable City Agency, City Department or City Officer shall be meant thereby for the purposes of these Contract Documents. In particular, intent and meaning shall be interpreted as follows:

STATE, OR COUNTY OR STATE OF CALIFORNIA.....	CITY OF GUADALUPE
DEPARTMENT OR DEPARTMENT OF TRANSPORTATION.....	CITY COUNCIL CITY OF GUADALUPE
DIRECTOR OR DIRECTOR OF TRANSPORTATION.....	DIRECTOR OF PUBLIC WORKS EITHER DIRECTLY OR THROUGH PROPERLY AUTHORIZED AGENT AND CONSULTANTS
ATTORNEY GENERAL	CITY ATTORNEY, CITY OF GUADALUPE

SECTION 2
PROPOSAL REQUIREMENTS AND CONDITIONS

2-1 CONTENTS OF PROPOSAL FORMS.

Prospective bidders will be furnished with proposal forms, bound together with this Project Manual, which will refer to the Specifications and Plans for the work to be done.

2-2 EXAMINATION OF PLANS, SPECIFICATIONS, CONTRACT, AND SITE OF WORK.

The bidder shall examine carefully the site of the work contemplated, The Plans and Specifications, and the Proposal and Contract forms.. The submission of a bid shall be conclusive evidence that the bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and scope of work to be performed, and as to the requirements of the Contract Documents.

(a) Where the City has made investigations of site conditions, including subsurface conditions in areas where work is to be performed under the Contract, or in other areas, some of which may constitute possible local material sources, bidders or contractors may, upon written request, inspect the records of the City as to those investigations subject to and upon the conditions hereinafter set forth. The investigations are made only for the purpose of study and design.

(b) Where there has been prior construction by the City or other public agencies within the project limits, records of the prior construction that are currently in the possession of the City and which have been used by, or are known to, the designers and administrators of the Project will be made available for inspection by bidders or contractors, upon written request, subject to the conditions hereinafter set forth. The records may include, but are not limited to, as-built drawings, design calculations, foundation and site studies, Project reports and other data assembled in connection with the investigation, design, construction and maintenance of the prior projects.

(c) Inspection of the records of investigations and Project records may be made at the office of the City Engineer. The records of investigations and Project records are not a part of the Contract and are available solely for the convenience of the bidder or contractor. It is expressly understood and agreed that the City assumes no responsibility whatsoever in respect to the sufficiency or accuracy of the investigations thus made, the records thereof, or of Project records, or of the interpretations set forth therein or made by the City in its use thereof and there is no warranty or guaranty, either express or implied, that the conditions indicated by the investigations or records are representative of those existing in or throughout those areas, or any part thereof, or that unlooked-for developments may not occur, or that materials other than, or in proportions different from those indicated, may not be encountered.

(d) In some instances, information considered by the City to be of possible interest to bidders or contractors has been compiled as “Materials Information.” The “Materials Information” is not a part of the Contract and is furnished solely for the convenience of bidders or contractors. It is understood and agreed that the fact that the City has compiled information as “Materials Information” and has exhibited or furnished to the bidders or contractors the “Materials Information” shall not be construed as a warranty or guaranty, express or implied, as to the completeness or accuracy of the compilations and the use of the “Materials Information” shall be subject to all of the conditions and limitations set forth herein.

(e) When contour maps were used in the design of the Project, the bidders may inspect those maps, and if available, they may obtain copies for their use.

(f) The availability or use of information described herein is not to be construed in any way as a waiver of the provisions of the first paragraph in this Section 2. and a bidder or contractor is cautioned to make any independent investigation and examination as they deem necessary to be satisfied as to conditions to be encountered in the performance of the work and, with respect to possible local material sources, the quality

and quantity of material available from the property and the type and extent of processing that may be required in order to produce material conforming to the requirements of the Specifications.

(g) No information derived from the inspection of investigations or compilation thereof made by the City or from the Architect, or the Architect's assistants, will in any way relieve the bidder or contractor from any risk or from properly fulfilling the terms of the Contract.

2-3 APPROXIMATE ESTIMATE.

The quantities given in the proposal and contract are approximate only, being given as a basis for the comparison of bids. The City does not, expressly or by implication, agree that the actual amount of work will correspond therewith, and reserves the right to increase or decrease the amount of any class or portion of the work, or to omit portions of the work, as may be deemed necessary or advisable by the Engineer.

2-4 PROPOSAL FORMS.

The City will furnish to each bidder a standard proposal form, which, when filled out and executed may be submitted as that bidder's bid. Bids not presented on forms so furnished, and copies or facsimiles of the bidder's completed and executed proposal forms submitted, as a bid will be rejected.

All proposal forms shall be obtained from the office of the Building Department, City of Guadalupe, 918 Obispo Street, Guadalupe, California 93434 as designated in the Notice to Contractors.

2-5 PREPARATION AND SUBMISSION OF BIDS.

(a) All Bids shall be submitted on the City furnished proposal forms. The proposal shall be submitted as directed in the Notice to Contractors under sealed cover plainly marked as a proposal and identifying the project to which the proposal relates and the date of the bid opening therefor. Proposals that are not properly marked may be disregarded.

(b) All bid Items and statements shall be properly filled out. The proposal shall set forth the item prices and totals, in clearly legible figures, in the respective spaces provided, and shall be signed by the bidder in longhand, who shall fill out all blanks in the proposal form as therein required.

(c) Bids shall not contain any recapitulations of the Work. Alternative Bids will not be received or considered unless required by the Contract Documents. No oral, telegraphic, or telephonic Proposals or modifications will be considered.

(d) Each Bid shall be accompanied by the prescribed bid and other required documents.

(e) Delivery of Bids shall comply with the Notice to Contractors as to place, date, and time. Bids and bid security shall be enclosed in a sealed opaque envelope bearing the title of the Work and the name of the bidder.

(f) Prices, wording, and notations must be in ink or typewritten. No erasures will be permitted. Mistakes may be crossed out and corrections typed or written in ink adjacent thereto and must be initialed in ink by the person or persons signing the Bid.

2-6 INTERPRETATIONS.

Should any bidder find discrepancies or omissions in the Contract Documents, or if there should be doubt as to the true meaning of any part thereof, the bidder shall at once submit a written request for correction, clarification, or interpretation to the City Engineer. Such requests shall be submitted at least six days prior to the date fixed for the opening of Bids.

(a) If the City determines the Contract Documents require changes, correction, clarification, or interpretation prior to the receipt of Bids, an appropriate bulletin or Addendum will be issued. All addenda so issued shall become part of the Contract Documents.

(b) The City, its officers, employees, and agents shall not be responsible for any changes, instructions, clarifications, interpretations, or other information pertaining to the Contract Documents given to bidders during the bidding period in any manner other than written addenda.

2-7 REQUIRED LISTING OF PROPOSED SUBCONTRACTORS.

Each Proposal shall have listed therein the name and address of each subcontractor to whom the bidder proposes to subcontract portions of the work in an amount in excess of one-half of one percent of the total bid or $10,000, whichever is greater, in accordance with the Subletting and Subcontracting Fair Practices Act, commencing with Section 4100 of the Public Contract Code. The bidder's attention is invited to other provisions of the Act related to the imposition of penalties for a failure to observe its provisions by using unauthorized subcontractors or by making unauthorized substitutions.

(a) A sheet for listing the subcontractors, as required herein, is included in the "Proposal" book.

2-8 DESIGN ENGINEERS MAY NOT BID ON CONSTRUCTION CONTRACT.

No engineering or architectural firm that has provided design services for a project shall be eligible to submit a Proposal for the Contract to construct the Project nor to subcontract for any portion of the work. The ineligible firms include the prime contractor for design, subcontractors of portions of the design, and affiliates of either. An affiliate is a firm that is subject to the control of the same persons, through joint ownership or otherwise.

2-9 REJECTION OF PROPOSALS.

Proposals may be rejected if they have been transferred to another bidder, or if they show any alteration of form, additions not called for, conditional bids, incomplete bids, erasures, or irregularities of any kind.

(a) When Proposals are signed by an agent, other than the officer or officers of a corporation authorized to sign contracts on its behalf or a member of a partnership, a "Power of Attorney" must be on file with the City prior to opening bids or shall be submitted with the Proposal; otherwise, the Proposal may be rejected as irregular and unauthorized.

2-10 PROPOSAL GUARANTY.

All bids shall be presented under sealed cover and accompanied by one of the following forms of bidder's security:

(a) Cash, a cashier's check, a certified check, or a bidder's bond executed by an admitted surety insurer, made payable to the City of Guadalupe.

(b) The security shall be in an amount equal to at least 10 percent of the amount bid. A bid will not be considered unless one of the forms of bidder's security is enclosed with it.

(c) The contractor shall use the bidder's bond form found in this Project Manual when bidding on the project. The bidder's bond form shall be properly filled out and executed. (Note: this form may be reproduced for transmittal to the surety for execution and attached to the front of the original bid bond form.)

(d) Surety shall be listed in the Current Insurance Organizations Authorized By The Insurance Commissioner To Transact Business Of Insurance In The State Of California published by the Department of Insurance, State of California, or successor publication.

2-11 WITHDRAWAL OF PROPOSALS.

Any bid may be withdrawn at any time prior to the date and time fixed for the opening of bids only by written request for the withdrawal of the bid filed at the location at which the City received the bid. The request shall be executed by the bidder or the bidder's duly authorized representative. The withdrawal of a bid does not prejudice the right of the bidder to file a new bid. Whether or not bids are opened exactly at the time fixed for opening bids, a bid will not be received after that time, nor may any bid be withdrawn after the time fixed for the opening of bids.

2-12 PUBLIC OPENING OF PROPOSALS.

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

2-13 RELIEF OF BIDDERS.

Attention is directed to the provisions of Public Contract Code Sections 5100 to 5107, inclusive, concerning relief of bidders and in particular to the requirement therein, that if the bidder claims a mistake was made in the bid presented, the bidder shall give the City written notice within five (5) working days (excluding Saturdays, Sundays, and state holidays) after the opening of the bids of the alleged mistake, specifying in the notice in detail how the mistake occurred.

2-14 DISQUALIFICATION OF BIDDERS.

More than one Proposal from an individual, firm, partnership, corporation, or combination thereof under the same or different names will not be considered. Reasonable grounds for believing that any individual, firm, partnership, corporation or combination thereof is interested in more than one Proposal for the work contemplated may cause the rejection of all Proposals in which that individual, firm, partnership, corporation or combination thereof is interested. If there is reason for believing that collusion exists among the bidders any or all Proposals may be rejected. Proposals in which the prices obviously are unbalanced may be rejected.

2-15 MATERIAL GUARANTY.

The successful bidder may be required to furnish a written guaranty covering certain items of work for varying periods of time from the date of acceptance of the Contract. The work to be guaranteed, the form, and the time limit of the guaranty will be specified in The Specifications. The guaranty shall be signed and delivered to the City of Guadalupe before acceptance of the Contract. Upon completion of the Contract the amounts of the 2 Contract bonds required in Article B, Paragraph 2, “Contract Bonds,” may be reduced to conform to the total amount of the Contract bid prices for the work to be guaranteed, and this amount shall continue in full force and effect for the duration of the guaranty period. The payment bond shall not be reduced until the expiration of the time required by Section 3249 of the Civil Code.

2-16 ADDENDA AND BULLETINS.

Full consideration shall be given to all addenda in the preparation of Bids, as addenda form a part of the Contract Documents. Bidders shall verify the number of addenda issued, if any, and acknowledge the receipt of all addenda by filling in the Addendum number in the space provided on the signature page of the Proposal. Failure to so acknowledge may cause the Bid to be rejected as not responsive.

(a) The City may issue bulletins to advise bidders of changed requirements. All bulletins shall be incorporated into or confirmed by subsequent addenda. Such addenda may modify previously issued bulletins.

2-17 QUALIFICATIONS OF BIDDERS.

(a) All bidders must be currently licensed as contractors according to the laws of the State and legal jurisdiction of the place where the Work is located before contract award. All bidders are required to complete the Contractor's Licensing Statement included with the proposal forms.

(b) No person, organization, or corporation is allowed to make, submit, or be interested in more than one Bid for the Work unless in a sub contractual relationship with respect to the Bids or unless Alternative Bids are required. A person, organization, or corporation submitting sub-Proposals or quoting prices or materials to bidders is not prevented from submitting a Bid for the entire Work.

2-18 TRADE NAMES AND ALTERNATIVES.

Requests for any “or equal” substitutions regarding a material, product, thing, or service shall be made in writing before contract award. After submitting a substitution request, the contractor shall have ten (10) days for the submission of data substantiating the request for substitution per section 6-1.05 of the Standard Specifications. All “or equal” substitutions shall be approved in writing.

SECTION 3
AWARD & EXECUTION OF CONTRACT

3-1 AWARD OF CONTRACT.

The right is reserved to reject any and all proposals. The award of the contract, if it be awarded, will be to the lowest responsible bidder whose proposal complies with all the requirements prescribed. Bids will be compared by the Total Mathematical Bid as determined by the Engineer. The Total Mathematical Bid is the summation of all required bid items, excluding bid alternates. Bid items are calculated by multiplying the Engineers Estimate quantities by the unit bid prices. In the case of a discrepancy between the Total Mathematical Bid and the total bid written, the Total Mathematical Bid shall govern.

The award of the bid, if made, will be made within 35 days after the opening of the Proposal and reviewing all "or equal" requests for substitutions. This period will be subject to extension for such further period as may be agreed upon in writing between the City and the bidder concerned.

3-2 EXECUTION OF CONTRACT.

The contract shall be signed by the successful bidder and returned, together with the contract bonds, public liability and property damage insurance, and all other documentation required by the Contract Documents, within 15 days after the bidder has received the contract for execution.

3-3 CONTRACT BONDS.

The successful bidder shall furnish, at the time of execution of the contract for work, and at his/her own expense, the two (2) bonds required by the State Contract Act. One bond shall secure the payment of the claims of laborers, mechanics, or material men employed on the work under the contract. The other bond shall guarantee the faithful performance of the contract. Sureties on each of said bonds shall be satisfactory to the City Attorney.

(a) Each of the two (2) bonds shall be in a sum equal to at least one hundred percent (100%) of the contract price.

(b) All alterations, extensions of time, extra and additional work, and other changes authorized by the Contract Documents may be made without securing the consent of the surety or sureties on the contract bonds.

3-4 PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE.

CONTRACTOR shall procure and maintain for the duration of the Contract insurance against claims for injuries to persons or damages to property that may arise from or in connection with the performance of the work hereunder by the CONTRACTOR, his agents, representatives, employees, and subcontractors. Additional insurance requirements are set forth in Section 16 of the Sampel Agreement for Contractor Services CONTRACTOR must maintain general liability and umbrella or excess liability insurance for as long as there is a statutory exposure to completed operations claims. AGENCY and its officers, officials, employees, and agents shall continue as additional insureds under such policies.

(a) Coverage shall be at least as broad as:
   i. Insurance Services Office Commercial General Liability coverage (occurrence from CG 0001).

   ii. Insurance Services Office Business Auto Coverage form number CA 0001, code 1 (any auto).

   iii. Workers Compensation insurance as required by the State of California and Employer's Liability Insurance.

(b) Contractor shall maintain limits not less than:
General liability insurance: CONTRACTOR shall maintain commercial general liability insurance with coverage at least as broad as Insurance Services Office form CG 00 01, in an amount not less than $3,000,000 per occurrence, $6,000,000 general aggregate, for bodily injury, personal injury, and property damage, and a $6,000,000 completed operations aggregate. The policy must include contractual liability that has not been amended. Any endorsement restricting standard ISO "insured contract" language will not be accepted.

Automobile liability insurance: CONTRACTOR shall maintain automobile insurance at least as broad as Insurance Services Office form CA 00 01 covering bodily injury and property damage for all activities of the CONTRACTOR arising out of or in connection with Work to be performed under this Agreement, including coverage for any owned, hired, non-owned or rented vehicles, in an amount not less than $1,000,000 combined single limit for each accident. Employer's Liability: $1,000,000 per accident for bodily injury or disease.

Umbrella or excess liability insurance: CONTRACTOR shall obtain and maintain an umbrella or excess liability insurance that will provide bodily injury, personal injury and property damage liability coverage at least as broad as the primary coverages set forth above, including commercial general liability, automobile liability, and employer's liability. Such policy or policies shall include the following terms and conditions:

- A drop-down feature requiring the policy to respond in the event that any primary insurance that would otherwise have applied proves to be uncollectable in whole or in part for any reason;

- Pay on behalf of wording as opposed to reimbursement;

- Concurrency of effective dates with primary policies;

- Policies shall "follow form" to the underlying primary policies; and

- Insureds under primary policies shall also be insureds under the umbrella or excess policies.

(c) Deductibles: Any deductibles or self-insured retentions must be declared to and approved by the City. At the option of the City, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the City, its trustees, officers, employees and volunteers; or the Contractor shall provide a financial guarantee satisfactory to the City guaranteeing payment of losses and related investigations, claim administration and defense expenses.

(d) The general liability and automobile liability policies are to contain, or be endorsed to contain, the following provisions:

i. Additional Insured Status: policies shall provide or be endorsed to provide that the City and its officers, officials, employees, agents, and volunteers shall be additional insureds under such policies. This provision shall also apply to any excess/umbrella liability policies.

ii. Primary/Noncontributing: Coverage provided by CONTRACTOR shall be primary and any insurance or self-insurance procured or maintained by AGENCY shall not be required to contribute with it. The limits of insurance required herein may be satisfied by a combination of primary and umbrella or excess insurance. Any umbrella or excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and non-contributory basis for the benefit of AGENCY before the AGENCY's own insurance or self-insurance shall be called upon to protect it as a named insured.

iii. Notice of cancellation: CONTRACTOR agrees to oblige its insurance agent or broker and insurers to provide to AGENCY with a thirty (30) day notice of cancellation (except for nonpayment for which a ten (10) day notice is required) or nonrenewal of coverage for each required coverage.

iv. Waiver of Subrogation: All insurance coverage maintained or procured pursuant to this agreement shall be endorsed to waive subrogation against AGENCY, its elected or appointed officers, agents, officials, employees and volunteers or shall specifically allow CONTRACTOR or others providing insurance evidence in compliance with these specifications to waive their right of recovery prior to a loss. CONTRACTOR hereby waives its own right of recovery against AGENCY, and shall require similar written express waivers and insurance clauses from each of its subconsultants.

(e) Acceptable Insurers: All insurance policies shall be issued by an insurance company currently authorized by the Insurance Commissioner to transact business of insurance or is on the List of Approved Surplus Line Insurers in the State of California, with an assigned policyholders' Rating of A- (or higher) and Financial Size Category Class VII (or larger) in accordance with the latest edition of Best's Key Rating Guide, unless otherwise approved by the AGENCY's risk manager

(f) Evidence of Coverage: CONTRACTOR shall provide certificates of insurance to AGENCY as evidence of the insurance coverage required herein. Insurance certificates and endorsements must be approved by AGENCY's risk manager prior to commencement of performance. Current certification of insurance shall be kept on file with AGENCY at all times during the term of this contract. AGENCY reserves the right to require complete, certified copies of all required insurance policies, at any time.

(g) Subcontractors Covered: Contractor shall include all subcontractors as insured under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverage and limits for subcontractors shall be subject to all the requirements stated herein.

(h) Products/Completed Operations: Coverage shall extend a minimum of three (3) years after project completion. Coverage shall be included on behalf of the insured for covered claims arising out of the actions of independent contractors. If the insured is using subcontractors, the Policy must include work performed "by or on behalf" of the insured. Policy shall contain no language that would invalidate or remove the insurer's duty to defend or indemnify for claims or suits expressly excluded from coverage. Policy shall specifically provide for a duty to defend on the part of the insurer. The AGENCY, its officials, officers, agents, and employees, shall be included as additional insureds under the Products and Completed Operations coverage.

(i) Agency's Rights of Enforcement: In the event any policy of insurance required under this Agreement does not comply with these requirements or is canceled and not replaced, AGENCY has the right but not the duty to obtain the insurance it deems necessary and any premium paid by AGENCY will be promptly reimbursed by CONTRACTOR or AGENCY will withhold amounts sufficient to pay premium from CONTRACTOR payments. In the alternative, AGENCY may cancel this Agreement.

(j) Enforcement of Contract Provisions (non estoppel): CONTRACTOR acknowledges and agrees that any actual or alleged failure on the part of the AGENCY to inform CONTRACTOR of non-compliance with any requirement imposes no additional obligations on the AGENCY nor does it waive any rights hereunder.

(k) Requirements not Limiting: Requirements of specific coverage features or limits contained in this Section are not intended as a limitation on coverage, limits or other requirements, or a waiver of any coverage normally provided by any insurance. Specific reference to a given coverage feature is for purposes of clarification only as it pertains to a given issue and is not intended by any party or insured to be all inclusive, or to the exclusion of other coverage, or a waiver of any type. If the CONTRACTOR maintains higher limits than the minimums shown above, the AGENCY requires and shall be entitled to coverage for the 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 AGENCY.

(l) Prohibition of Undisclosed Coverage Limitations: None of the coverages required herein will be in compliance with these requirements if they include any limiting endorsement of any kind that has not been first submitted to AGENCY and approved of in writing.

(m) Separation of Insureds: A severability of interests provision must apply for all additional insureds ensuring that CONTRACTOR's insurance shall apply separately to each insured against whom claim is made or suit

is brought, except with respect to the insurer's limits of liability. The policy(ies) shall not contain any cross-liability exclusions.

(n) Pass Through Clause. CONTRACTOR agrees to ensure that its subconsultants, subcontractors, and any other party involved with the project who is brought onto or involved in the project by CONTRACTOR, provide the same minimum insurance coverage and endorsements required of CONTRACTOR. CONTRACTOR agrees to monitor and review all such coverage and assumes all responsibility for ensuring that such coverage is provided in conformity with the requirements of this section. CONTRACTOR agrees that upon request, all agreements with consultants, subcontractors, and others engaged in the project will be submitted to AGENCY for review.

(o) Agency's Right to Revise Requirements: The AGENCY reserves the right at any time during the term of the contract to change the amounts and types of insurance required by giving the CONTRACTOR a ninety (90) day advance written notice of such change. If such change results in substantial additional cost to the CONTRACTOR, the AGENCY and CONTRACTOR may renegotiate CONTRACTOR's compensation.

(p) Self-insured Retentions: Any self-insured retentions must be declared to and approved by AGENCY. AGENCY reserves the right to require that self-insured retentions be eliminated, lowered, or replaced by a deductible. Self-insurance will not be considered to comply with these specifications unless approved by AGENCY.

(q) Timely Notice of Claims: CONTRACTOR shall give AGENCY prompt and timely notice of claims made or suits instituted that arise out of or result from CONTRACTOR's performance under this Agreement, and that involve or may involve coverage under any of the required liability policies.

(r) Additional Insurance: CONTRACTOR shall also procure and maintain, at its own cost and expense, any additional kinds of insurance, which in its own judgment may be necessary for its proper protection and prosecution of the Work.

3-5 FAILURE TO EXECUTE CONTRACT.

Failure of the lowest responsible bidder, the second lowest responsible bidder, or the third lowest responsible bidder to execute the contract and file acceptable bonds as provided herein within ten (10) days, not including Saturdays, Sundays and legal holidays, after that bidder has received the contract for execution shall be just cause for the forfeiture of the Proposal guaranty. The successful bidder may file with the City Clerk a written notice, signed by the bidder or the bidder's authorized representative, specifying that the bidder will refuse to execute the contract if it is presented. The filing of this notice shall have the same force and effect as the failure of the bidder to execute the contract and furnish acceptable bonds within the time hereinbefore prescribed.

3-6 RETURN OF PROPOSAL GUARANTEES.

The Proposal guaranties accompanying the Proposals of the first, second and third lowest responsible bidders will be retained until the contract has been finally executed, after which those Proposal guaranties, except bidders' bonds and any guaranties which have been forfeited, will be returned to the respective bidders whose Proposals they accompany. The Proposal guaranties, other than bidder's bonds, submitted by all other unsuccessful bidders will be returned upon determination, by the City, of the first, second and third lowest responsible bidders.

3-7 BIDDING PROTECT PROCEDURES

A. Time for submitting Protests

1. A protest regarding bidding documents shall be submitted in writing by the protesting bidder to the City so that the protest is received five (5) days before the day scheduled for bid opening.

2. A protest regarding bid opening procedures, bids, of the selection of the successful bidder shall be

submitted in writing, by the protesting bidder to the City, so that the protest is received within seven (7) days after bid opening.

B. Protests shall include a clear detail of the reason for the protest and the remedies sought by the bidder submitting the protest.

C. The City will issue a response within twenty (20) days after receipt of protest.

SECTION 4
PROSECUTION, PROGRESS, AND ACCEPTANCE OF THE WORK

4-1 GENERAL.

Attention is directed to the provisions in Section 8, “Prosecution and Progress” of the Standard Specifications, and these special provisions

4-2 COMMENCEMENT OF WORK.

The Contractor shall begin work within ten (10) working days after the date of the Notice to Proceed. This work shall be diligently prosecuted to completion before the expiration of the Time of Contract shown on the cover of the Project Manual.

The Contractor shall notify the Engineer, in writing, of the Contractor’s intent to begin work at least 72 hours before work is begun. The notice shall be delivered to the Engineer and shall specify the date the Contractor intends to start.

4-3 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 within the number of working days expressed in the contract, 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 of and by reason of the delay; and it is therefore agreed that the Contractor will pay to the City, the sum of **$1,000.00 per day**, for each and every calendar day delay in finishing the work in excess of the number of working days prescribed above; and the Contractor agrees to pay the liquidated damages herein provided for, and further agrees that the City may deduct the amount thereof from any moneys 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 number of working days specified, the Engineer shall have the right to increase the number of working days or not, as the Engineer may deem best to serve the interest of the City, and if the Engineer decides to increase the number of working days, the Engineer shall further have the right to charge to the Contractor, or the Contractor’s heirs, assigns or sureties and to deduct from the final payment for the work all or any part, as the Engineer 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 the extension, except that cost of final surveys and preparation of final estimate shall not be included in the charges.

No extension of time will be granted for a delay caused by a shortage of materials unless the Contractor furnishes to the Engineer documentary proof that the Contractor has made every effort to obtain the materials from all known sources within reasonable reach of the work in a diligent and timely manner, and further proof in the form of supplementary progress schedules, that the inability to obtain the materials when originally planned, did in fact cause a delay in final completion of the entire work which could not be compensated for by revising the sequence of the Contractor’s operations. The term “shortage of materials,” as used in this section, shall apply only to materials, articles, parts or equipment that are standard items and are to be incorporated in the work. The term “shortage of materials,” shall not apply to materials, parts, articles or equipment that are processed, made, constructed, fabricated or manufactured to meet the specific requirements of the contract. Only the physical shortage of material will be considered under these provisions as a cause for extension of time. Delays in obtaining materials due to priority in filling orders will not constitute a shortage of materials.

If the Contractor is delayed in completion of the work by reason of changes made under Section 5, “Control of the Work,” of the Standard Specifications, or by any act of the Engineer or of the City, not contemplated by the contract, an extension of time commensurate with the delay in completion of the work thus caused will be granted and the Contractor shall be relieved from any claim for liquidated damages, or engineering and inspection charges or other

penalties for the period covered by that extension of time; provided that the Contractor shall notify the Engineer in writing of the causes of delay within 15 days from the beginning of the delay. The Engineer shall ascertain the facts and the extent of the delay, and the Engineer's findings thereon shall be final and conclusive.

It is the intention of the above provisions that the Contractor shall not be relieved of liability for liquidated damages or engineering and inspection charges for any period of delay in completion of the work in excess of that expressly provided for in this Section 4-3.

4-4 PRE-CONSTRUCTION CONFERENCE.

Prior to the issuance of the Notice to Proceed, a pre-construction conference may be held at the discretion of the City Engineer at Guadalupe City Hall for the purpose of discussing with the Contractor the scope of work, Plans, Specifications, existing conditions, materials to be ordered, equipment to be used, and all essential matters pertaining to the prosecution of and the satisfactory completion of the project as required. The Contractor's representative at this conference shall include all major superintendents for the work and may include major sub-contractors.

4-5 PROGRESS SCHEDULE

The Contractor shall submit a detailed CPM schedule to the Engineer one week before the Pre-Construction Meeting. The Contractor shall make revisions as required by the Engineer. Upon acceptance by the Engineer the schedule will become the accepted Construction Schedule. An accepted schedule is required before work may proceed. The schedule shall show the Work spread over the entire contract time available for construction.

The Contractor shall revise and update the Construction Schedule on or before the twentieth of each month showing the status of work actually completed during the preceding estimate period. The Contractor shall submit to the Engineer one (1) printed copy of the revised Construction Schedule with his/her monthly progress payment request for that period. The schedule shall indicate the controlling items of work for each phase of the project. Preparation and updating of Construction Schedule shall be performed at Contractor's sole expense.

Failure by the Contractor to submit updated or revised Construction Schedules when required may prevent acceptance of progress payment requests by the Engineer until such updated or revised Construction Schedules have been submitted for review and have been accepted by the Engineer.

If the Contractor has fallen behind the accepted Construction Schedule by more than fifteen (15) percentage points based on earned progress payments, the Contractor shall take steps, including, but not limited to, increasing the number of personnel, shifts, and/or overtime operations, days of work, and/or amount of construction equipment until such time as the Work is back on schedule. He/she shall also submit for review no later than the next request for partial payment, such supplementary schedule or schedules as may be deemed necessary to demonstrate the manner in which the rate of progress will be regained. All cost required to bring the Project back on schedule shall be borne by the Contractor without additional cost to the Agency.

If the Contractor falls behind the accepted construction schedule, as modified by such time extensions as may have been granted by the City for unavoidable delays, by more than thirty-five (35) percentage points based on earned progress payments, he/she shall be deemed in material breach of Contract and the Work may be turned over to the surety for completion within the scheduled time.

4-6 DISPUTES AND CLAIMS

GENERAL

Any and all decisions made on appeal pursuant to this Subsection 4-6 shall be in writing. Any "decision" purportedly made pursuant to this Subsection 4-6 which is not in writing shall not be binding upon the Agency and should not be relied upon the Contractor.

Nothing in this subsection shall be considered as relieving the Contractor from his duty to file the notice required under this Subsection or other duties required by the contract documents.

NOTICE OF POTENTIAL CLAIM

The Contractor shall not be entitled to the payment of any additional compensation for any cause, including any act, or failure to act, by the Engineer, or the happening of any event, thing or occurrence, unless he shall have given the Engineer due written notice of potential claim as hereinafter specified, provided, however, that compliance with this Subsection shall not be a prerequisite as to any claim which is based on differences in measurements or errors of computation as to contract quantities.

The written notice of potential claim shall set forth the reasons for which the Contractor believes additional compensation will or may be due, the nature of the costs involved, and, insofar as possible, the amount of the potential claim. The said notice as above required must have been given to the Engineer prior to the time that the Contractor shall have performed the work giving rise to the potential claim for additional compensation, if based on an act or for additional compensation, if based on an act or failure to act by the Engineer, or in all other cases within 15 days after the happening of the event, thing or occurrence giving rise to the potential claim.

It is the intention of this Subsection that differences between the parties arising under and by the virtue of the contract be brought to the attention of the Engineer at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action promptly taken. The Contractor hereby agrees that he shall have no right to additional compensation for any claim that may be based on any such act, failure to act, event, thing or occurrence for which no written notice of potential claim as herein required was filed.

SECTION 5 (Not Used)

SECTION 6
ADDITIONAL PROVISIONS AND NOTICES REQUIRED BY STATE LAW

6-1 GENERAL.

This section contains additional provisions and notices required to be included in contracts for public works projects entered into by the City that are not covered in other sections of these special provisions.

6-2 WORKING HOURS.

The Contractor shall comply with all applicable provisions of Section 1810 to 1815, inclusive, of the California Labor Code relating to working hours. The Contractor shall as a penalty to the City, forfeit $50.00 for each worker employed in the execution of the Contract by the Contractor or by any subcontractor for each calendar day during which such worker is required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week, unless such worker receives compensation for all hours worked in excess of 8 hours at not less than 1-1/2 times the basic rate of pay.

6-3 TRAVEL AND SUBSISTENCE PAY.

(a) As required by Section 1773.1 of the California Labor Code the Contractor shall pay travel and subsistence payments to each workman needed to execute the Work, as such travel and subsistence payments are defined in the applicable collective bargaining agreements filed in accordance with this Section.

(b) To establish such travel and subsistence payments, the representative of any craft, classification, or type of workman needed to execute the contracts shall file with the Department of Industrial Relations fully executed copies of collective bargaining agreements for the particular craft, classification or type of work involved. Such agreements shall be filed within 10 days after their execution and thereafter shall establish such travel and subsistence payments whenever filed 30 days prior to the call for bids.

6-4 PROTECTION OF WORKERS IN TRENCH EXCAVATIONS.

As required by Section 6705 of the California Labor Code and in addition thereto, whenever work under the Contract involves the excavation of any trench or trenches 5 feet or more in depth, the Contractor shall submit for acceptance by the City or by a registered Civil or Structural Engineer, employed by the City, to whom authority to accept has been delegated, in advance of excavation, a detailed plan showing protection from the hazard of caving ground during the excavation of such trench or trenches. If such plan varies from the Construction Safety Orders of the Division of Industrial Safety, the plan shall be prepared by a registered Civil or Structural Engineer employed by the Contractor, and all costs shall be considered as included in the Contract items of work designated in the Engineer's Estimate and no other additional compensation shall be allowed therefor. Nothing in this Section shall be deemed to allow the use of a shoring, sloping, or other protective system less effective than that required by the Construction Safety Orders. Nothing in this Section shall be construed to impose tort liability on the City, the Architect, nor any of their officers, agents, representatives, or employees.

6-5 DAMAGE RESULTING FROM CERTAIN ACTS OF GOD.

As provided in Section 7105 of the California Public Contract Code, the Contractor shall not be responsible for the cost of repairing or restoring damage to the Work which damage is determined to have been proximately caused by an act of God, in excess of 5 percent of the contracted amount, provided, that the Work damaged was built in accordance with accepted and applicable building standards and the Plans and specifications of the City. The Contractor shall obtain insurance to indemnify the City for any damage to the Work caused by an act of God if the insurance premium is a separate bid item in the bidding schedule for the Work. For purposes of this section, the term "acts of God" shall include only the following occurrences or conditions and effects: earthquakes in excess of a magnitude of 3.5 on the Richter Scale, and tidal waves.

6-6 CONCRETE FORMS, FALSE WORK, AND SHORING.

The Contractor shall comply fully with the requirements of Section 1717 of the Construction Safety Orders, State of California, Department of Industrial Relations, regarding the design of concrete forms, FALSE WORK, and shoring and the inspection of same prior to placement of concrete. Where the said Section 1717 requires the services of a civil engineer registered in the State of California to approve design calculations and working drawings of the FALSE WORK or shoring system, or to inspect such system prior to placement of concrete, the Contractor shall employ a registered civil engineer for these purposes, and all costs therefor shall be included in the price named in the Contract for completion of the Work as set forth in the Contract Documents.

6-7 SUBMISSION OF BIDS; AGREEMENT TO ASSIGN.

In accordance with Section 4552 of the Government Code, the bidder shall conform to the following requirements. In submitting a bid to a public purchasing body, the bidder offers and agrees that if the bid is accepted, it will assign to the purchasing body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec.15) or under the Cartwright Act [Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code], arising from purchases of goods, materials, or services by the bidder for sale to the purchasing body pursuant to the bid. Such assignment shall be made and become effective at the time the purchasing body tenders final payment to the bidder.

6-8 PUBLIC WORKS CONTRACTS; ASSIGNMENT TO AWARDING BODY.

In accordance with Section 4551 of the Government Code, the Contractor and subcontractor shall conform to the following requirements. In entering into a public works contract or a subcontract to supply goods, services, or material pursuant to a public works contract, the Contractor or subcontractor offers and agrees to assign to the awarding body all rights, title and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act [Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code], arising from purchases of goods, services, or materials pursuant to the public works contract of the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the Contractor, without further acknowledgment by the parties.

6-9 REMOVAL, RELOCATION OR PROTECTION OF EXISTING UTILITIES.

In accordance with the provisions of Section 4215 of the Government Code, the Contractor shall not be assessed liquidated damages for delay in completion of the project, when such delay was caused by failure of the public agency or owner of the utility to provide for the removal or relocation of such utility facilities.

6-10 SUBSTITUTION OF SECURITIES.

Retainage from Monthly Payments: Pursuant to Section 22300 of the Public Code, the Contractor may substitute securities for any money withheld by the Owner to insure performance under the contract. At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the City or with a state or federally chartered bank as the escrow agent, who shall return such securities to the Contractor upon satisfactory completion of the contract. Deposit of securities with an escrow agent shall be subject to a written agreement between the escrow agent and the City in accordance with the provisions of Section 4590. The City will not certify that the contract has been satisfactorily completed until at least 50 calendar days after filing by the City of a Notice of Completion. Securities eligible for investment under Section 22300 of the Public Contract Code shall be limited to those listed in Section 16430 of the Government Code and to bank or savings and loan certificates of deposit, interest bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by the Contractor and the City.

6-11 LISTING OF SUBCONTRACTORS.

As required under the provisions of Section 4104 et seq of the California Public Contract Code, any person making a bid or offer to perform the work, shall in his or her bid or offer, set forth: (a) the name and location of the place of

business of each subcontractor who will perform work or labor or render service to the prime contractor in or about the construction of the work or improvement in an amount in excess of one-half of 1 percent of the prime contractor's total bid; (b) the name and location of the place of business of each subcontractor licensed by the State of California who, under subcontract to the primary contractor specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in , in an amount in excess of one-half of 1 percent of the prime contractor's total bid; (c) The portion of the work which will be done by each such subcontractor under this act. The prime contractor shall list only one subcontractor for each such portion of the work as itemized on the "List of Subcontractors," included in the Proposal.

6-12 BIDS FOR TRENCHING AND EXCAVATION WORK.

In accordance with the provisions of Section 6707 of the California Labor Code, whenever the state, a county, city and county, or city issues a call for bids for the construction of a pipeline, sewer, sewage disposal system, boring or jacking pits, or similar trenches or open excavation, which are five feet deep or deeper, such call shall specify that each bid submitted in response thereto shall contain, as a bid item, adequate sheeting, shoring, and bracing or equipment method, for the protection of life or limb, which shall conform to applicable safety orders.

6-13 STATE WAGE DETERMINATION.

(a) As required by Sections 1770 and following, of the California Labor Code, the Contractor shall pay not less than the prevailing rate of per diem wages as determined by the Director of the California Department of Industrial Relations. Copies of such prevailing rate of per diem wages are on file at the office of the City Engineer, which copies shall be made available to any interested party on request. The Contractor shall post a copy of such determination at each job site.

(b) As provided in Section 1775 of the California Labor Code, the Contractor shall, as a penalty to the City, forfeit at least $50.00 for each calendar day, or portion thereof, for each worker paid less than the State General Prevailing Wage Rates as determined by the Director of the Department of Industrial Relations or such work or craft in which such worker is employed for any public work done under the contract by it or by any subcontractor under it.

6-14 PAYROLL RECORDS; RETENTION; INSPECTION; NONCOMPLIANCE PENALTIES; RULES AND REGULATIONS.

(a) As required under the provisions of Section 1776 of the California Labor Code, each Contractor and subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by him or her in connection with the public work.

(b) The payroll records enumerated herein, shall be certified and shall be available for inspection at all reasonable hours at the principal office of the Contractor on the following basis:

A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request.

A certified copy of all payroll records enumerated herein, shall be made available for inspection or furnished upon request to a representative of the body awarding the contract, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the Department of Industrial Relations.

A certified copy of all payroll records enumerated herein, shall be made available upon request by the public for inspection or copies thereof made; provided, however, that a request by the public shall be made through either the body awarding the contract, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. If the requested payroll records have not been provided the requesting party shall, prior to being provided the records, reimburse the costs of preparation by the Contractor,

subcontractors, and the entity through which the request was made. The public shall not be given access to the records at the principal offices of the Contractor.

(c) Each Contractor shall file a certified copy of the records, enumerated herein, with the entity that requested the records within 10 days after receipt of a written request.

Any copy of records made available for inspection and copies furnished upon request to the public or any public agency by the awarding body, the Division of Apprenticeship Standard, or the Division of Labor Standards Enforcement shall be marked or obliterated in such a manner as to prevent disclosure of an individual's name, address, and social security number. The name and address of the Contractor awarded the contract or performing the contract shall not be marked or obliterated.

(d) The Contractor shall inform the body awarding the Contract of the location of the records enumerated herein, including the street address, city and county, and shall, within 5 working days, provide a notice of change of location and address.

(e) In the event of noncompliance with the requirements of this Article, the Contractor shall have 10 days in which to comply subsequent to receipt of written notice specifying in what respects the Contractor must comply with this Article. Should noncompliance still be evident after the 10-day period, the Contractor shall, as a penalty to the state or political subdivision on whose behalf the Contract is made or awarded, forfeit $50.00 for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due. Responsibility for compliance with these Paragraphs lies with the Contractor.

(f) 5% retention is to be subtracted from each invoice, to be paid to the contractor 35 days after the Notice of Completion is recorded with the County of Santa Barbara.

6-15 APPRENTICES.

Attention is directed to Sections 1777.5 and 1777.6 and 1777.7 of the California Labor Code and Title 8, California Administrative Code Section 200 et seq. To insure compliance and complete understanding of the law regarding apprentices, and specifically the required ratio thereunder, the Contractor (and subcontractor) should, where some question exists, contact the Division of Apprenticeship Standards prior to commencement of the work. Responsibility for compliance with this Paragraph lies with the Contractor. The Owner policy is to encourage the employment and training of apprentices on its construction contacts as may be permitted under local apprenticeship standards.

6-16 WORKERS COMPENSATION.

(a) In accordance with the provisions of Section 1860 of the California Labor Code, the Contractor's attention is directed to the requirement that in accordance with the provisions of Section 3700 of the California Labor Code, every Contractor will be required to secure the payment of compensation of his or her employees.

(b) In accordance with the provisions of Section 1861 of the California Labor Code, each contractor to whom a public works contract is awarded shall sign and file with the awarding body the following certification prior to performing the work of the contract: "I am aware of the provisions of Section 3700 of the Labor Code which requires every employer to be insured against liability for worker's 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 of this contract."

Full compensation for conforming to the provisions in Section 6, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

SECTION 7
MISCELLANEOUS

7-1 LABOR NON-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, mental disability, medical condition, marital status, or sex of such persons, except as provided in Section 12940 of the Government Code, and every contractor for public works violating this section is subject to all the penalties imposed for a violation of this chapter."

7-2 NIGHT, SATURDAY, SUNDAY, AND HOLIDAY WORK.

No work shall be performed at night, on Saturdays, Sundays, or on legal holidays, except with the permission of the City Engineer and in accordance with such regulations, as they shall furnish in writing. Before performing any work at said times, the Contractor shall give written notice to the City Engineer so that proper inspection may be provided. "Night," as used in this paragraph, shall be deemed to include the hours from 5:00 p.m. to 7:00 a.m., of the next succeeding day.

7-3 (Not Used)

7-4 PARTIAL AND FINAL PAYMENT.

The retained percentage or security will be held by the City and will be due and payable to the Contractor fifty (50) days after final acceptance of the work by the City Council and/or City Administrator.

7-5 (Not Used)

7-6 HAZARDOUS WASTE IN EXCAVATION.

In accordance with Section 7104 of the Public Contract Code, the Contractor shall comply fully with the following requirements:

(a) The Contractor shall promptly, and before the following conditions are disturbed, notify the City, in writing, of any:

Material encountered in excavation that the Contractor has reason to believe may be hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be moved to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.

Subsurface of any latent physical conditions at the site differing from those indicated.

Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract.

(b) That the City shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the work shall issue a change order under the procedures described in the Contract

(c) That in the event that a dispute arises between the City and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the work, the Contractor shall not be excused from any scheduled completion date provided for by the Contract, but shall proceed with all work to be performed under the Contract. The Contractor shall retain any and all rights provided either by Contract or by law that pertain to the resolution of disputes between the contracting parties.

7-7 PROJECT APPEARANCE.

The Contractor shall maintain a neat appearance to the work.

(a) During construction, the Contractor shall keep the work site, areas adjacent to the work site, and streets and alleys in an orderly condition, free and clear from debris and discarded materials.

(b) Broken concrete, trench spoil, or other debris developed during construction shall be disposed of concurrently with its removal. If stock piling is necessary it shall be done only at the approval of the City Engineer, but in no case shall the debris remain for more than one week.

7-8 DISPOSAL OF EXCESS MATERIAL.

All material determined to be excess by the Engineer becomes property of the Contractor, unless otherwise indicated in these special provisions. All material approved for disposal at the City's Sanitary Landfill is subject to payment of current fees.

The Contractor shall obtain all applicable permits from the County of Santa Barbara for the dumping of materials outside the City Limits of Guadalupe.

7-9 CLEANUP AND DUST CONTROL.

Cleanup and dust control shall conform to Standard Specifications and these special provisions.

(a) The Contractor shall apply water in amounts and at intervals as directed by the Engineer. The water supply vehicle and an operator shall be available within one hour's notice on Saturdays, Sundays, and holidays to perform dust control work. If the Contractor is not available for dust control measures, the City of Guadalupe will arrange for the work to be performed by others and will deduct all equipment, labor, and material costs thereof from the Contract amount.

7-10 GUARANTEE.

The Contractor shall be responsible for the repair or replacement of latent defects in workmanship or materials for a period of one year from the date of filing of the Notice of Completion.

7-11 PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS.

(a) The Contractor shall be responsible for the protection and the restoration or replacement of any improvements existing on public or private property at the start of work or placed there during the progress of work and not specified or shown on the Plans to be permanently removed. Existing improvements shall include, but are not limited to, curbs, gutters, cross-gutters, sidewalks, driveways, lawns, sprinkler systems, shrubs, trees, fences, and walls. All existing improvements shall be reconstructed to equal or better than the existing improvements removed.

In submitting a bid, the Contractor will be deemed to have carefully examined the site of the work and to have acquainted himself with all conditions relating to the protection and restoration of existing improvements. The City of Guadalupe does not guarantee that all improvements are shown on the Plans, and it shall be the

Contractor's responsibility to provide in his bid for the protection and restoration of all existing improvements except those otherwise specified herein.

(b) All curbs, gutters, sidewalks, and driveways shall be removed and replaced to the next joint or score line beyond the actually damaged or broken sections; or in the event that joints or score lines do not exist or are three or more feet from the removed or damaged section, the damaged portions shall be removed and reconstructed to neat, plane faces. All new concrete shall match, as nearly as possible, the appearance of adjacent concrete improvements.

7-12 UTILITIES.

Utilities shall conform to the relevant provisions in the Standard Specifications and these special provisions.

(a) Utilities for the purpose of these special provisions shall be considered as including, but not limited to: pipelines, conduits, transmission lines, and appurtenances of "Public Utilities" (as defined in the Public Utilities Act of the State of California) and those of private industry, businesses, or individuals solely for their own use or for use of their tenants; and storm drains, sanitary sewers, street lighting, and traffic signal systems. The City of Guadalupe has, by a search of known records, endeavored to locate and indicate on the Plans all utilities that exist within the limits of the work. However, the accuracy or completeness of the utilities indicated on the Plans is not guaranteed. Service connections to an adjacent property may or may not be shown on the Plans. It shall be the responsibility of the Contractor to determine the exact location of all utilities and their service connections. The Contractor shall make his own investigation as to the location, type, kind of material, age, and condition of existing utilities and their appurtenances and service connections which may be affected by the contract work; and, in addition, he shall notify the City as to any utilities, appurtenances, and service connections located by him which have been incorrectly shown on or omitted from the Plans.

(b) The Contractor shall notify the owners of all utilities at least two working days in advance of excavation around any of their structures. At the completion of the contract work, the Contractor shall leave all utilities and appurtenances in a condition satisfactory to the owners and the City of Guadalupe.

7-13 (Not Used)

7-14 SUBMITTALS.

7-1.14.A GENERAL- Submittals covered by these requirements include manufacturers information, shop drawings, test procedures, test results, samples, requests for substitutions, and miscellaneous work-related submittals. Submittals shall also include, but not be limited to, all mechanical, electrical and electronic equipment and systems, materials, reinforcing steel, fabricated items, and piping and conduit details. The Contractor shall furnish all drawings, specifications, descriptive data, certificates, samples, tests, methods, schedules, and manufacturer's installation and other instructions as specifically required in the Contract Documents to demonstrate fully that the materials and equipment to be furnished and the methods of work comply with the provisions and intent of the Contract Documents.

7-1.14.B CONTRACTOR'S RESPONSIBILITIES-The Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall assure that the material, equipment or method of work shall be as described in the submittal. The Contractor shall verify that all features of all products conform to the specified requirements. Submittal documents shall be clearly edited to indicate only those items, models, or series of equipment, which are being submitted for review. All extraneous materials shall be crossed out or otherwise obliterated. The Contractor shall ensure that there is no conflict with other submittals and notify the Engineer in each case where his submittal may affect the work of another contractor or the City. The Contractor shall coordinate submittals among his subcontractors and suppliers

7-1.14.C The Contractor shall coordinate submittals with the work so that work will not be delayed. He shall coordinate and schedule different categories of submittals, so that one will not be delayed for lack of coordination with another. **No extension of time will be allowed because of failure to properly schedule submittals.** The Contractor shall not proceed with work related to a submittal until the submittal process is complete. This requires that submittals for review and comment shall be returned to the Contractor stamped "No Exceptions Taken" or "Make Corrections Noted.

7-1.14.D The Contractor shall certify on each submittal document that he has reviewed the submittal, verified field conditions, and complied with the Contract Documents

7-1.14.E The Contractor may authorize in writing a material or equipment supplier to deal directly with the Engineer or with the City with regard to a submittal. These dealings shall be limited to contract interpretations to clarify and expedite the work.

7-1.14.F CATEGORIES OF SUBMITTALS

7-1.14.F(1) GENERAL- Submittals fall into two general categories; submittals for review and comment, and submittals which are primarily for information only. Submittals that are for information only are generally specified as PRODUCT DATA in applicable specification sections.

7-1.14.F(2) SUBMITTALS FOR REVIEW AND COMMENT- All submittals except where specified to be submitted as product data for information only shall be submitted by the Contractor to the Engineer for review and comment

7-1.14.F(3) SUBMITTALS (PRODUCT DATA) FOR INFORMATION ONLY- Where specified, the Contractor shall furnish submittals (product data) to the Engineer for Information only.

7-1.14.G TRANSMITTAL

7-1.14.G(1) GENERAL- Unless otherwise specified, submittals regarding material and equipment shall be accompanied by a transmittal form approved by the Engineer. A separate transmittal form shall be used for each specific item, class of material, equipment, and items specified in separate, discrete sections, for which the submittal is required. Submittal documents common to more than one piece of equipment shall be identified with all the appropriate equipment numbers. Submittals for various items shall be made with a single form when the items taken together constitute a manufacturer's package or are so functionally related that expediency indicates checking or review of the group or package as a whole.

A unique number, sequentially assigned, shall be noted on the transmittal form accompanying each item submitted. Original submittal numbers shall have the following format: "XXX"; where "XXX" is the sequential number assigned by the Contractor. Re-submittals shall have the following format: "XXX-Y"; where "XXX" is the originally assigned submittal number and "Y" is a sequential letter assigned for re-submittals, i.e., A, B, or C being the 1st, 2nd, and 3rd re-submittals, respectively. Submittal 25B, for example, is the second re-submittal of submittal 25.

7-1.14.G(2) DEVIATION FROM CONTRACT- If the Contractor proposes to provide material, equipment, or method of work which deviates from these Special Provisions, he shall indicate so under "deviations" on the transmittal form accompanying the submittal copies.

7-1.14.G(3) SUBMITTAL COMPLETENESS- Submittals which do not have all the information required to be submitted, including deviations, are not acceptable and will be returned without review.

7-1.14.H REVIEW PROCEDURE

7-1.14.H(1) GENERAL- Submittals are specified for those features and characteristics of materials, equipment, and methods of operation which can be selected based on the Contractor's

judgment of their conformance to the specified requirements. Other features and characteristics are specified in a manner which enables the Contractor to determine acceptable options without submittals. The review procedure is based on the Contractor's guarantee that all features and characteristics not requiring submittals conform as specified. Review shall not extend to means, methods, techniques, sequences or procedures of construction, or to verifying quantities, dimensions, weights or gages, or fabrication processes (except where specifically indicated or required by these Special Provisions) or to safety precautions or programs incident thereto. Review of a separate item, as such, will not indicate approval of the assembly in which the item functions.

7-1.14.H(2) When the Contract Documents require a submittal, the Contractor shall submit 5 copies of all submitted information plus one reproducible original of all information shall be transmitted with submittals for review and comment.

7-1.14.H(3) SUBMITTALS FOR REVIEW AND COMMENT- Unless otherwise specified, within 10 calendar days after receipt of a submittal for review and comment, the Engineer shall review the submittal and return **3 copies** of the marked-up reproducible original noted in 1 above. The Engineer will retain the reproducible original. The returned submittal shall indicate one of the following actions:

7-1.14.H(3)a) If the review indicates that the material, equipment or work method complies with these Special Provisions, submittal copies will be marked "NO EXCEPTIONS TAKEN." In this event, the Contractor may begin to implement the work method or incorporate the material or equipment covered by the submittal.

7-1.14.H(3)b) If the review indicates limited corrections are required, copies will be marked "MAKE CORRECTIONS NOTED." The Contractor may begin implementing the work method or incorporating the material and equipment covered by the submittal in accordance with the noted corrections. Where submittal information will be incorporated in O&M data, a corrected copy shall be provided.

7-1.14.H(3)c) If the review reveals that the submittal is insufficient or contains incorrect data, copies will be marked "AMEND AND RESUBMIT." Except at his own risk, the Contractor shall not undertake work covered by this submittal until it has been revised, resubmitted and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."

7-1.14.H(3)d) If the review indicates that the material, equipment, or work method does not comply with these Special Provisions, copies of the submittal will be marked "Rejected - See Remarks." Submittals with deviations that have not been identified clearly may be rejected. Except at his own risk, the Contractor shall not undertake the work covered by such submittals until a new submittal is made and returned marked either "No Exceptions Taken" or "Make Corrections Noted.

7-1.14.H(4) SUBMITTALS (PRODUCT DATA) FOR INFORMATION ONLY- Such information is not subject to submittal review procedures and shall be provided as part of the work under this contract and its acceptability determined under normal inspection procedures.

7-1.14.I EFFECT OF REVIEW OF CONTRACTOR'S SUBMITTALS- review of contract drawings, methods of work, or information regarding materials or equipment the Contractor proposes to provide, shall not relieve the Contractor of his responsibility for errors therein and shall not be regarded as an assumption of risks or liability by the Engineer or the City, or by any officer or employee thereof, and the Contractor shall have no claim under the contract on account of the failure, or partial failure, of the method of work, material, or equipment so reviewed. A mark of "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED" shall mean that the City has no objection to the Contractor, upon his own responsibility, using the plan or method of work proposed, or providing the materials or equipment proposed.

SECTION 8 (Not Used)

SECTION 9
EXTRA WORK

9-1.01 EXTRA WORK.

Extra Work shall be paid in accordance with Section 9 of these Special Provisions.

9-1.02 GENERAL.

New or unforeseen work will be classified as "extra work" when the Engineer determines that it is not covered by Contract Unit Prices or Stipulated unit prices.

9-1.03 EXTRA WORK PAYMENT.

When extra work is to be paid for on a force account basis the labor, materials and equipment used in the performance of such work shall be subject to the approval of the Engineer and compensation will be determined as follows:

9-1.03A <u>WORK PERFORMED BY CONTRACTOR.</u> The Contractor will be paid the direct costs for labor, materials and equipment used in performing the work determined as hereinafter provided in Sections 9-1.03A(1), "Labor," 9-1.03A(2), "Materials," and 9-1.03A(3), "Equipment Rental," except where agreement has been reached to pay in accordance with Section 9-1.03B, "Work Performed by Special Forces or Other Special Services."

To the total of the direct costs computed as provided in Sections 9-1.03A(1), "Labor," 9-1.03A(2), "Materials," and 9-1.03A(3), "Equipment Rental," there will be added a markup of 33 percent to the cost of labor, 15 percent to the cost of materials, and 15 percent to the equipment rental. A markup for "Home Office Overhead" will not be allowed.

The above markups shall constitute full compensation for all overhead costs which shall be deemed to include all items of expense not specifically designated as cost or equipment rental in Sections 9-1.03A(1), "Labor," 9-1.03A(2), "Materials," and 9-1.03A(3), "Equipment Rental." The total payment made as provided above shall be deemed to be the actual cost of such work and shall constitute full compensation therefor.

When extra work is performed by a subcontractor, approved in accordance with the provisions in Section 2-3, "Subcontracts," of the Standard Specifications, an additional markup of 5 percent will be added to the total cost of said extra work including all markups specified in this Section 9-1.03A. Said additional 5 percent markup shall reimburse the Contractor for additional administrative costs, and no other additional payment will be made by reason of performance of the extra work by a subcontractor.

9-1.03A(1) <u>LABOR.</u> The Contractor will be paid the cost of labor for the workmen (including foremen when authorized by the Engineer), used in the actual and direct performance of the work. The cost of labor, whether the employer is the Contractor, subcontractor, or other forces, will be the sum of the following:

9-1.03A(1a) <u>ACTUAL WAGES.</u> The actual wages paid shall include any employer payments to or on behalf of the workmen for health and welfare, pension, vacation, and similar purposes.

9-1.03A(1b) LABOR SURCHARGE. To the actual wages, as defined in Section 9-1.03A(1a), will be added a labor surcharge set forth in the Department of Transportation publication entitled Labor Surcharge And Equipment Rental Rates, which is in effect on the date upon which the work is accomplished and which is a part of the contract. Said labor surcharge shall constitute full compensation for all payments imposed by State and Federal laws and for all other payments made to, or on behalf of, the workmen, other than actual wages as defined in Section 9-1.03A(1a) and subsistence and travel allowance as specified in Section 9-1.03A(1c). Indirect labor costs, including superintendence, shall be considered part of the markup in 9-1.03A.

9-1.03A(1c) SUBSISTENCE AND TRAVEL ALLOWANCE. The actual subsistence and travel allowance paid to such workmen.

9-1.03A(2) MATERIALS. The City reserves the right to furnish such materials as it deems advisable, and the Contractor shall have no claims for costs and markup on such materials.

Only materials furnished by the Contractor and necessarily used in the performance of the work will be paid for. The cost of such materials will be the cost to the purchaser, whether Contractor, subcontractor or other forces, from the supplier thereof, except as the following are applicable:

9-1.03A(2a) If a cash or trade discount by the actual supplier is offered or available to the purchaser, it shall be credited to the City notwithstanding the fact that such discount may not have been taken.

9-1.03A(2b) If materials are procured by the purchaser by any method which is not a direct purchase from and a direct billing by the actual supplier to such purchaser, the cost of such materials shall be deemed to be the price paid to the actual supplier as determined by the Engineer plus the actual costs, if any, incurred in the handling of such materials.

9-1.03A(2c) If the materials are obtained from a supply or source owned wholly or in part by the purchaser, the cost of such materials shall not exceed the price paid by the purchaser for similar materials furnished from said source on contract items or the current wholesale price for such materials delivered to the job site, whichever price is lower.

9-1.03A(2d) If the cost of such materials is, in the opinion of the Engineer, excessive, then the cost of such material shall be deemed to be the lowest current wholesale price at which such materials were available in the quantities concerned delivered to the job site, less any discounts as provided in Section 9-1.03A(2a).

9-1.03A(2e) If the Contractor does not furnish satisfactory evidence of the cost of such materials from the actual supplier thereof within 60 days after the date of delivery of the material or within 15 days after acceptance of the contract, whichever occurs first, the City reserves the right to establish the cost of such materials at the lowest current wholesale prices at which such materials were available in the quantities concerned delivered to the location of the work, less any discounts as provided in Section 9-1.03A(2a).

9-1.03A(3) EQUIPMENT RENTAL. The Contractor will be paid for the use of equipment at the rental rates listed for such equipment in the Department of Transportation publication entitled Labor Surcharge And Equipment Rental Rates, which is in effect on the date upon which the work is accomplished and which is a part of the contract, regardless of ownership and any rental or other agreement, if such may exist, for the use of such equipment entered into by the Contractor, except that for those pieces of equipment with a rental rate of $10.00 per hour or less as listed in the Labor Surcharge And Equipment Rental Rates publication and which are rented from a local equipment agency, other than Contractor owned, the Contractor will be paid at the hourly rate shown on the rental agency invoice or agreement for the time used on force account work as provided in Section 9-1.03A(3a), “Equipment on the Work.” If a minimum equipment rental amount is required by the local equipment rental agency, the actual amount charged will be paid to the Contractor.

If it is deemed necessary by the Engineer to use equipment not listed in the said publication, a suitable rental rate for such equipment will be established by the Engineer. The Contractor may furnish any cost data, which might assist the Engineer in the establishment of such rental rate. If the rental rate established by the Engineer is $10.00 per hour or less, the provisions above concerning rental of equipment from a local equipment agency shall apply.

The rental rates paid as above provided shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals.

Operators of rented equipment will be paid for as provided in Section 9-1.03A(1), "Labor."

All equipment shall, in the opinion of the Engineer, be in good working condition and suitable for the purpose for which the equipment is to be used.

Unless otherwise specified, manufacturer's ratings and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

Individual pieces of equipment or tools not listed in said publication and having a replacement value of $500 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefor.

Rental time will not be allowed while equipment is inoperative due to breakdowns.

9-1.03A(3a) EQUIPMENT ON THE WORK. The rental time to be paid for equipment on the work shall be the time the equipment is in operation on the extra work being performed, and in addition, shall include the time required to move the equipment to the location of the extra work and return it to the original location or to another location requiring no more time than that required to return it to its original location, except that moving time will not be paid for if the equipment is used at the site of the extra work on other than such extra work. Loading and transporting costs will be allowed, in lieu of moving time, when the equipment is moved by means other than its own power, except that no payment will be made if the equipment is used at the site of the extra work on other than such extra work.

The following shall be used in computing the rental time of equipment on the work:

(1) When hourly rates are listed, less than 30 minutes of operation shall be considered to be 1/2 hour of operation.

(2) When daily rates are listed, less than 4 hours of operation shall be considered to be 1/2 day of operation.

9-1.03A(3b) EQUIPMENT NOT ON THE WORK. For the use of equipment moved in on the work and used exclusively for extra work paid for on a force account basis, the Contractor will be paid the rental rates listed in the Department of Transportation publication entitled Labor Surcharge And Equipment Rental Rates, which is in effect on the date upon which the work is accomplished and which is a part of the contract, or determined as provided in Section 9-1.03A(3) and for the cost of transporting the equipment to the location of the work and its return to its original location, all in accordance with the following provisions:

(1) The original location of the equipment to be hauled to the location of the work shall be agreed to by the Engineer in advance.

(2) The State will pay the costs of loading and unloading such equipment.

(3) The cost of transporting equipment in low bed trailers shall not exceed the hourly rates charged by established haulers.

(4) The cost of transporting equipment shall not exceed the applicable minimum established rates of the Public Utilities Commission.

(5) The rental period shall begin at the time the equipment is unloaded at the site of the extra work, shall include each day that the equipment is at the site of the extra work, excluding Saturdays, Sundays, and legal holidays unless the equipment is used to perform the extra work on such days, and shall terminate at the end of the day on which the Engineer directs the Contractor to discontinue the use of such equipment. The rental time to be paid per day will be in accordance with the following:

Hours Equipment is in Operation	*Hours to Be Paid*
0	4
0.5	4.25
1	4.5
1.5	4.75
2	5
2.5	5.25
3	5.5
3.5	5.75
4	6
4.5	6.25
5	6.5
5.5	6.75
6	7
6.5	7.25
7	7.5
7.5	7.75
8	8
Over 8	hours in operation

The hours to be paid for equipment, which is operated less than 8 hours due to breakdowns, shall not exceed 8 less the number of hours the equipment is inoperative due to breakdowns. When hourly rates are listed, less than 30 minutes of operation shall be considered to be 1/2 hour of operation. When daily rates are listed, payment for 1/2 day will be made if the equipment is not used. If the equipment is used, payment will be made for one day. The minimum rental time to be paid for the entire rental period on an hourly basis shall not be less than 8 hours or if on a daily basis shall not be less than one day.

(6) Should the Contractor desire the return of the equipment to a location other than its original location, the City will pay the cost of transportation in accordance with the above provisions, provided such payment shall not exceed the cost of moving the equipment to the work.

(7) Payment for transporting, and loading and unloading equipment, as above provided, will not be made if the equipment is used on the work in any other way than upon extra work paid for on a force account basis.

When extra work, other than work specifically designated as extra work in the plans and specifications, is to be paid for on a force account basis and the Engineer determines that such extra work requires the Contractor to move on to the work equipment which could not reasonably have been expected to be needed in the performance of the contract, the Engineer may authorize payment for the use of such

equipment at equipment rental rates in excess of those listed as applicable for the use of such equipment subject to the following additional conditions:

(1) The Engineer shall specifically approve the necessity for the use of particular equipment on such work,

(2) The Contractor shall establish to the satisfaction of the Engineer that such equipment cannot be obtained from his normal equipment source or sources and those of his subcontractors,

(3) The Contractor shall establish to the satisfaction of the Engineer that the proposed equipment rental rate for such equipment from his proposed source is reasonable and appropriate for the expected period of use.

(4) The Engineer shall approve the equipment source and the equipment rental rate to be paid by the City before the Contractor begins work involving the use of said equipment.

9-1.03A(3c) OWNER-OPERATED EQUIPMENT. When owner-operated equipment is used to perform extra work to be paid for on a force account basis, the Contractor will be paid for the equipment and operator, as follows:

Payment for the equipment will be made in accordance with the provisions in Section 9-1.03A(3), "Equipment Rental."

Payment for the cost of labor and subsistence or travel allowance will be made at the rates paid by the Contractor to other workmen operating similar equipment already on the project or, in the absence of such other workmen, at the rates for such labor established by collective bargaining agreements for the type of workman and location of the work, whether or not the owner-operator is actually covered by such an agreement. A labor surcharge will be added to the cost of labor described herein, in accordance with the provisions in Section 9-1.03A(1b), "Labor Surcharge."

To the direct cost of equipment rental and labor, computed as provided herein, will be added the markups for equipment rental and labor as provided in Section 9-1.03A, "Work Performed by Contractor."

9-1.03A(3d) DUMP TRUCK RENTAL. Dump truck rental shall conform to the provisions of Sections 9-1.03A(3), "Equipment Rental," 9-1.03A(3a), "Equipment on the Work," and 9-1.03A(3b), "Equipment not on the Work," except as follows:

Fully maintained and operated rental dump trucks used in the performance of extra work paid for on a force account basis will be paid for at the same hourly rate paid by the Contractor for use of fully maintained and operated rental dump trucks in performing contract item work.

In the absence of contract item work requiring dump truck rental, the Engineer will establish an hourly rental rate to be paid. The Contractor shall provide the Engineer with complete information on the hourly rental rates available for rental of fully maintained and operated dump trucks.

The provisions in Section 9-1.03A(1), "Labor," shall not apply to operators of rented dump trucks.

The rental rates listed for dump trucks in the Department of Transportation publication entitled Labor Surcharge And Equipment Rental Rates shall not apply.

To the total of the rental costs for fully maintained and operated dump trucks, including labor, there will be added a markup of 15 percent. An additional markup of 5 percent will be added by reason of performance of the work by a subcontractor. No separate markup will be made for labor.

The provisions of Section 9-1.03A(3c), "Owner-Operated Equipment," shall not apply to dump truck rentals.

9-1.03B WORK PERFORMED BY SPECIAL FORCES OR OTHER SPECIAL SERVICES. When the Engineer and the Contractor, by agreement, determine that a special service or an item of extra work cannot be performed by the forces of the Contractor or those of any of his subcontractors, such service or extra work item may be performed by a specialist. Invoices for such service or item of extra work on the basis of the current market price thereof may be accepted without complete itemization of labor, material, and equipment rental costs when it is impracticable and not in accordance with the established practice of the special service industry to provide such complete itemization.

In those instances wherein a Contractor is required to perform extra work necessitating a fabrication or machining process in a fabrication or machine shop facility away from the jobsite, the charges for that portion of the extra work performed in such facility may, by agreement, be accepted as a specialist billing.

To the specialist invoice price, less a credit to the State for any cash or trade discount offered or available, whether or not such discount may have been taken, will be added 15 percent in lieu of the percentages provided in Section 9-1.03A, “Work Performed by Contractor.”

9-1.03C RECORDS. The Contractor shall maintain his records in such a manner as to provide a clear distinction between the direct costs of extra work paid for on a force account basis and the costs of other operations.

From the above records, the Contractor shall furnish the Engineer completed daily extra work reports, either on forms furnished by the City or on computerized facsimiles of the City’s forms acceptable to the Engineer, for each day’s extra work to be paid for on a force account basis. The daily extra work reports shall itemize the materials used, and shall cover the direct cost of labor and the charges for equipment rental, whether furnished by the Contractor, subcontractor, or other forces, except for charges described in Section 9-1.03B, “Work Performed by Special Forces or Other Special Services.” The daily extra work reports shall provide names or identifications and classifications of workmen, the hourly rate of pay and hours worked, and also the size, type and identification number of equipment, and hours operated.

Material charges shall be substantiated by valid copies of vendor’s invoices. Such invoices shall be submitted with the daily extra work reports, or if not available, they shall be submitted with subsequent daily extra work reports. Should said vendor’s invoices not be submitted within 60 days after the date of delivery of the material or within 15 days after the acceptance of the contract, whichever occurs first, the City reserves the right to establish the cost of such materials at the lowest current wholesale prices at which said materials were available in the quantities concerned delivered to the location of work less any discounts as provided in Section 9-1.03A(2a).

Said daily extra work reports shall be signed by the Contractor or his authorized representative.

The Engineer will compare his records with the completed daily extra work reports furnished by the Contractor and make any necessary adjustments. When these daily extra work reports are agreed upon and signed by both parties, said reports shall become the basis of payment for the work performed, but shall not preclude subsequent adjustment based on a later audit by the City.

The Contractor’s cost records pertaining to work paid for on a force account basis shall be open to inspection or audit by representatives of the City, during the life of the contract and for a period of not less than 3 years after the date of acceptance thereof, and the Contractor shall retain such records for that period. Where payment for materials or labor is based on the cost thereof to forces other than the Contractor, the Contractor shall make every reasonable effort to ensure that the cost records of such other forces will be open to inspection and audit by representatives of the City on the same terms and conditions as the cost records of the Contractor. If an audit is to be commenced more than 60 days after the acceptance date of the contract, the Contractor will be given a reasonable notice of the time when such audit is to begin.

9-1.04 PAYMENT

Payment as provided in Sections 9-1.03A, “Work Performed by Contractor,” and 9-1.03B, “Work Performed by Special Forces or Other Special Services,” shall constitute full compensation to the Contractor for performance of work paid for on a force account basis and no additional compensation will be allowed therefor.

SECTION 10
TECHNICAL SPECIFICATIONS

10-1 GENERAL REQUIREMENTS

10-1.01 General

Comply with the applicable provisions of the State of California Caltrans Standard Specification (latest edition); the City of Santa Maria Standard Specifications; these Technical Specifications; and the plans and typical sections.

10-1.02 Project Site Maintenance

Keep the site clean and free from rubbish through construction and during periods of work suspension. Furnish and operate a self-loading motor sweeper with spray nozzles at least once each working day to keep paved areas acceptably clean wherever construction, including restoration, is incomplete.

Prevent dust by sprinkling water or other means as necessary, but using water resulting in mud on public streets will not be permitted. Implement dust control during weekends and holidays.

Remove excess excavated materials from any source from the site immediately. Remove forms and lumber on the day of form removal. Remove materials and equipment from the site when no longer necessary.

Before the final inspection, clear site of equipment, unused materials, and rubbish to present a clean and neat appearance. Sweep all pavement areas with a street sweeper immediately before the final inspection. Broom clean all concrete areas. Rake all topsoil areas. All cleanup costs are included in the bid. Failure to perform the final cleanup will result in the City removing and/or disposing of the articles or materials at the Contractor's expense.

Prevent spillage on haul routes. Remove any spillage immediately and clean the area.

10-1.03 Sanitary Facilities

Provide and maintain enclosed, portable restrooms for personnel engaged in the work. Maintain facilities in a neat and sanitary condition and comply with all applicable laws, ordinances, and regulations pertaining to public health and sanitation.

10-1.04 Protection and Restoration of Existing Improvements

Protect public and private property adjacent to the work and exercise due caution to avoid damage to such property.

Repair or replace all existing improvements within the right-of-way that are not designated for removal but that are damaged or removed during construction. Repair and/or replace with equivalent to existing improvements. Match finish and dimension.

10-1.05 Notification of Residents, Businesses, and Agencies

Notify the affected residents and businesses four calendar days in advance of the start of work. Use "door knob" type notices which include a description of the impending work, the date and time when traffic will be restricted, and a date and time when parking will not be allowed along the street scheduled for renovation. The hanger must be in English on one side and have a Spanish translation on the other side. Submit a sample notice for review and approval by the Engineer five calendar days before distribution.

Ten calendar days before beginning construction, notify local schools, hospitals, ambulance services, police and fire departments, transit agencies, refuse collectors, and the Underground Service Alert (USA) of the work schedule.

Furnish and place "No Parking" signs, 12 inches by 18 inches minimum size and approved by the Engineer, throughout the area of work at fifty-foot intervals two working days (four calendar days before work beginning on a Monday or Tuesday) before the start of construction. Include the date and time on signs for which parking is prohibited. Remove signs immediately when they are no longer needed.

If the work is delayed or rescheduled after the required notifications have been issued, re-date the signs affected, notify residents and businesses of the change via a new “door knob” notice, and re-contact the local services and agencies. If the work is delayed more than five calendar days, remove the signs and place re-dated signs two working days (four calendar days before work beginning on a Monday or Tuesday) in advance of the work.

10-1.06 Field Surveying

Provide surveying services for the construction of the project. The City will provide AutoCAD drawings and survey control where applicable. Conform to the lines, elevations, and grades shown on the plans. Preserve and protect survey stakes and marks during the duration of the project.

10-1.07 Payment

Payment for other work required under the General Requirements is included in the prices bid for the individual items of work. No additional compensation will be allowed unless specifically noted otherwise.

10-2 MOBILIZATION

10-2.01 General

Mobilization includes but is not limited to the following:

- Obtaining all required bonds, insurance, and permits
- Posting all OSHA required notices and establishing safety programs and injury and illness prevention plans (IIPP).
- Moving onto the site of all Contractor’s equipment needed for project operations.
- Arranging for and erection of Contractor’s work and storage yard.
- Providing and installing temporary construction power, wiring, and lighting.
- Providing and installing temporary communication facilities.
- Providing and installing construction water facilities and on-site sanitary facilities.
- Designation of the Contractor’s superintendent who will be present at the job site full time.
- Submittal of detailed work plan describing the order of Work, coordination with Owner’s staff, local agency coordination, and other key aspects of the Work.
- Submittal of the work schedule and schedule of values.
- Preparing and submitting field record drawings.
- General construction site management, including furnishing all labor, materials, tools, equipment, and incidentals, and doing all Work involved in spill prevention and control, material management, waste management, storm and non-storm water management, and other activities required for the Work.
- Removing equipment, personnel, temporary facilities, and other construction resources at job completion and site cleanup.
- All other incidental work necessary to complete mobilization per the Contract Documents.

10-2.02 Measurement and Payment

Payment for Mobilization is on a lump sum basis. It includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in Mobilization, including the pre-construction requirements, construction progress meetings, permits, securing staging areas, providing temporary sanitary facilities and utilities, and all other items necessary to complete Mobilization for the Work defined in these Contract Documents.

SECTION 015723

TEMPORARY STORMWATER POLLUTION PREVENTION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section describes the requirements for providing and installing temporary erosion and sedimentation control structures as specified.

B. This Section describes the requirement for the Contractor to comply with all federal, state and local laws, rules and regulations, including but not limited to, the National Pollutant Discharge Elimination System (NPDES) MS4 and 1200C Permit(s); and the WPCF UIC Permit or rule authorization requirements in its absence.

1.2 SUBMITTALS

A. Follow Submittal procedure outlined in Section 1 General Provisions.

B. The contractor shall submit the following for Owner review:

1. A Contractor-developed Erosion and Sedimentation Control Plan that incorporates the City's ESCP elements and any modifications needed to ensure full compliance with applicable federal, state, and local laws, rules, regulations and permits.

PART 2 - PRODUCTS

2.1 Furnish and install the products as specified in the approved Erosion and Sedimentation Control Plan (ESCP) that incorporates the City's ESCP elements and any modifications needed to ensure full compliance with applicable federal, state, and local laws, rules, regulations and permits. Products which shall be installed, but are not limited to, are the following:

A. Siltation fences

B. Concrete washout

C. Construction entrance

D. Onsite spoils area

E. Check dams

F. Street sweeping and vacuuming

G. Storm drain inlet protection

PART 3 - EXECUTION

3.1 GENERAL

A. An ESCP in accordance with the National Pollutant Discharge Elimination System (NPDES) MS4 and 1200C Permit(s). The Contractor shall review the BMP's selected for the Project in the approved ESCP, then prepare erosion and sediment control plans that are site specific that show the application of these approved BMPs. These site and increment specific erosion and sediment control plans shall be included in each increment package.

B. Erosion and sedimentation control measures are to be installed in areas only to extent required by new construction and as indicated or as directed by governing regulations.

C. The Contractor shall provide inspection and repair of established ESCP applications and prepare maintenance reports of erosion control measures in accordance with approved ESCP.

END OF SECTION 015723

SECTION 311000

SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Furnish all labor, materials and equipment for providing all of the following complete and in place:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Stripping and stockpiling rock.
6. Removing site improvements.
7. Temporary erosion and sedimentation control measures.

B. Related Requirements:

1. Section 312000 Earth Moving.

1.3 DEFINITIONS

A. Subsoil: All soil beneath the level of subgrade, soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.

B. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil," but in disturbed areas such as urban environments, the surface soil can be subsoil.

C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil, the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects larger than 2 inches in diameter; and free of weeds, roots, toxic materials, or other nonsoil materials.

D. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.

E. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and according to the requirements of the landscape architect’s tree protection plan.

F. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 MATERIAL OWNERSHIP

A. Except for materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project.

1.6 INFORMATIONAL SUBMITTALS

A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.

1. Use sufficiently detailed photographs or video recordings.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

B. Topsoil Stripping and stockpiling program.

C. Rock stockpiling program.

D. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.7 QUALITY ASSURANCE

A. Topsoil Stripping and Stockpiling Program: Prepare a written program to systematically demonstrate the ability of personnel to properly follow procedures and handle materials and equipment during the Work. Include dimensioned diagrams for placement and protection of stockpiles.

B. Rock Stockpiling Program: Prepare a written program to systematically demonstrate the ability of personnel to properly follow procedures and handle materials and equipment during the Work. Include dimensioned diagrams for placement and protection of stockpiles.

1.8 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed trafficways if required by Owner or authorities having jurisdiction.

B. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.

1. Do not proceed with work on adjoining property until directed by Engineer.

C. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.

D. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.

E. Do not commence site clearing operations until temporary erosion and sedimentation control and plant-protection measures are in place.

F. Tree- and Plant-Protection Zones: Protect according to the requirements of the landscape architect's tree protection plan.

G. Soil Stripping, Handling, and Stockpiling: Perform only when the soil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Section 312000 "Grading"

1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Locate and clearly identify trees, shrubs, and vegetation to remain or to be relocated have been flagged and that protection zones have been identified and enclosed according to the requirements of the landscape architect's tree protection plan.

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements, at no additional cost, to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.

B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

C. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

A. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Engineer or Landscape Engineer.

B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations according to requirements of the landscape architect's tree protection plan.

3.4 EXISTING UTILITIES

A. Owner will arrange for disconnecting and sealing indicated utilities that serve existing structures before site clearing, when requested by Contractor.

1. Verify that utilities have been disconnected and capped before proceeding with site clearing.

B. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.

1. Arrange with utility companies to shut off indicated utilities.
2. Owner will arrange to shut off indicated utilities when requested by Contractor.

C. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Engineer not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Engineer's written permission.

3.5 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
2. Grind down stumps and remove roots larger than 2 inches diameter, obstructions, and debris to a depth of 18 inches) below exposed subgrade.
3. Use only hand methods or air spade for grubbing within protection zones.
4. Chip removed tree branches and dispose of off-site.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth indicated on Drawings in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and nonsoil materials from topsoil, including clay lumps, gravel, and other objects larger than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

1. Limit height of topsoil stockpiles to 72 inches.
2. Do not stockpile topsoil within protection zones.
3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.

3.7 STOCKPILING ROCK

A. Remove from construction area naturally formed rocks that measure more than 1 foot across in least dimension. Do not include excavated or crushed rock.

1. Separate or wash off non-rock materials from rocks, including soil, clay lumps, gravel, and other objects larger than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.

B. Stockpile rock away from edge of excavations without intermixing with other materials. Cover to prevent windblown debris from accumulating among rocks.

1. Limit height of rock stockpiles to 36 inches.
2. Do not stockpile rock within protection zones.
3. Dispose of surplus rock. Surplus rock is that which exceeds quantity indicated to be stockpiled or reused.
4. Stockpile surplus rock to allow later use by the Owner.

3.8 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.
2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.9 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION 311000

SECTION 312000

EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Furnish all labor, materials and equipment for providing all of the following complete and in place:

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for walks, pavements, and landscaped areas.
3. Subbase course for walks and pavement.
4. Excavating and backfilling trenches for utilities and pits for buried utility structures.

B. Related Requirements:
1. Section 311000 Site Clearing.
2. Section 321216 Asphalt Paving.
3. Section 321313 Concrete Paving
4. Section 321613 Concrete Curbs.
5. Section 334000 Stormwater Utilities
6. Section 334726 Storm Drainage Ponds and Reservoirs.

1.3 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Aggregate layer placed between the subbase course and paving.

C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Engineer. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices and changes in the Work.
2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.

3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be without additional compensation.

F. Fill: Soil materials used to raise existing grades.

G. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material 3/4 cu. yd. or more in volume that exceed a standard penetration resistance of 100 blows/2 inches when tested by an geotechnical testing agency, according to ASTM D 1586.

H. Subgrade: Uppermost surface of an excavation, or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

I. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct preexcavation conference at Project site.

1. Review methods and procedures related to earthmoving, including, but not limited to, the following:

a. Personnel and equipment needed to make progress and avoid delays.
b. Coordination of Work with utility locator service.
c. Coordination of Work and equipment movement with the locations of tree- and plant-protection zones.
d. Extent of trenching by hand or with air spade.
e. Field quality control.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of the following manufactured products required:

1. Geotextiles.
2. Controlled low-strength material, including design mixture.
3. Warning tapes.

B. Samples for Verification: For the following products, in sizes indicated below:

1. Geotextile: 12 by 12 inches.
2. Warning Tape: 12 inches long; of each color.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:

1. Classification according to ASTM D 2487.

2. Laboratory compaction curve according to ASTM D 698/ASTM D 1557.

1.7 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E 329 and ASTM D 3740 for testing indicated.

1.8 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

B. Improvements on Adjoining Property: Authority for performing earth moving indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.

1. Do not proceed with work on adjoining property until directed by Engineer.

C. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth moving operations.

D. Do not commence earth moving operations until temporary site fencing and erosion- and sedimentation-control measures, specified in Section 311000 "Site Clearing" are in place.

E. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

F. Do not direct vehicle or equipment exhaust towards protection zones.

G. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

1. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487 or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

2. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487 or a combination of these groups. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

2.2 GEOTEXTILES

A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.
2. Apparent Opening Size: No. 40 sieve, maximum; ASTM D 4751.
3. Permittivity: 0.5 per second, minimum; ASTM D 4491.
4. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

2.3 GEOGRID

A. Subsurface Structural Geogrid: Punched polypropylene, manufactured for subsurface structural applications, with load transfer capacity greater than 90 percent; complying with ASTM D6637-10and ASTM D7737-11 and the following, measured per test methods referenced:

1. Radial Stiffness: 1500 lb/ft; ASTM D6637-10
2. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.

B. Protect and maintain erosion and sedimentation controls during earth moving operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.3 EXCAVATION, GENERAL

A. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Engineer. The Contract Sum will be adjusted for rock excavation according to unit prices included in the Contract Documents. Changes in the Contract Time may be authorized for rock excavation.

1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; and soil, boulders, and other materials not classified as rock or unauthorized excavations specified in See Section 311000 "Site Clearing."

a. Intermittent drilling; ram hammering; or ripping of material not classified as rock excavation is earth excavation.

2. Rock excavation includes removal and disposal of rock. Remove rock to lines and subgrade elevations indicated to permit installation of permanent construction without exceeding the following dimensions:

a. 24 inches outside of concrete forms other than at footings.
b. 12 inches outside of concrete forms at footings.
c. 6 inches outside of minimum required dimensions of concrete cast against grade.
d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
e. 6 inches beneath bottom of concrete slabs-on-grade.
f. 6 inches beneath pipe in trenches, and the greater of 24 inches wider than pipe or 42 inches wide.

3.4 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.5 SUBGRADE INSPECTION

A. Notify Engineer and Soils Engineer when excavations have reached required subgrade.

B. If Soils Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. Proof-roll subgrade below the building slabs and pavements with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by the Soils Engineer, and replace with compacted backfill or fill as directed.

D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices changes in the Work.

E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer, without additional compensation.

3.6 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Engineer.

1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Engineer.

3.7 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.8 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
2. Surveying locations of underground utilities for Record Documents.
3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring and bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.9 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.10 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.

2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.11 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698/ASTM D 1557:

1. Under pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at least 92 percent.
3. Under turf or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at least 85 percent.
4. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

3.12 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following tolerances:

1. Turf or Unpaved Areas: Plus or minus 1 inch
2. Walks: Plus or minus 1 inch
3. Pavements: Plus or minus 1/2 inch
4. Bioretention: Plus or minus 1 inch

3.13 BASE COURSES

A. Place base course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place base course under pavements and walks as follows:

1. Place geogrid material over subbase for base course where vehicle traffic present
2. Place base course material over subbase under pavement.
3. Shape base course to required crown elevations and cross-slope grades.
4. Place base course 6 inches or less in compacted thickness in a single layer.

5. Place base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
6. Compact subbase and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698 /ASTM D 1557.

3.14 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
2. Determine that fill material classification and maximum lift thickness comply with requirements.
3. Determine, during placement and compaction that in-place density of compacted fill complies with requirements.

B. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.

C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2937, and ASTM D 6938, as applicable. Tests will be performed at the following locations and frequencies:

1. Paved Areas: At subgrade and at each compacted fill and backfill layer, at least 1 test for every 2000 sq. ft. or less of paved area or building slab, but in no case fewer than 3 tests.
2. Trench Backfill: At each compacted initial and final backfill layer, at least 1 test for each 150 feet or less of trench length, but no fewer than 2 tests.

E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.15 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Engineer; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.16 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 312000

SECTION 321216

ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Hot-mix asphalt patching.
   2. Hot-mix asphalt paving.

B. Related Requirements:

   1. Section 312000 Earth Moving.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Include technical data and tested physical and performance properties.
   2. Job-Mix Designs: For each job mix proposed for the Work.

1.4 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each paving material. Include statement that mixes containing recycled materials will perform equal to mixes produced from all new materials.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
   1. Tack Coat: Minimum surface temperature of 60 deg F.
   2. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
   3. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

B. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 55 deg F for water-based materials, and not exceeding 95 deg F.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. Coarse Aggregate: ASTM D 692/D 692M, sound; angular crushed stone, crushed gravel, or cured, crushed blast-furnace slag.

B. Fine Aggregate: ASTM D 1073 or AASHTO M 29, sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.
   1. For hot-mix asphalt, limit natural sand to a maximum of 20 percent by weight of the total aggregate mass.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: AASHTO M 320 PG 70-10.

B. Asphalt Cement: ASTM D 3381/D 3381M for viscosity-graded material.

C. Cutback Prime Coat: ASTM D 2027, medium-curing cutback asphalt, MC-30 or MC-70.

D. Emulsified Asphalt Prime Coat: ASTM D 977 or AASHTO M 140 emulsified asphalt, or ASTM D 2397 or AASHTO M 208 cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.

E. Tack Coat: ASTM D 977 or AASHTO M 140 emulsified asphalt, or ASTM D 2397 or AASHTO M 208 cationic emulsified asphalt, slow setting, factory diluted in water, of suitable grade and consistency for application.

2.3 AUXILIARY MATERIALS

A. Recycled Materials for Hot-Mix Asphalt Mixes: Reclaimed asphalt pavement; reclaimed, unbound-aggregate base material; and recycled tires.

B. Sand: ASTM D 1073 or AASHTO M 29, Grade No. 2 or No. 3.

C. Joint Sealant: ASTM D 6690, or AASHTO M 324, Type II or III, hot-applied, single-component, polymer-modified bituminous sealant.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to begin paving.

B. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 PATCHING

A. Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into perimeter of

adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Tack Coat: Before placing patch material, apply tack coat uniformly to vertical asphalt surfaces abutting the patch. Apply at a rate of 0.05 to 0.15 gal. /sq. yd. .
   1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
   2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

C. Placing Patch Material: Partially fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact. Cover asphalt base course with compacted, hot-mix surface layer finished flush with adjacent surfaces.

3.3 PLACING HOT-MIX ASPHALT

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
   1. Place hot-mix asphalt base course in number of lifts and thicknesses indicated.
   2. Place hot-mix asphalt surface course in single lift.
   3. Spread mix at minimum temperature of 250 deg F.
   4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
   5. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.
   1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Overlap mix placement about 1-1/2 inches from strip to strip to ensure proper compaction of mix along longitudinal joints.
   2. Complete a section of asphalt base course before placing asphalt surface course.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.4 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.
   1. Complete compaction before mix temperature cools to 185 deg F.

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 96 percent of reference laboratory density according to ASTM D 6927 or AASHTO T 245, but not less than 94 percent nor greater than 100 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.5 INSTALLATION TOLERANCES

A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:
1. Base Course: Plus or minus 1/2 inch.
2. Surface Course: Plus 1/4 inch, no minus.

B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:
1. Base Course: 1/4 inch.
2. Surface Course: 1/8 inch.
3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

C. Asphalt Traffic-Calming Devices: Compact and form asphalt to produce the contour indicated and within a tolerance of plus or minus 1/8 inch of height indicated above pavement surface.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Owner’s representative will engage a qualified testing agency to perform tests and inspections.

B. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.

C. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

D. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979 or AASHTO T 168.

1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.
    a. One core sample will be taken for every 1000 sq. yd. or less of installed pavement, with no fewer than three cores taken.
    b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.

E. Replace and compact hot-mix asphalt where core tests were taken.

F. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

END OF SECTION 321216

SECTION 321313

CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Furnish all labor, materials and equipment for providing all of the following complete and in place:
   1. Concrete paving.
   2. Expansion and control joints.
   3. Finishing and curing of above concrete work.

B. Arrange for a trained and competent person to establish the vertical and horizontal locations of all site work concrete structures according to the plans.

C. Related Requirements:

   1. Section 312000 Earth Moving.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated

B. Samples for Initial Selection: For each type of product, ingredient, or admixture requiring color selection.

C. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified ready-mix concrete manufacturer and testing agency.

B. Material Certificates: For the following, from manufacturer:

1. Cementitious materials.
2. Steel reinforcement and reinforcement accessories.
3. Admixtures.
4. Curing compounds.
5. Applied finish materials.
6. Bonding agent or epoxy adhesive.
7. Joint fillers.

1.6 QUALITY ASSURANCE

A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturer ready-mixed concrete products that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").

B. Testing Agency Qualifications: Qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

1.7 FIELD CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:

1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

C. Hot-Weather Concrete Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.

1. Use flexible or curved forms for curves with a radius 100 feet or less. 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 will not impair subsequent treatments of concrete surfaces.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.

B. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60. Cut bars true to length with ends square and free of burrs.

C. Tie Bars: ASTM A 615/A 615M, Grade 60; deformed.

2.3 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of same type, brand, and source throughout Project:

1. Portland Cement: ASTM C 150, gray portland cement Type I/II or Type III. Supplement with the following:

a. Fly Ash: ASTM C 618, Class C or Class F.
b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C 33, Class 4S uniformly graded. Provide aggregates from a single source [with documented service record data of at least 10 years' satisfactory service in similar paving applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Exposed Aggregate: Selected, hard, and durable; washed; free of materials with deleterious reactivity to cement or that cause staining; from a single source, with gap-graded coarse aggregate as follows:

1. Aggregate Sizes: 1/2 to 3/4 inch nominal.

D. Air-Entraining Admixture: ASTM C 260.

E. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
3. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

F. Water: Potable and complying with ASTM C 94/C 94M.

2.4 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz. /sq. yd. dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.

2.5 CONCRETE COLORING

A. Integral Color Concrete Pigment: Conforming to ASTM C979, resistant to lime and other alkali, resistant to sunlight, and inorganic, and containing no carbon black. Provide ready-to-use, integral color material. Color additives shall contain pure, concentrated mineral pigments specially processed for mixing into concrete.

B. Colors: To be verified by landscape architect samples utilizing cement, aggregates, and pigmented additive specified in the Contract Documents.

2.6 RELATED MATERIALS

A. Joint-Fillers: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork in preformed strips.

B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.7 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301 for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixes or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.
2. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that meet or exceed requirements.

B. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use plasticizing and retarding admixture in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

C. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash or Pozzolan: 25 percent.
2. Ground Granulated Blast-Furnace Slag: 50 percent.
3. Combined Fly Ash or Pozzolan, and Ground Granulated Blast-Furnace Slag: 50 percent, with fly ash or pozzolan not exceeding 25 percent.

D. Concrete Mixtures: Normal-weight concrete.

1. Compressive Strength (28 Days): 2500 psi
2. Maximum W/C Ratio at Point of Placement: 0.45.
3. Slump Limit: 3 inches, plus or minus 1 inch.
4. Solar Reflectance Index: Not less than 29.

2.8 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 and 90 deg F reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For concrete batches of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For concrete batches larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.

3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch according to requirements in Section 312000 "Earth Moving."

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Notify engineer minimum 24 hours prior to commencement of concreting operations

B. Remove loose material from compacted subbase surface immediately before placing concrete.

C. Moisten base as required to minimize absorption of water from fresh concrete. Do not permit puddles of water to accumulate

3.3 FORMWORK

A. General Requirements: Set forms and screeds to the required grades and lines, rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of the work and so that forms can remain in place at least 24 hours after concrete placement. Place joint fillers vertical, in locations indicated and secured to prevent displacement during concrete placement operations.

B. Check completed work for grade and alignment to the following tolerances:

1. Top of Form or Screed Units: Maximum 1/8" deviation in 10'.
2. Vertical Face: Longitudinal axis, maximum 1/4" in 10'.

C. Setting Forms: Join forms neatly and tightly, stake securely to line and grade, and brace firmly throughout. Clean and oil forms thoroughly before concrete is placed against them. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

D. Place joint fillers vertical in position, in straight lines. Secure to formwork during concrete placement. Expansion joints shall be provided at intervals not to exceed 50 feet and shall extend the full width and depth of the concrete.

E. Remove forms in a manner to prevent damage to the concrete and exposed surfaces.

3.4 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

3.5 JOINTS

A. Place expansion joints at intervals to elevations and profiles indicated. If not shown provide expansion joints at approximately 45' intervals. Generally, if not shown otherwise, align curb, gutter, and sidewalk joints.

B. Continue steel reinforcement across expansion joints.

C. Edging: After initial floating, tool edges of gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in.

B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.

F. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.

G. Screed pavement surfaces with a straightedge and strike off.

3.7 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:

1. Moist Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

    a. Water.
    b. Continuous water-fog spray.
    c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period using cover material and waterproof tape.

3.8 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform field tests and inspections.

B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least 1 composite sample for each 1000 linear ft. or fraction thereof of each concrete mixture placed each day.

    a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 specimens at 28 days.
    a. A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mix will be satisfactory if average of any 3 consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

D. Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.

F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer.

G. Concrete paving will be considered defective if it does not pass tests and inspections.

H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

I. Prepare test and inspection reports.

3.9 REPAIRS AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Engineer.

B. Drill test cores, where directed by Engineer, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.

C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321313

SECTION 321613

CONCRETE CURBS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Furnish all labor, materials and equipment for providing all of the following complete and in place:
   1. Concrete curbs.
   2. Expansion and control joints.
   3. Finishing and curing of above concrete work.

B. Arrange for a trained and competent person to establish the vertical and horizontal locations of all site work concrete structures according to the plans.

1.3 Related Requirements:

1. Section 312000 Earth Moving.

1.4 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.

A. W/C Ratio: The ratio by weight of water to cementitious materials.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated

B. Samples for Initial Selection: For each type of product, ingredient, or admixture requiring color selection.

C. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified ready-mix concrete manufacturer and testing agency.

B. Material Certificates: For the following, from manufacturer:

1. Cementitious materials.
2. Steel reinforcement and reinforcement accessories.
3. Admixtures.
4. Curing compounds.
5. Applied finish materials.
6. Bonding agent or epoxy adhesive.
7. Joint fillers.

1.7 QUALITY ASSURANCE

A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturer ready-mixed concrete products that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").

B. Testing Agency Qualifications: Qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

1.8 FIELD CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:

1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

C. Hot-Weather Concrete Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided

water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.

1. Use flexible or curved forms for curves with a radius 100 feet or less. 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 will not impair subsequent treatments of concrete surfaces.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.

B. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60. Cut bars true to length with ends square and free of burrs.

C. Tie Bars: ASTM A 615/A 615M, Grade 60; deformed.

2.3 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of same type, brand, and source throughout Project:

1. Portland Cement: ASTM C 150, gray portland cement Type I/II or Type III. Supplement with the following:

a. Fly Ash: ASTM C 618, Class C or Class F.
b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C 33, Class 4S uniformly graded. Provide aggregates from a single source [with documented service record data of at least 10 years' satisfactory service in similar paving applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Exposed Aggregate: Selected, hard, and durable; washed; free of materials with deleterious reactivity to cement or that cause staining; from a single source, with gap-graded coarse aggregate as follows:

1. Aggregate Sizes: 1/2 to 3/4 inch nominal.

D. Air-Entraining Admixture: ASTM C 260.

E. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
3. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

F. Water: Potable and complying with ASTM C 94/C 94M.

2.4 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz. /sq. yd. dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.

2.5 RELATED MATERIALS

A. Joint-Fillers: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork in preformed strips.

B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.6 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301 for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixes or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.
2. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that meet or exceed requirements.

B. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use plasticizing and retarding admixture in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

C. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash or Pozzolan: 25 percent.
2. Ground Granulated Blast-Furnace Slag: 50 percent.
3. Combined Fly Ash or Pozzolan, and Ground Granulated Blast-Furnace Slag: 50 percent, with fly ash or pozzolan not exceeding 25 percent.

D. Concrete Mixtures: Normal-weight concrete.

1. Compressive Strength (28 Days): 2500 psi
2. Maximum W/C Ratio at Point of Placement: 0.45.
3. Slump Limit: 2 inches, plus or minus 1 inch.
4. Solar Reflectance Index: Not less than 29.

2.7 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 and 90 deg F reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For concrete batches of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For concrete batches larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch according to requirements in Section 312000 "Earth Moving."

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Notify engineer minimum 24 hours prior to commencement of concreting operations

B. Remove loose material from compacted subbase surface immediately before placing concrete.

C. Moisten base as required to minimize absorption of water from fresh concrete. Do not permit puddles of water to accumulate

3.3 FORMWORK

A. General Requirements: Set forms and screeds to the required grades and lines, rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of the work and so that forms can remain in place at least 24 hours after concrete placement. Place joint fillers vertical, in locations indicated and secured to prevent displacement during concrete placement operations.

B. Check completed work for grade and alignment to the following tolerances:

1. Top of Form or Screed Units: Maximum 1/8" deviation in 10'.
2. Vertical Face: Longitudinal axis, maximum 1/4" in 10'.

C. Setting Forms: Join forms neatly and tightly, stake securely to line and grade, and brace firmly throughout. Clean and oil forms thoroughly before concrete is placed against them. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

D. Place joint fillers vertical in position, in straight lines. Secure to formwork during concrete placement. Expansion joints shall be provided at intervals not to exceed 50 feet and shall extend the full width and depth of the concrete.

E. Remove forms in a manner to prevent damage to the concrete and exposed surfaces.

3.4 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

3.5 JOINTS

A. Place expansion joints at intervals to elevations and profiles indicated. If not shown provide expansion joints at approximately 45' intervals. Generally, if not shown otherwise, align curb and sidewalk joints.

B. Continue steel reinforcement across expansion joints.

C. Edging: After initial floating, tool edges of curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in.

B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.

F. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.

G. Screed pavement surfaces with a straightedge and strike off.

3.7 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:

1. Moist Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

    a. Water.

b. Continuous water-fog spray.
c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period using cover material and waterproof tape.

3.8 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform field tests and inspections.

B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least 1 composite sample for each 1000 linear ft. or fraction thereof of each concrete mixture placed each day.

a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 specimens at 28 days.

a. A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mix will be satisfactory if average of any 3 consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

D. Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.

F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer.

G. Concrete paving will be considered defective if it does not pass tests and inspections.

H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

I. Prepare test and inspection reports.

3.9 REPAIRS AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Engineer.

B. Drill test cores, where directed by Engineer, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.

C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321613

SECTION 015723

PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Furnish all labor, materials and equipment for providing all of the following complete and in place:

1. Install pavement markings

1.3 Related Requirements:

1. Section 321313 Concrete Paving.
2. Section 321216 Asphalt Paving

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated

1. Waterborne traffic line paint.

PART 2 - PRODUCTS

2.1 PAINT

A. Paint for marking pavement shall conform to Federal Specification No. TT-P-1952D, color blue.

2.2 PAINT APPLICATOR

A. Apply all marking by approved mechanical equipment. The equipment shall provide constant agitation of paint and travel at controlled speeds. Synchronize one or more paint "guns" to automatically begin and cut off paint flow in the case of skip lines. The equipment shall have manual control to apply continuous lines of varying length and marking widths as shown.

PART 3 - EXECUTION

3.1 SURFACE PREPERATION

A. Allow new pavement surfaces to cure for a period of not less than 14 days before application of marking materials.

B. Thoroughly clean all surfaces to be marked before application of paint. Remove dust, dirt, and other granular surface deposits by sweeping, blowing with compressed air, rinsing with water, or a combination of these methods. Completely remove any coatings adhering to the pavement with scrapers, wire brushings, sandblasting, mechanical abrasion, or approved chemicals. Pavement marking shall follow as closely as practicable after the surface has been cleaned and dried. The Contractor shall establish control points for marking and provide templates to control paint application by type and color at necessary intervals. The Contractor is responsible to preserve and apply marking in conformance with the established control points.

3.2 APPLICATION

A. Apply uniformly painted pavement marking of required color, length, and width with true, sharp edges and ends on properly cured, prepared, and dried surfaces in conformance with the details as shown and established control points. Temperature of the surface to be painted and the atmosphere shall be above 50°F and less than 95°F. Apply the paint at a wet film thickness of 0.015 inch. Apply paint in one coat.

3.3 PROTECTION

A. Conduct operations in such a manner that necessary traffic can move without hindrance. Protect the newly painted markings so that, insofar as possible, the tires of passing vehicles will not pick up paint. Place warning signs at the beginning of the wet line, and at points well in advance of the marking equipment for alerting approaching traffic. Efface and replace damaged portions of marking.

END OF SECTION 321723

SECTION 323111

GATE OPERATORS

PART 1 GENERAL

1.1 SUBMITTALS

A. Action Submittals:
1. Shop Drawings: Illustrate products, installation, and relationship to adjacent construction.
2. Product Data: Manufacturer's descriptive data and product attributes.

B. Closeout Submittals:
1. Operation and Maintenance Data.

1.2 QUALITY ASSURANCE

A. Installer Qualifications: Firm specializing in work of this Section, with minimum 2 years' experience.

1.3 WARRANTY

A. Manufacturer's warranty against material and manufacturing defects.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract Documents are based on products by LiftMaster. www.LiftMaster.com

2.2 MANUFACTURED UNITS

A. Slide Gate Operators:
1. Model: CSL24UL.
2. Operation: Gear driven.
3. Meet UL 325, UL 991, ASTM F2200, and CAS C22.2 No. 247.
4. Motor: 24 VDC, continuous duty type, sized to gate conditions.
5. Traveling speed: 12 inches per second.
6. Battery backup: per manufacturer
7. Monitoring and controls:
   a. Internet connectivity: MyQ technology with 50 channel FHSS.
   b. Radio receiver: Security+ 2.0 technology.
   c. Monitored retro-reflective photo eyes.
   d. Monitored small profile wired safety edge.
8. Accessories:
   a. Monitored safety devices
   b. Wired monitored edges
   c. Plug-in loop detector.
   d. Wireless commercial keypad.
   e. Internet gateway.
   f. Smart video intercom.
   g. Commercial access control receiver.
   h. Heater kit.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer’s instructions.

3.2 CLOSEOUT ACTIVITIES

A. Test and adjust operators for proper operation.

B. Demonstration: Demonstrate operation and programming of operators to Owner.

END OF SECTION

SECTION 323113

CHAIN LINK FENCES AND GATES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Chain link cantilever slide gate system.

B. Related Sections:
   1. Division 03 Concrete
   2. Division 31 Earthwork

1.3 REFERENCES

A. American Society for Testing Materials:
   1. B117 Practice for Operating Salt Spray (Fog) Apparatus
   2. D523 Test Method for Specular Gloss
   3. D714 Test Method for Evaluating Degree of Blistering of Paints
   4. F567 Standard Practice for Installation of Chain-Link Fence
   5. F1184 Standard Specification for Industrial and Commercial Horizontal Slide Gates
   6. F2200 Standard Specification for Automated Vehicular Gate Construction

B. Underwriters Laboratory UL-325 safety standards

1.4 SUBMITTALS

A. Product Data: Manufactures information for each type of product indicated.
B. Shop Drawings: Product elevations, sections, and details as necessary.
C. Product Warranty: Standard limited warranty that the cantilever slide gate system is free from defects in material and workmanship and, under normal or proper usage, will remain free from such defects for a period of three (3) years from the date of original purchase.

1.5 QUALITY ASSURANCE

A. The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and the materials and techniques specified.
B. Provide complete cantilever slide gate system with all components provided by a single manufacturer.
C. Manufacturer Qualifications: Company specializing in manufacturing of cantilever slide gate systems with a minimum of 5 years documented experience.

1.6 PRODUCT HANDLING AND STORAGE

A. Cantilever slide gate to be delivered to the project site pre-assembled when possible and coated. Upon receipt at the job site, all materials shall be checked to ensure that no damages occurred during shipping.
B. Materials shall be handled and stored properly to protect against damage, weather, vandalism and theft.

PART 2 – PRODUCTS

2.1 SECURE-TRAC® CHAIN LINK CANTILEVER SLIDE GATE

Approved manufacture: Merchants Metals® www.merchantsmetals.com
Phone: (888) 260-1600 tech-info@merchantsmetals.com

A. Cantilever Slide Gates: **SECURE-TRAC**® manufactured in accordance with ASTM F 1184 Type II Class 2, and in compliance with UL-325, and ASTM 2200 (No substitution). Gate to be made of Aluminum Alloy 6005-T61. All square members are 2” sq. weighing 0.94 lb. /ft. (139 kg/m).

Complete frame welded to one piece track and 4" x 2" bottom rail weighing 1.71 lbs. /ft. (2.54 kg/m). Supply 2 truck assemblies that are swivel type having lubricated and sealed ball bearing wheels.

B. Gates 31'0" (9449 mm) thru 40'0" (12192 mm) dual top tracks member weighing 6.36 lb./ft. (9.45kg/m). The bottom rail 4" x 2" weighing 1.71 lb. /ft. (2.54 kg/m). Top tracks require two additional truck assemblies. Diagonal adjustable 1/4" (6 mm) stainless steel truss cables (2) provided inside each panel of the gate.
C. Gates over 40'0" (12192 mm), contact the manufacturer for custom drawings and specifications.
D. Chain Link 9 gauge wire 2" fabric options choose one: Galvanized before Weaving (GBW), Galvanized after Weaving (GAW), Aluminized, or Thermally Fused & Adhered 2b PVC.
E. Finish – choose one: Natural Aluminum or Polymer coated horizontal slide gates and posts shall match the coating type and color as that specified for the fence framework. Finish shall comply with Corrosion Resistance Salt Spray Test per ASTM B117, Impact Resistance per ASTM D2794, and Adhesion per ASTM D3359 Method B. All primary components shall receive a thorough cleaning and pre-treatment with a 10-step process: Hot alkaline cleaner, clear water rinse, hot iron phosphate application, clear water rinse, reverse Osmosis rinse, dry off oven heat, zinc enriched powder primer coat at 2-4 mils., gel oven heat, Ultra polyester finish T.G.I.C. powder coat at 2-4 mils., and final curing oven. Choose color: Black, Brown, Green, or Custom.
F. Gateposts, 4" O.D. (101.6 mm) schedule 40 weighing 9.11 lb. /ft. (13.6 kg/m). Single gates with single tracks require 3 gate posts. (1 latch post and 2 support posts) Single gates with dual tracks require 5 gate posts. (1 latch and 2 dual support posts) Double gates require twice the number of support posts but do not have a latch post.
G. Electrically operated horizontal slide gates must be manufactured and installed to comply with the safety requirements of ASTM F2200 and UL 325.

2.2 SETTING MATERIALS

A. Concrete: Minimum 28 day compressive strength of 3,000 psi.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify areas to receive fencing are completed to final grades and elevations.
B. Property lines and legal boundaries of work to be clearly established by the general contractor or property owner.

3.3 FRAMEWORK INSTALLATION

A. Posts: Posts shall be set plumb in concrete footings. Minimum footing diameter four times the largest cross section of the post up to a 4.00" (101.6 mm) dimension and three times the largest cross section of post greater than a 4.00" (101.6 mm) dimension. See civil plans for dimensions and details. Local codes, site soil conditions, local frost depth, fence height and wind load may require larger diameter or deeper footings - See Chain Link Manufactures Institute – Product Guide and Wind Load Guide CLFMI: WLG 2445. Top of concrete footing to be at grade crowned to shed water away from the post or 6 inches (152 mm) below grade crowned to shed water away from the post

3.3 CANTILEVER GATE INSTALLATION

A. Horizontal Slide Gates: Install according to manufacturer's instructions and in accordance with ASTM F567. Gates shall be plum in the closed position, installed to slide with an initial pull force no greater than 40 lbs. (18.14 kg). Ground clearance shall be 3 in. (76 mm), grade permitting. Electrically operated gate installation must conform to ASTM F2200 and UL 325.

3.4 ELECTRICAL GROUNDING

A. Grounding: A licensed electrical contractor shall install grounding when required.

3.4 CLEANING

A. Clean up debris and remove from the site.

END OF SECTION

SECTION 334000

STORMWATER UTILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Uniform Plumbing Code (UPC), Current Edition.

C. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
   1. AASHTO M 288 (2021) Standard Specification for Geosynthetic Specification for Highway Applications

D. ASTM INTERNATIONAL (ASTM)
   1. ASTM C923/C923M (2020) Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals
   2. ASTM C990 (2009; R 2019) Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
   3. ASTM C990M (2009; R 2019) Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants (Metric)
   4. ASTM D1751 (2018) Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
   5. ASTM D2564 (2020) Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems
   6. ASTM D3034 (2016) Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
   7. ASTM D3212 (2020) Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
   8. ASTM F477 (2014; R 2021) Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
   9. ASTM F679 (2016) Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings
   10. ASTM F794 (2021) Standard Specification for Poly(Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter
   11. ASTM F1417 (2011a; E 2020) Standard Practice for Installation Acceptance of Plastic Non-pressure Sewer Lines Using Low-Pressure Air
   12. ASTM F2881/F2881M (2021; E 2021) Standard Specification for 12 to 60 in. (300 to 1500 mm) Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm Sewer Applications

1.2 SUMMARY

A. Section Includes:
   1. Pipe and fittings.

2. Nonpressure transition couplings.
3. Drains.
4. Encasement for piping.

1.3 Related Requirements:
1. Section 312000 Earth Moving.

1.4 DEFINITIONS
1. HDPE: High Density Polyethylene
2. PE: Polyethylene
3. PP: Polypropylene
4. PVC: Polyvinyl Chloride Plastic
5. RCP: Reinforce Concrete Sewer Pipe
6. SRPE: Steel Reinforced Polyethylene

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.6 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from storm drainage system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.

B. Profile Drawings: Show system piping in elevation. Draw profiles at horizontal scale of not less than 1 inch equals 50 feet and vertical scale of not less than 1 inch equals 5 feet. Indicate manholes and piping. Show types, sizes, materials, and elevations of other utilities crossing system piping.

C. Field quality-control reports.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Inspect materials delivered to site for damage and unload and store materials with minimal handling.

B. Do not store materials directly on the ground. Keep the inside of pipes and fittings free of dirt and debris.

C. Before, during, and after installation, protect plastic pipe and fittings from any environment that would result in damage or deterioration to the material.

D. Keep a copy of the manufacturer's instructions available at the construction site at all times and follow these instructions unless directed otherwise by the Engineer of Record.

E. Store solvents, solvent compounds, lubricants, elastomeric gaskets, and any similar materials required to install plastic pipe in accordance with the manufacturer's recommendations and discard if the storage period exceeds the recommended shelf life.

F. Discard solvents in use when the recommended pot life is exceeded.

G. Handle materials in a manner that ensures delivery to the trench in sound, undamaged condition. Carry pipe to the trench.

1.8 PROJECT CONDITIONS

A. Interruption of Existing Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
   1. Notify Architect and Owner no fewer than five days in advance of proposed interruption of service.
   2. Do not proceed with interruption of service without Owner's written permission.

PART 2 - PRODUCTS

2.1 PVC PIPE AND FITTINGS

A. PVC Storm Sewer Piping, 4-inch through 8-inch:
   1. Pipe: ASTM D3034, SDR 35 PVC, pipe shall have an integrally molded bell or socket end for gasketed joint assembly.
   2. Fittings: ASTM D3034, PVC with bell ends.
   3. Joints: ASTM D3212
   4. Gaskets: ASTM D3212

B. PVC Underdrain Piping:
   1. Pipe: ASTM D3034, SDR 35 PVC, pipe shall have an integrally molded bell or socket end for gasketed joint assembly.
   2. Fittings: ASTM D 3034, PVC with bell ends.
   3. Joints: ASTM D3212
   4. Gaskets: ASTM D3212
   5. Slots: Three rows of 1-inch x 0.1-inch slots at 3-inch spacing.

C. HDPE Storm Sewer Piping
   1. N-12 Prolink WT (Watertight) series as manufactured by advanced drainage systems, inc. (ADS) unless noted otherwise on plans. Lateral connections to mainlines shall be made using manufacturer’s watertight reducing fittings. Pipe and fitting installation shall be in accordance with manufacturer’s recommended procedures. Connections to concrete structures shall be constructed watertight using manufacturer’s recommended materials and methods.
   2. AASHTO M252 (4-10 inch)
   3. AASHTO M294 (12-60 inch)
   4. ASTM F2306 (12-60inch)

2.2 NONPRESSURE TRANSITION COUPLINGS

A. Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of same sizes as piping to be joined, and corrosion-resistant-metal tension band and tightening mechanism on each end.

B. Sleeve Materials:
   1. For Plastic Pipes: ASTM F477, elastomeric seal or ASTM D 5926, PVC.
   2. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

C. Unshielded, Flexible Couplings:
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Dallas Specialty & Mfg. Co.
      b. Fernco Inc.
      c. Logan Clay Pipe.
      d. Mission Rubber Company; a division of MCP Industries, Inc.
      e. NDS Inc.
      f. Plastic Oddities; a division of Diverse Corporate Technologies, Inc.
   2. Description: Elastomeric sleeve with corrosion-resistant-metal tension band and tightening mechanism on each end.

2.3 DRAINS

A. Ductile Iron Grates:
   1. Description: ASTM A536 Grade 70-50-05 compliant square secured grate and frame with round bottom flange size to match basin outer diameter. Size as indicated.
   2. Top-Loading Classification(s): Heavy Duty (H-20).

B. Plastic Grates:
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. ADS.
   2. Description: UV Protected, HDPE, flat grate. Frame and grate to match basin outer diameter. Size as indicated.
   3. Top-Loading Classification(s): Pedestrian (H-10). ADA compliant. Heel-proof.

C. Plastic Catch Basins:
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. ADS.
   2. Description: ASTM D1784 cell class 12454 compliant PVC. Custom manufactured according to plan details. Provide watertight connection with specified pipe system.
   3. Top-Loading Classification(s): Heavy Duty (H-20).

D. Precast Concrete Catch Basins:
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. ADS.
      b. Jensen Precast.
      c. Mid State Concrete Products
      d. Oldcastle Infrastructure
   2. Description: Concrete: Type II Portland cement ASTM C 150 and Federal Specifications on cement, SS-C-1960/3, Type I/II Low Alkali, minimum compressive strength 4000 PSI at 28 days. Reinforcing Bar: ASTM A-706 / A-615, Grade 40 and 60.
   3. Top-Loading Classification(s): Heavy Duty (H-20)

2.4 CONCRETE

A. General: Cast-in-place concrete according to ACI 318, ACI 350/350R, and the following:

1. Cement: ASTM C 150, Type II.
2. Fine Aggregate: ASTM C33, sand.
3. Coarse Aggregate: ASTM C33, crushed gravel.
4. Water: Potable.

B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio.
1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.
2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavation, trenching, and backfilling are specified in Section 312000 "Earth Moving."

3.2 PIPING INSTALLATION

A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.

B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.

C. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

D. Install gravity-flow, nonpressure drainage piping according to the following:
1. Install piping pitched down in direction of flow.
2. Install piping NPS 6 and larger with restrained joints at tee fittings and at changes in direction. Use corrosion-resistant rods, pipe or fitting manufacturer's proprietary restraint system, or cast-in-place concrete supports or anchors.
3. Install PVC profile gravity storm sewer piping according to ASTM D 2321 and ASTM F 1668.

3.3 PIPE JOINT CONSTRUCTION

A. Join gravity-flow, nonpressure drainage piping according to the following:
1. Join PVC profile gravity storm sewer piping according to ASTM D 2321 for elastomeric-seal joints or ASTM F 794 for gasketed joints.
2. Join dissimilar pipe materials with nonpressure-type flexible couplings.

3.4 DRAIN INSTALLATION

A. Install type of drains in locations indicated.
1. Use Medium-Duty, top-loading classification drains in earth, unpaved foot traffic, or paved foot-traffic areas.

2. Use Heavy-Duty, top-loading classification drains in vehicle-traffic service areas.

B. Embed drains in 4-inch minimum concrete around bottom and sides.

C. Fasten grates to drains if indicated.

D. Set drain frames and covers with tops flush with pavement surface.

E. Assemble trench sections with flanged joints.

F. Embed trench sections in 4-inch minimum concrete around bottom and sides.

3.5 CONCRETE PLACEMENT

A. Place cast-in-place concrete according to ACI 318.

3.6 CONNECTIONS

A. Make connections to existing piping and underground manholes.
1. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye fitting, plus 6-inch overlap, with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
2. Protect existing piping, manholes, and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

3.7 IDENTIFICATION

A. Materials and their installation are specified in Section 312000 "Earth Moving." Arrange for installation of green warning tape directly over piping and at outside edge of underground structures.
1. Use detectable warning tape over ferrous piping.
2. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.8 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
1. Submit separate reports for each system inspection.
2. Defects requiring correction include the following:
   a. Alignment: Less than full diameter of inside of pipe is visible between structures.
   b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
   c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
   d. Infiltration: Water leakage into piping.
   e. Exfiltration: Water leakage from or around piping.
3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
4. Reinspect and repeat procedure until results are satisfactory.

5. Top of grate elevation shall be within 0.02’ of specified elevation on plans. Contractor shall adjust noncompliant grates at contractor’s expense.

3.9 CLEANING

A. Clean interior of piping of dirt and superfluous materials. Flush with potable water.

END OF SECTION

SECTION 334726

BIORETENTION BASIN

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Uniform Plumbing Code (UPC), Current Edition.

C. ASTM INTERNATIONAL (ASTM)
1. ASTM C33 (2023) Standard Specification for Concrete Aggregates
2. ASTM D422 (2014), Standard Test Method for Particle Size Analysis of Soils

1.2 SUMMARY

A. Section Includes:
1. Gravel Layer
2. Soil Mix
3. Overflow Structure
4. Underdrain
5. Flow-Restricting Orifice
6. Landscape Design
7. Irrigation
8. Signage

1.3 Related Requirements:
1. Section 312000 Earth Moving.
2. Section 334000 Stormwater Utilities

1.4 DEFINITIONS
1. PVC: Polyvinyl chloride plastic
2. HDPE: High Density Polyethylene
3. RCP: Reinforce Concrete Sewer Pipe

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.6 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from storm drainage system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.

B. Profile Drawings: Show system piping in elevation. Draw profiles at horizontal scale of not less than 1 inch equals 50 feet and vertical scale of not less than 1 inch equals 5 feet. Indicate manholes and piping. Show types, sizes, materials, and elevations of other utilities crossing system piping.

C. Field quality-control reports.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Inspect materials delivered to site for damage and unload and store materials with minimal handling.

B. Do not store materials directly on the ground. Keep the inside of pipes and fittings free of dirt and debris.

C. Before, during, and after installation, protect plastic pipe and fittings from any environment that would result in damage or deterioration to the material.

D. Keep a copy of the manufacturer's instructions available at the construction site at all times and follow these instructions unless directed otherwise by the Engineer of Record.

E. Store solvents, solvent compounds, lubricants, elastomeric gaskets, and any similar materials required to install plastic pipe in accordance with the manufacturer's recommendations and discard if the storage period exceeds the recommended shelf life.

F. Discard solvents in use when the recommended pot life is exceeded.

G. Handle materials in a manner that ensures delivery to the trench in sound, undamaged condition. Carry pipe to the trench.

PART 2 - PRODUCTS

2.1 GRAVEL LAYER

A. Caltrans specification 68-2.02F(3) “Class 2 Permeable Material”

1. The percentage composition by weight of Class 2 permeable material in place must comply with the gradation requirement shown in the following table:

Class 2 Permeable Material
Gradation Requirements

Sieve Size	Percentage Passing
1”	100
3/4”	90-100
3/8”	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

Class 2 permeable material must have a sand equivalent value of not less than 75

Drain rock or other granular material may be used; however, a layer of pea gravel or other intermediate-sized material should cover the top of the drain rock to reduce movement of fines from the soil layer into the interstices of the drain rock. Do not use filter fabric for this purpose.

2.2 SOIL MIX

A. Specification of Soils for Biotreatment or Bioretention Facilities
   1. A mixture of 60%-70% washed sand (ASTM C33) and 30%-40% compost should be used.

B. Bioretention soils shall meet the following criteria. “Applicant” refers to the entity proposing the soil mixture for approval by a Permittee.
   1. General Requirements – Bioretention soil shall:
      a. Achieve a long-term, in-place infiltration rate of at least 5 inches per hour.
      b. Support vigorous plant growth.
      c. Consist of the following mixture of fine sand and compost, measured on a volume basis:
         1) 60%-70% Sand
         2) 30%-40% Compost
   2. Submittal Requirements – The applicant shall submit to the Permittee for approval:
      a. A minimum one-gallon size sample of mixed bioretention soil.
      b. Certification from the soil supplier or an accredited laboratory that the Bioretention Soil meets the requirements of this guideline specification.
      c. Grain size analysis results of the fine sand component performed in accordance with ASTM D 422, Standard Test Method for Particle Size Analysis of Soils or Caltrans Test Method (CTM) C202.
      d. Quality analysis results for compost performed in accordance with Seal of Testing Assurance (STA) standards, as specified in 4.
      e. Organic content test results of mixed Bioretention Soil. Organic content test shall be performed in accordance with by Testing Methods for the Examination of Compost and Composting (TMECC) 05.07A, “Loss-On-Ignition Organic Matter Method”.
      f. Grain size analysis results of compost component performed in accordance with ASTM D 422, Standard Test Method for Particle Size Analysis of Soils.
      g. A description of the equipment and methods used to mix the sand and compost to produce Bioretention Soil.
      h. Provide the name of the testing laboratory(s) and the following information:
         1) Contact person(s)
         2) Address(s)
         3) Phone contact(s)
         4) E-mail address(s)
         5) Qualifications of laboratory(s), and personnel including date of current certification by USCC, ASTM, Caltrans, or approved equal
   3. Sand for Bioretention Soil
      a. Sand shall be free of wood, waste, coating such as clay, stone dust, carbonate, etc., or any other deleterious material. All aggregate passing the No. 200 sieve size shall be nonplastic.
      b. Sand for Bioretention Soils shall be analyzed by an accredited lab using #200, #100, #40 or #50, #30, #16. #8, #4, and 3/8 inch sieves (ASTM D 422, CTM 202 or as approved by municipality), and meet the following gradation:

Sieve Size	Percentage Passing
3/8”	100
No. 4	90-100
No. 8	70-100
No. 16	40-100
No. 30	15-70
No. 40 OR No. 50	5-55
No. 100	0-15
No. 200	0-5

Note: all sands complying with ASTM C33 for fine aggregate comply with the above gradation requirements.

4. Composted Material

Compost shall be a well decomposed, stable, weed free organic matter source derived from waste materials including yard debris, wood wastes or other organic materials not including manure or biosolids meeting the standards developed by the US Composting Council (USCC). The product shall be certified through the USCC Seal of Testing Assurance (STA) Program (a compost testing and information disclosure program).

a. Compost Quality Analysis by Laboratory – Before delivery of the soil, the supplier shall submit a copy of lab analysis performed by a laboratory that is enrolled in the US Composting Council’s Compost Analysis Proficiency (CAP) program and using approved Test Methods for the Examination of Composting and Compost (TMECC). The lab report shall verify:
   1) Organic Matter Content: 35% - 75% by dry wt.
   2) Carbon and Nitrogen Ratio: C:N < 25:1 and C:N >15:1
   3) Maturity/Stability: Any one of the following is required to indicate stability:
      a) Oxygen Test < 1.3 O2 /unit TS /hr
      b) Specific oxy. Test < 1.5 O2 / unit BVS /hr
      c) Respiration test < 8 mg CO2-C /g OM / day
      d) Dewar test < 20 Temp. rise (°C) e.
      e) Solvita® > 5 Index value
   4) Toxicity: Any one of the following measures is sufficient to indicate non-toxicity.
      a) $NH4+ : NO_3$-N < 3
      b) Ammonium < 500 ppm, dry basis
      c) Seed Germination > 80 % of control
      d) Plant Trials > 80% of control
      e) Solvita® = 5 Index value
   5) Nutrient Content: provide analysis detailing nutrient content including N-P-K, Ca, Na, Mg, S, and B.
      a) Total Nitrogen content 0.9% or above preferred.
      b) Boron: Total shall be <80 ppm;
   6) Salinity: Must be reported; < 6.0 mmhos/cm
   7) pH shall be between 6.2 and 8.2 May vary with plant species.

b. Compost Quality Analysis by Compost Supplier – Before delivery of the compost to the soil supplier the Compost Supplier shall verify the following:
   1) Feedstock materials shall be specified and include one or more of the following: landscaping/yard trimmings, grass clippings, food scraps, and agricultural crop residues.
   2) Maturity/Stability: shall have a dark brown color and a soil-like odor. Compost exhibiting a sour or putrid smell or containing recognizable grass or leaves, or is hot (120F) upon delivery or rewetting is not acceptable.

3) Weed seed/pathogen destruction: provide proof of process to further reduce pathogens (PFRP). For example, turned windrows must reach min. 55C for 15 days with at least 5 turnings during that period.

c. Compost for Bioretention Soil Texture – Compost for bioretention soils shall be analyzed by an accredited lab using #200, 1/4 inch, 1/2 inch, and 1 inch sieves (ASTM D 422 or as approved by municipality), and meet the following gradation:

Sieve Size	Percentage Passing
1”	99-100
1/2”	90-100
1/4”	40-90
No. 200	1-10

d. Bulk density shall be between 500 and 1100 dry lbs/cubic yard

e. Moisture content shall be between 30% - 55% of dry solids.

f. Inerts – compost shall be relatively free of inert ingredients, including glass, plastic and paper, < 1 % by weight or volume.

g. Select Pathogens – Salmonella <3 MPN/4grams of TS, or Coliform Bacteria <10000 MPN/gram.

h. Trace Contaminants Metals (Lead, Mercury, Etc.) – Product must meet US EPA, 40 CFR 503 regulations.

i. Compost Testing – The compost supplier will test all compost products within 120 calendar days prior to application. Samples will be taken using the STA sample collection protocol. (The sample collection protocol can be obtained from the U.S. Composting Council, 4250 Veterans Memorial Highway, Suite 275, Holbrook, NY 11741 Phone: 631-737-4931, www.compostingcouncil.org). The sample shall be sent to an independent STA Program approved lab. The compost supplier will pay for the test.

C. VERIFICATION OF ALTERNATIVE BIORETENTION SOIL MIXES

Bioretention soils not meeting the above criteria shall be evaluated on a case by case basis. Alternative bioretention soil shall meet the following specification: “Soils for bioretention facilities shall be sufficiently permeable to infiltrate runoff at a minimum rate of 5 inches per hour during the life of the facility, and provide sufficient retention of moisture and nutrients to support healthy vegetation.” The following steps shall be followed by municipalities to verify that alternative soil mixes meet the specification:

1. General Requirements – Bioretention soil shall achieve a long-term, in-place infiltration rate of at least 5 inches per hour. Bioretention soil shall also support vigorous plant growth. The applicant refers to the entity proposing the soil mixture for approval.

a. Submittals – The applicant must submit to the municipality for approval:

1) A minimum one-gallon size sample of mixed bioretention soil.

2) Certification from the soil supplier or an accredited laboratory that the Bioretention Soil meets the requirements of this guideline specification.

3) Certification from an accredited geotechnical testing laboratory that the Bioretention Soil has an infiltration rate between 5 and 12 inches per hour as tested according to Section 1.b.(2)(ii).

4) Organic content test results of mixed Bioretention Soil. Organic content test shall be performed in accordance with by Testing Methods for the Examination of Compost and Composting (TMECC) 05.07A, “Loss-On-Ignition Organic Matter Method”.

5) Grain size analysis results of mixed bioretention soil performed in accordance with ASTM D 422, Standard Test Method for Particle Size Analysis of Soils.

6) A description of the equipment and methods used to mix the sand and compost to produce Bioretention Soil.

7) The name of the testing laboratory(s) and the following information:

a) Contact person(s)
b) Address(s)
c) Phone contact(s)
d) E-mail address(s)
e) Qualifications of laboratory(s), and personnel including date of current certification by STA, ASTM, or approved equal.

b. Bioretention Soil
1) Bioretention Soil Texture: Bioretention Soils shall be analyzed by an accredited lab using #200, and 1/2" inch sieves (ASTM D 422 or as approved by municipality), and meet the following gradation:

Sieve Size	Percentage Passing
1/2"	97-100
No. 200	2-5

2) Bioretention Soil Permeability testing: Bioretention Soils shall be analyzed by an accredited geotechnical lab for the following tests:
a) Moisture – density relationships (compaction tests) shall be conducted on bioretention soil. Bioretention soil for the permeability test shall be compacted to 85 to 90 percent of the maximum dry density (ASTM D1557).
b) Constant head permeability testing in accordance with ASTM D2434 shall be conducted on a minimum of two samples with a 6-inch mold and vacuum saturation.

D. MULCH FOR BIORETENTION FACILITIES
1. Three inches of mulch is recommended for the purpose of retaining moisture, preventing erosion and minimizing weed growth. Projects subject to the State's Model Water Efficiency Landscaping Ordinance (or comparable local ordinance) will be required to provide at least three inches of mulch. Aged mulch, also called compost mulch, reduces the ability of weeds to establish, keeps soil moist, and replenishes soil nutrients. Aged mulch can be obtained through soil suppliers or directly from commercial recycling yards. It is recommended to apply 1" to 2" of composted mulch, once a year, preferably in June following weeding.

2.3 OVERFLOW STRUCTURE

A. PVC PIPE AND FITTINGS
1. PVC Storm Sewer Piping, 4-inch through 8-inch:
a. Pipe: ASTM D3034, SDR 35 PVC, pipe shall have an integrally molded bell or socket end for gasketed joint assembly.
b. Fittings: ASTM D3034, PVC with bell ends.
c. Joints: ASTM D3212
d. Gaskets: ASTM D3212

B. Plastic Grates:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
a. ADS.
2. Description: UV Protected, HDPE, flat grate. Frame and grate to match basin outer diameter. Size as indicated.
3. Top-Loading Classification(s): Pedestrian (H-10). ADA compliant. Heel-proof.

2.4 UNDERDRAIN

A. Use minimum 4" dia. PVC SDR 35 or equivalent, perforated pipe, installed with the holes facing down. The underdrain can be placed in a groove dug into the top of the gravel layer. Connect to the overflow structure using solid 4" dia. Schedule 80 or equivalent pipe. At the other end, provide a threaded, capped cleanout connected by a sweep bend.

B. 4-inch PVC Underdrain Piping:
   1. Pipe: ASTM D3034, SDR 35 PVC, pipe shall have an integrally molded bell or socket end for gasketed joint assembly.
   2. Fittings: ASTM D 3034, PVC with bell ends.
   3. Joints: ASTM D3212
   4. Gaskets: ASTM D3212
   5. Slots: Three rows of 1-inch x 0.1-inch slots at 3-inch spacing.

2.5 FLOW-RESTRICTING ORIFICE

A. The orifice is constructed by threading the underdrain connection pipe where it protrudes into the overflow structure. The pipe is capped, and a hole of the required diameter is drilled in the cap.

2.6 VEGETATION

A. Deer grass and common rush to be planted per project plans.

2.7 SIGNAGE

A. Each bioretention facility must include a sign meeting current Project Clean Water standards. Signs may be available from Project Clean Water; check for availability. Signs must be visible to site users and to maintenance personnel. Minimum 2 ft x 2ft sign with the word “Bioretention basin, do not alter or remove” in 2-inch lettering or approved equivalent.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavation, trenching, and backfilling are specified in Section 312000 "Earth Moving."

B. Elevations all around each facility are consistent with project plans.

3.2 CONNECTIONS

A. Make connections to existing piping and underground manholes.
   1. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye fitting, plus 6-inch overlap, with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
   2. Protect existing piping, manholes, and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

3.3 IDENTIFICATION

A. Materials and their installation are specified in Section 312000 "Earth Moving." Arrange for installation of green warning tape directly over piping and at outside edge of underground structures.
   1. Use detectable warning tape over ferrous piping.
   2. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.4 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
   1. Submit separate reports for each system inspection.
   2. Defects requiring correction include the following:
      a. Alignment: Less than full diameter of inside of pipe is visible between structures.
      b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
      c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
      d. Infiltration: Water leakage into piping.
      e. Exfiltration: Water leakage from or around piping.
   3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
   4. Reinspect and repeat procedure until results are satisfactory.

3.5 CLEANING

A. Clean interior of piping of dirt and superfluous materials. Flush with potable water.

END OF SECTION

SECTION 260500

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section Includes:
   1. Materials and equipment shall be furnished and installed in support of electrical work described in these plans and specifications including but not limited to, raceways, boxes, enclosures, feeders, branch circuiting, supports, terminal cabinets, sleeves, gutters, panels, transformers, switchgear, lighting fixtures, controls, relays, contactors, in order to complete and make fully functional the systems described.
   2. Lighting systems as shown on the plans and as specified herein, including controls, occupancy sensors, photocell controls, LED's, drivers, racks, supports, fasteners, straps, and miscellaneous mounting hardware and support structures for such equipment.
   3. Utility company site work as required by local utility companies. All utility company conduits, raceways, trenching, backfilling, utility vaults, equipment pads and substructures shall meet both the respective utility companies requirements as well as those of the authority having jurisdiction, whichever is more restrictive. In no case shall work be completed and covered without the written approval of the serving utility companies both on and off site.
   4. Duct banks and raceways for all power and lighting systems as shown and/or required. Duct banks shall include all trenching, racking, conduit, concrete, backfill, boxes, pads, substructures required for a fully developed and useable pathway for cables, conductors, as shown on site, etc.
   5. Power and Lighting Distribution: Furnish and install power and lighting distribution systems including but not limited to switchgear, panels, feeders, transformers, branch circuits, devices, fixtures, disconnect switches, contactors, controls, etc. for a complete working system.
   6. Lighting acceptance testing, documentation and completion of required forms as specified in Section 265670, LIGHTING ACCEPTANCE TESTING.
   7. Allocation of time to adequately train the Owner on the use and operation of all systems installed within the facility or on the property. Minimum two week advance notice shall be coordinated with the Owner and his representatives. Training shall be as outlined in individual system specifications identified to follow.

B. Related Sections Under Other Divisions:
   1. Painting of electrical equipment where exposed and required by the Architect to be painted as described elsewhere in the specification.

2. Pole Bases: Contractor shall be responsible to furnish light standard concrete pole bases, rebar, bolt templates and anchor bolt kits for a complete installation. Concrete, rebar, excavation shall be in accordance with all parts of this specification.
3. HVAC Control Raceway: Raceways, boxes, and control wiring for thermostats, temperature sensors and control components specified within the mechanical specifications, shall be furnished and installed as required by Division 25 and installed in accordance with the minimum wiring methods allowed for branch circuit wiring in Division 26 (the BAS systems and components are installed in accordance with Division 25).

1.3 SYSTEM DESCRIPTION

A. The electrical plans indicate the general layout and arrangement; the architectural drawings and field conditions shall determine exact locations. Field verify all conditions and modify as required to satisfy design requirements as well as code minimums. Maintain all required working clearances as described in CEC Article 110 as well as other applicable articles.

B. Discrepancies shall be brought immediately to the attention of the Architect for clarification. The Architect shall approve any changes. Prior to rough-in, refer to architectural plans that shall take precedence over electrical plans with respect to locations.

C. Contact local serving utility companies and verify all utility company requirements prior to commencement of utility work. Make proper adjustments to the construction to satisfy the serving utility requirements if they differ from the construction documents. It shall be the Contractor’s responsibility to contact each utility company for obtaining finalized utility design drawings and/or approval, and for scheduling inspection of utility infrastructure installations.

D. Charges imposed by the electric and communications utility companies shall be paid by Owner directly to utility companies.

1.4 SUBMITTALS AND SHOP DRAWINGS

A. Before construction, submit in accordance with the General Conditions of this Specification: A complete list of all materials proposed to be furnished and installed under this section.

B. Manufacturers' specifications, catalog cuts and shop drawings as required to demonstrate compliance with the specifications. Identify specific intended use for each component where submittal may be ambiguous. Submit entire bound submittal at one time; partial submittals will not be accepted. At a minimum, submittals will be required for the following:
1. Utility service/site work equipment including ducts, conduits, fittings, concrete manholes, concrete pullboxes, vaults, trench racks, accessories, etc.
2. Distribution equipment including main switchboards, distribution switchgear, transformers, distribution panels and breakers, motor controls, distribution and branch circuit panels, grounding, surge protection devices, etc.
3. Electrical equipment including disconnects, fuses, raceways, straps and racks, fittings, conductors, boxes, gutters, devices, plates, etc.
4. Lighting equipment including fixtures, LED’s, drivers, mounting accessories, color charts (where required), etc.

5. Lighting control equipment including low voltage switching system, dimmer switchbank / accessories, occupancy sensing equipment, time clocks, contactors, photocells, lumen sensors, etc.
6. Constructability review letter/comments for lighting acceptance testing as required by Section 265670, LIGHTING ACCEPTANCE TESTING.
7. Conduit including all fittings, etc.
8. Wiring and cable, terminations, etc.
9. Fire rating penetration materials, details, etc.

C. The intent of these specifications is to establish a standard of quality for materials and equipment. Therefore, some items are identified by manufacturer or trade name designation. Substitutions shall be subject to the Architect's approval. Samples of the proposed and substitute materials may be required for inspection prior to approval. Costs, if any, for evaluation of substitutions shall be the Contractor's responsibility. The decision of the Architect shall be final. Where the substitution will affect other trades, coordinate all changes with those trades concerned and pay any additional costs incurred by them as a result of this substitution. Approval of substitutions shall not relieve the Contractor from providing an operational system in accordance with all applicable codes and ordinances.

D. SUPPORTING DEVICES
1. Where walls, floor, slabs or supplementary steel work are used for seismic restraint locations, details of acceptable attachment methods for ducts, conduit and pipe must be included and approved before the submittals must include spacing, static loads and seismic loads at all attachment and support points.
2. Provide seismic details of seismic restraints and anchors; including number, size and locations for each piece of equipment.

1.5 DELIVERY, STORAGE AND HANDLING

A. Storage of equipment for the job is the responsibility of the Electrical Contractor and shall be scheduled for delivery to the site, as the equipment is required. Damage to the equipment delivered to the site or in transport to the job shall be the responsibility of the Electrical Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials shall be new and bear the label of or be listed by a nationally recognized testing laboratory. The quality and suitability of all materials shall conform to the standards and practices of this trade.

B. Supplied materials shall be of a current manufactured product line. Discontinued products are not acceptable. Where products are identified on the contract documents by part number, supply the current product model or series which meets the specification and intended use of the specified component.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Professionalism and appearance of installations shall be in accordance with accepted practices of this trade. Installation methods shall conform to manufacturers' specifications and recommendations. The Contractor shall man the job with qualified journeymen and helpers in this trade for the duration of the job. It is the Contractor's responsibility to communicate with and keep the job superintendent appraised of changes or clarifications, etc.

B. Employment of any person on any job in the capacity of an electrician is not permitted unless such person has qualified for and holds a valid Journeyman Electrician Pocket Card or General Journeyman Electrician Certificate issued by the State of California Division of Apprenticeship Standards except, Contractor may employ electrical helpers or apprentices on any job of electrical construction, new or existing, when the work of such helpers or apprentices is performed under the direct and constant personal supervision of a journeyman electrician holding a valid Pocket Card accepted by the State of California Division of Apprenticeship Standards.
   1. Each Pocket Card carrying journeyman electrician will be permitted to be responsible for the quality of workmanship for a maximum of one helper or apprentice during any same time period, provided the nature of work is such that good supervision can be maintained and the quality of workmanship is the best, as expected by Owner and implied by the latest edition of the National Electrical Code.
   2. Before each journeyman electrician commences work, deliver to Owner at the project site, a photocopy of the journeyman’s valid Pocket Card.

C. Materials shall be installed in accordance with the manufacturers' specification and recommendations. They must conform to the approval AHJ adopted codes and standards, but not less than the 2022 CEC and all applicable codes and standards, including but not necessarily limited to California Code of Regulations Title 24, NFPA, National Electrical Manufacturers Association, ANSI, CBC, and any other adopted ordinances of applicable agencies having jurisdiction. Refer to general conditions of specifications.

D. Electrical Contractor shall lay work out in advance in order to avoid unnecessary cutting, chasing, and drilling of floors, walls, ceilings and other surfaces. Work of this nature shall be carefully done so as not to damage work already performed by other trades. Any damage which results must be properly repaired at no extra cost to the Owner. Such alterations shall not depreciate the integrity of the structure. Approval for cuts or penetrations in structural members shall be by the Architect.

E. Coordinate work with other trades as required to eliminate any delays during construction. Coordinate changes with other prime contractors to avoid construction conflicts.

F. Engineer's Field Observation: When Electrical Engineering representative performs a field observation, the Electrical Contractor shall be present and available to remove equipment covers as needed.

G. Drawings of Record: Provide a full and accurate set of field record drawings marked up in a neat and understandable manner submitted to the Owner Representative, Construction Manager, or Architect upon completion of the work and prior to issuance of a certificate of completion.

The drawings shall dimension all electrical facilities including but not limited to underground conduit, vaults, boxes as well as conduit routing scaled to within 12" of actual field conditions and shall be kept up to date on a daily basis reflecting changes or deviations. Electrical facilities shall be accurately drawn on the plan to scale. Refer to the general conditions of these specifications for additional requirements. Record drawings shall be required to identify both horizontal and vertical dimensions to visible and fixed points such as concrete, asphalt, buildings, sidewalks, etc.

H. Identification: Provide engraved laminated plastic nameplates for all switchboards, panelboards, fire alarm system cabinets, main devices, control panels, time clocks, contactors and safety disconnect switches accurately identifying each device. Labels shall be attached to the equipment by means of screws or rivets. Self-adhering labels will not be acceptable.

I. Safety: The Electrical Contractor is responsible to maintain equipment in a safe and responsible manner. Keep dead front equipment in place while equipment is energized. Conduct construction operations in a safe manner for employees as well as other work persons or anyone visiting the job site. Provide barriers, trench plates, flags, tape, etc. The Contractor shall hold all parties harmless of negligent safety practices that may cause injury to others on or near the job site.

J. Guarantees: Equipment and labor shall be guaranteed and warranted free of defects, unless otherwise stated to be more restrictive, for a period of one year from the date of final acceptance by the Owner. A written warranty shall be presented to the Architect at the time of completion prior to final acceptance. Equipment deemed to be damaged, broken or failed should be repaired or replaced at no additional cost to the Owner. Materials or system requiring longer than a one-year warranty as described herein shall be separately warranted in separate letters of guarantee stating the duration of warranty.

K. Operating and Installation Manuals: Provide two copies each of manuals, operating and installation instructions for equipment indicated in submittal packages. Instruct the Owner's representative as to the operation and location of equipment necessary to allow them to operate the facility upon final acceptance for each system installed as part of this project. This instruction period shall be prearranged with the Owner's representative prior to occupancy of the facility and the weeks prior to training scheduled.

L. In service training: Provide in service training to Owner’s Staff for each system installed as part of this project. Training sessions to be scheduled with Owner in advance, and shall be a minimum of 4 hours for each system.

M. Lighting Acceptance Testing: Provide two copies of lighting acceptance testing results and equipment operating manuals as specified in Section 265670, LIGHTING ACCEPTANCE TESTING. Instruct the Owner on operation of control systems as noted in Paragraph J above.

END OF SECTION 260500

SECTION 260519

LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Wires and cables.
   2. Connectors.
   3. Lugs and pads.

1.3 SYSTEM DESCRIPTION

A. Provide wires, cables, connectors, lugs, strain reliefs, racking insulators for a complete and operational electrical system.

1.4 SUBMITTALS

A. Provide product data for the following equipment:
   1. Wires.
   2. Cables.
   3. Connectors.
   4. Lugs.
   5. Splice Kits.
   6. Strain Relief Fittings.
   7. Cable Racking and Insulators.

B. Provide the insulation cable testing report in the project closeout documentation, refer to Closeout Requirements in the General Conditions portion of this specification.

1.5 REGULATORY REQUIREMENTS

A. Conform to requirements of the CEC, latest adopted version with amendments by local Authority Having Jurisdiction (AHJ).

B. Furnish products listed by UL or other testing firm acceptable to AHJ.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Wires and Cables: General Cable, Okonite, Southwire, or approved equal.

B. Connectors: Burndy, Ilsco, Thomas & Betts, or approved equal.

C. Wire connectors shall be minimum 75 degree centigrade rated and properly sized for the number of conductors being connected, terminated, spliced etc. All above grade connectors shall be solderless lug or plastic wire nut type, screw on, pressure cable type (wire nut or spring nut type), 600 volt, 105 degree C, with skirt to cover all portions of stripped wires. Connector shall be U.L. rated for number and size of conductors being joined together as a splice.

D. Splices:
1. Branch Circuit Splices: Ideal, Scotch-Lock, 3M, or approved.
2. Feeder Splices: Compression barrel splice with two layers Scotch 23 and four layers of Scotch 33+ as vapor barrier.
3. Screw Terminal Lugs.
4. Kearney Split Bolt.

2.2 WIRES AND CABLES FOR LINE VOLTAGE SYSTEM AND CONTROLS. WIRE AND CABLE SHALL BE:

A. Copper, 600 volt rated throughout. Conductors 12AWG to 10AWG, solid or stranded. Conductors 8AWG and larger, stranded.

B. Phase color to be consistent at all feeder terminations; A-B-C, top to bottom, left to right, front to back. Phasing tape shall be permitted on sizes #6 and larger. Neutrals shall be solid white with color stripe as indicated.

C. Color Code Conductors as Follows:

		Phase			Neutral		Ground
	A Ph	B Ph	C Ph	A Ph	B Ph	C Ph	
208/120V							
3 Ph	Blk	R/Blk	BL	W/Blk	N.A.	W/BL	Grn
240/120V							
1 Ph	Blk	R	N.A.	W/Blk	W/R	N.A.	Grn
480/277V	Brn	Org	Yel	Gry/Brn	Gry/Org	Gry/Yel	Grn
Blk = Black, R = Red, BL = Blue, Grn = Green, Brn = Brown, Org = Orange, Yel = Yellow, Gry = Grey, W = White							

D. All conductors shall be copper unless otherwise noted. Minimum size for individual conductors shall be #12 AWG unless otherwise noted. Sizes #8 AWG and larger shall be stranded conductor. Individual conductors shall be insulated with type, XHHW, THW, THHN/THWN 600-volt insulation unless otherwise noted. Control, signal, communication conductors shall be as dictated by the vendor of that equipment or as specified here-in. Proper insulation type shall be used for the proper environmental application (waterproof, wet location, plenum, temperature rated, etc.). If a condition exists where the application is uncertain, contact the Engineer for direction. Contractor is responsible to follow specific cabling requirements described in other sections of this specification relative to various communications and controls systems as well as the respective riser diagrams shown on plans. If a discrepancy occurs, communicate such discrepancy to the Architect and Engineer immediately for resolution.

E. Insulation types THWN, THHN or XHHW. Minimum insulation rating of 90C for branch circuits.

2.3 CONNECTORS

A. Copper Pads: Drilled and tapped for multiple conductor terminals.

B. Lugs: Indent/compression type for use with stranded branch circuit or control conductors.

C. Solid Conductor Branch Circuits: Spring connectors, wire nuts, for conductors 12 through 8AWG.

2.4 LUGS AND PADS

A. Ampacity: Cross-sectional area of pad for multiple conductor terminations to match ampere rating of panelboard bus or equipment line terminals.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation: Conductors shall not be installed until after conduit systems are permanently in place. Use an approved non hardening type wire pulling lubricant if lubricant is to be used. Maintain all conduits and wire pulls free from foreign material. If due to field conditions, more than a total of 300 degrees of bend are required; a pull box shall be furnished and installed for ease of installation. Said pull boxes must be sized and rated for the appropriate application and must remain easily accessible upon completion of the project (approval of the location shall be obtained from the Architect prior to installation). Show these pullboxes on the field record drawings. Conductors installed in underground raceways on site shall be duct sealed and taped where they exit the raceway to prevent the entrance of foreign material and moisture after the conductors are installed. Proper drainage shall be provided for underground pull and splice boxes.

B. Insulation: Use proper insulation types where temperature and environment are a factor.

C. Splices at or below grade level are not allowed.

D. Labeling: All conductors in panels, switchboards, terminal cabinets, vaults, pull boxes, and junction boxes shall be labeled with tape number markers indicating circuit number and identifying system. All labeling shall be permanent. In pullboxes and vaults, provide embossed brass tags identifying system serviced and function. See Section 260553 IDENTIFICATION OF ELECTRICAL SYSTEMS.

E. All conductors, wiring, cable where installed below floor, slab or underground shall be considered wet locations, and shall be rated accordingly. Non waterproof cabling is not allowed in any below grade or wet application.

F. Cables routed together in cable tray shall be stacked, organized and tie wrapped together in a neat and workman like manner. Random cable routing is not acceptable.

G. Cable and conductors routed through pull boxes and vaults shall be properly supported on porcelain or equal insulators mounted on steel rack inserts. Bend radius of cable or conductor shall not be less than six times the overall cable diameter.

H. Wires and Cables:
   1. Conductor Installation:
      a. Install conductors in raceways having adequate, code size cross-sectional area for wires indicated.
      b. Install conductors with care to avoid damage to insulation.
      c. Do not apply greater tension on conductors than recommended by manufacturer during installation.

d. Use of pulling compounds is permitted. Clean residue from exposed conductors and raceway entrances after conductor installation.

2. Conductor Size and Quantity:
   a. Install no conductors smaller than 12AWG unless otherwise shown.
   b. Provide all required conductors for a fully operable system.
3. Provide dedicated neutrals (one neutral conductor for each phase conductor).
4. Conductors in Cabinets:
   a. Cable and train all wires in panels and cabinets for power and control neatly and uniformly. Use plastic ties in panels and cabinets.
   b. Tie and bundle feeder conductors in wireways of panelboards.
   c. Hold conductors away from sharp metal edges.
   d. Connectors: Retighten mechanical type lugs and connectors for conductors to equipment prior to Notice of Completion.

3.2 FIELD QUALITY CONTROL

A. Tests:
   1. Test conductor insulation on feeders of 400 amp and greater for conformity with 1000 volt megohmmeter. Use Insulated Cable Engineers Association testing procedures. Minimum insulation resistance acceptable is 1 megohm for systems 600 volts and below.

   2. Test Report: Prepare a typed tabular report indicating the testing instrument, the feeder tested, amperage rating of the feeder, insulation type, voltage, the approximate length of the feeder, conduit type, and the measured resistance of the megohmmeter test. Submit report with operating and maintenance manual.

END OF SECTION 260519

SECTION 26 0526

GROUNDING AND BONDING FO ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section Includes:
   1. Grounding and bonding requirements of electrical installations for personnel safety and to provide a low impedance path for possible ground fault currents as described in CEC Article 250.
   2. “Grounding electrode system” refers to all electrodes required by CEC, as well as including made, supplementary, lightning protection system and telecommunications system grounding electrodes.
   3. The terms “connect” and “bond” are used interchangeably in this specification and have the same meaning.

B. Related Work:
   1. Section 260500, COMMON WORK RESULTS FOR ELECTRICAL.
   2. Section 260519, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.

PART 2 - PRODUCTS

2.1 GROUNDING AND BONDING CONDUCTORS

A. Equipment grounding conductors shall be UL 83 insulated stranded copper, except that sizes No. 10 AWG and smaller shall be solid copper. Insulation color shall be continuous green for all equipment grounding conductors, except that wire sizes No. 4 AWG and larger shall be permitted to be identified per CEC.

B. Bonding conductors shall be ASTM B8 bare stranded copper, except that sizes No. 10 AWG and smaller shall be ASTM B1 solid bare copper wire.

C. Conductor sizes shall not be less than what is shown on the drawings and not less than required by the CEC, whichever is greater.

2.2 GROUND RODS

A. Copperclad steel, 3/4" diameter by 10’ long, conforming to UL 467 unless otherwise noted on drawings and details.

B. Quantity of rods shall be as required to obtain the specified ground resistance or additional rods shall be driven to obtain specified resistance or less.

2.3 SPLICES AND TERMINATION COMPONENTS

A. Components shall meet or exceed UL 467 and be clearly marked with the manufacturer, catalog number, and permitted conductor size(s).

PART 3 - EXECUTION

3.1 GENERAL

A. Ground in accordance with the CEC, as shown on drawings, and as hereinafter specified.

B. System Grounding:
1. Secondary service neutrals: Ground at the supply side of the secondary disconnecting means and at the related transformers.
2. Separately derived systems (transformers downstream from the service entrance): Ground the secondary neutral.

C. Equipment Grounding: Metallic structures (including ductwork and building steel), enclosures, fire sprinklers, plumbing piping, raceways, junction boxes, outlet boxes, cabinets, machine frames, and other conductive items in close proximity with electrical circuits shall be bonded and grounded.

3.2 INACCESSIBLE GROUNDING CONNECTIONS

A. Make grounding connections which are buried or otherwise normally inaccessible (except connections for which periodic testing access is required) by exothermic weld.

3.3 SECONDARY EQUIPMENT AND CIRCUITS

A. Main Bonding Jumper: Bond the secondary service neutral to the ground bus in the service equipment.

B. Metallic Piping, Building Steel, and Supplemental Electrode(s):
1. Provide a grounding electrode conductor sized per CEC between the service equipment ground bus and all metallic water and gas pipe systems, building steel, and supplemental or made electrodes. Jumper insulating joints in the metallic piping. All connections to electrodes shall be made with fittings that conform to UL 467.
2. Provide a supplemental ground electrode and bond to the grounding electrode system.

C. Service Disconnect: Provide a ground bar bolted to the enclosure with lugs for connecting grounding conductors.

D. Switchgear, Switchboards:
1. Connect the various feeder equipment grounding conductors to the ground bus in the enclosure with suitable pressure connectors.
2. For service entrance equipment, connect the grounding electrode conductor to the ground bus.
3. Connect metallic conduits, which terminate without mechanical connection to the housing, by grounding bushings and grounding conductor to the equipment ground bus.

E. Transformers:
1. Exterior: Exterior transformers supplying interior service equipment shall have the neutral grounded at the transformer secondary. Provide a grounding electrode at the transformer.
2. Separately derived systems (transformers downstream from service equipment): Ground the secondary neutral at the transformer. Provide a grounding electrode conductor from the transformer to nearest component of the grounding electrode system and the ground bar at the service equipment.

F. Conduit Systems:
1. Ground all metallic conduit systems. All metallic conduit systems shall contain an equipment grounding conductor sized per CEC.
2. Non metallic conduit systems shall contain an equipment grounding conductor, except that non-metallic feeder conduits which carry a grounded conductor from exterior transformers to interior or building-mounted service entrance equipment need not contain an equipment grounding conductor.
3. Metal conduit containing only a grounding conductor, and which is provided for mechanical protection of the conductor, shall be bonded to that conductor at the entrance and exit from the conduit.

G. Feeders and Branch Circuits: Install equipment grounding conductors with all feeders, power and lighting branch circuits.

H. Boxes, Cabinets, Enclosures, and Panelboards:
1. Bond the equipment grounding conductor to each pullbox, junction box, outlet box, device box, cabinets, and other enclosures through which the conductor passes.
2. Provide lugs in each box and enclosure for equipment grounding conductor termination.
3. Provide ground bars in panelboards, bolted to the housing, with sufficient lugs to terminate the equipment grounding conductors.

I. Motors and Starters: Provide lugs in motor terminal box and starter housing or motor control center compartment to terminate equipment grounding conductors.

J. Receptacles shall not be grounded through their mounting screws. Ground with a jumper from the receptacle green ground terminal to the device box ground screw and the branch circuit equipment grounding conductor.

K. Ground lighting fixtures to the equipment grounding conductor of the wiring system when the green ground is provided; otherwise, ground the fixtures through the conduit systems. Fixtures

connected with flexible conduit shall have a green ground wire included with the conductors from the fixture through the flexible conduit to the first outlet box.

L. Fixed electrical appliances and equipment shall be provided with a ground lug for termination of the equipment grounding conductor.

3.4 CONDUCTIVE PIPING

A. Bond all conductive piping systems, interior and exterior, to the building to the grounding electrode system. Bonding connections shall be made as close as practical to the equipment ground bus.

3.5 GROUND RESISTANCE

A. Grounding system resistance to ground shall not exceed 5 ohms. Make necessary modifications or additions to the grounding electrode system for compliance without additional cost to the Owner. Final tests shall assure that this requirement is met.

B. Resistance of the grounding electrode system shall be measured using a four-terminal fall-of-potential method as defined in IEEE Standard 81. Ground resistance measurements shall be made before the electrical distribution system is energized and shall be made in normally dry conditions not less than 48 hours after the last rainfall. Resistance measurements of separate grounding electrode systems shall be made before the systems are bonded together below grade. The combined resistance of separate systems may be used to meet the required resistance, but the specified number of electrodes must still be provided.

C. Services at Pacific Gas and Electric Company interface point shall comply with their ground resistance requirements.

D. Below-grade connections shall be visually inspected by the IOR prior to backfilling. The Contractor shall notify the IOR 24 hours before the connections are ready for inspection.

E. Furnish a copy of tests to Owner at completion of project.

3.6 GROUND ROD INSTALLATION

A. Drive each rod vertically in the earth, not less than 9 1/2’ in depth.

B. Where permanently concealed ground connections are required, make the connections by the exothermic process to form solid metal joints. Make accessible ground connections with mechanical pressure type ground connectors.

C. Where rock prevents the driving of vertical ground rods, install angled ground rods or grounding electrodes in horizontal trenches to achieve the specified resistance.

END OF SECTION 260526

SECTION 260533

RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Conduit and fittings.
2. Outlet boxes.
3. Weatherproof outlet boxes.
4. Junction and pull boxes.

B. Related Work:
1. Installation of all wire, cable, conductor, boxes/gutters, pull ropes, fiber optic cable raceway, conduit, innerduct, cable sleeve and duct as described on the plans and/or as specified here-in. This scope shall include pathways to be installed underground on site and offsite, underslab, above grade, both concealed and exposed, overhead concealed and exposed as appropriately applied. Raceways/boxes shall be installed in accordance with their intended and allowed uses and as specified here-in whichever is more restrictive. Size and capacity of all raceway/boxes shall be as specified here-in or as depicted on the drawings, but shall not be less than that required by code. Larger raceway sizes may be specified than code would permit. The specifications shall govern.
2. Listed products for termination, coupling, extending, benching supports of raceways shall be used.
3. Raceways/boxes described by this section shall include, but not be limited to, power for site utilities and lighting, controls, fire alarm, power distribution, lighting, lighting controls, and other building low voltage/communications systems controls as may be required. Raceways, boxes and duct paths required for utility companies shall be installed per plans unless utility company requirements are more restrictive at which time those requirements shall take precedence.
4. Protection of and cleanliness of pathways and raceways must be assured during the construction process in order to eliminate the possibility of debris entering the conduit, duct, pathway resulting in decreased wire capacity and potential damage to installed conductors and cables.
5. Pathways are shown in a diagrammatic way and are generally accurate as to routing, however, it is the Contractor’s responsibility as a means and methods process to coordinate with all other trades that require space within a building. The Contractor shall obtain approval for installation of raceways routing through structural footings, retaining walls, columns, beams, perlins, grade beams, etc.

6. It is the Contractor's responsibility to insure that all raceway and boxes systems penetrate fire assemblies and sound rated assemblies in an approved manner using the appropriate and listed products for the purpose.
7. Trenching and backfilling for all underground conduit systems installed by the Electrical Contractor shall be the responsibility of the Contractor. Conduits shall have minimum cover requirement of 24" below finish grade. Refer to details on drawings for conduits in trench requirements. Locations of existing underground (UG) utility systems shall be determined by calling Underground Service Alert (USA) at least 48 hours prior to any excavation. Also refer to Section 26 05 46.13, ELECTRIC UTILITY SYSTEMS.
8. Minimum conduit size shall be 3/4".
9. All conduit, concrete pads, underground concrete shall be furnished and installed with the approved materials and type for the application. Provide proper traffic control during construction as well as barriers and protection of all excavations and trenching.
10. Empty or future conduits shall be properly plugged with plastic caps or inserts with a 3/8" polyethylene pull rope. Plastic or "duct" tape will not be acceptable.
11. Exterior installations: After conductors are installed, seal conduit ends to prevent entrance of foreign material using pliable duct seal, caps or waterproof expanding foam.
12. All systems including lighting, lighting controls, power distribution, etc. shall be in dedicated conduit systems.
13. Underground conduits entering building shall have the open end of conduit within building above the elevation of the conduit outside the building such that water cannot enter building through conduit. If such a condition exists, a pull box outside of building footprint shall be installed in conduit route before conduit enters building whereby top of pull box is below finish floor of building and moisture may exit box before entering building.
14. No single conduit run of any type shall exceed 300 degrees of radius bend from termination box to termination box.
15. Separate Raceway System: Provide a separate dedicated raceway system for each system installed, do not combine different systems into a raceway system.
16. Spare, Future Conduits: Conduits labeled conduit only, spare, or for future use, shall be provided with a pullrope, capped at each end, labeled as spare with destination marked, and turned over to the Owner in an unused state. Contractor shall not utilize these conduits for the installation of cabling or conductors as part of this scope of work. Contractor to verify and install at no additional cost to the Owner, additional conduits as required for the installation of the systems being installed.
17. Outlet System: Provide electrical boxes and fittings as required for a complete installation. Including but not limited to outlet boxes, junction boxes, pull boxes, bushings, locknuts, covers and all other necessary components.
18. Code Compliance: Comply with CEC as applicable to construction and installation of electrical boxes and fittings and size boxes according to CEC 312, 314 and 366 except as noted otherwise.
19. Outlets to be flush mounted: Maintain integrity of insulation and vapor barrier. Unless otherwise noted, flush mount all outlet boxes.
20. Provide putty pads of proper type around outlet boxes and/or as detailed on plan to meet sound transmission restrictions and fire ratings of walls.

1.3 SUBMITTALS

A. Provide Shop Drawings and Product Data for the Following Equipment:
   1. Conduit and fittings.

2. Outlet boxes.
3. Weatherproof outlet boxes.
4. Junction and pull boxes.
5. Concrete boxes and vaults.
6. Raceways

1.4 REGULATORY REQUIREMENTS

A. Conform to requirements of the CEC, latest adopted version with amendments by local AHJs.

B. Furnish products listed by UL or other independent and nationally recognized testing firm.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Heavy wall Rigid Non-Metallic Conduit, shall be PVC schedule 40 manufactured in accordance with NEMA Standard TC-2, UL-651 and WC 1094A specifications.

B. Extra heavy wall non-metallic conduit, shall be PVC schedule 80 manufactured in accordance with NEMA Standard TC-2, UL-651 and WC 1094A specifications.

C. Galvanized Rigid Steel (GRS) conduit shall be PVC Coated, hot dipped galvanized, zinc coated and shall comply with Underwriters Laboratories UL-6, ANSI Specification C-80.1 and Federal Specification WW-C-581E.

D. Electrical Metallic Tubing (EMT) shall be color coded as indicated, zinc coated, with a protective coating applied to the inside surface and shall comply with Underwriter Laboratories UL-797 ANSI Specification C-80.3 and Federal Specification WW-C-563A.

E. Flexible Metal Conduit (FMC) shall be continuous wound reduced wall galvanized steel produced to UL standards.

F. Liquid tight flexible metal conduit shall have a thermoplastic cover over a galvanized steel core containing an integral copper ground in sizes to 1 1/4" and shall be in compliance with UL standards and CEC Article 350.

G. Manufacturers:
1. Outlet Boxes: Bowers, Raco, Steel City or equal.
2. Weatherproof Outlet Boxes: Bell, Red Dot, [Carlon] or equal.
3. Floor Boxes: Wiremold/Walker, Hubbell, Steel City, or equal.
4. Junction and Pull Boxes: Circle AW, Hoffman, Wireguard or equal.
5. Box Extension Adapter: Bell, Red Dot, [Carlon] or equal.
6. Conduit Fittings: O-Z Gedney, Thomas & Betts, or equal.
7. Vaults: Christy, Brooks, Utility Vault or equal.
8. Putty pads: 3M, Hilti, or equal.
9. Heavy wall rigid non-metallic conduit, Carlon, Certainteed, R&G Sloane or equal.
10. Extra heavy wall non-metallic conduit, Carlon, Certainteed, R&G Sloane or equal.

11. Galvanized Rigid Steel (GRS) conduit shall be hot dipped galvanized, zinc coated and shall comply with Underwriters Laboratories UL-6, ANSI Specification C-80.1 and Federal Specification WW-C-581E.
12. Electrical Metallic Tubing (EMT) shall be zinc coated, with a protective coating applied to the inside surface and shall comply with Underwriter Laboratories UL-797 ANSI Specification C-80.3 and Federal Specification WW-C-563A.
13. Flexible Metal Conduit (FMC), Alflex, American Flexible Conduit or equal.
14. Liquid tight flexible metal conduit, Anacanda (type UA), Electri-flex Liquatite or equal.
15. Exterior In-Grade Boxes for Non-Utility Company, Precast concrete or polymer concrete, Utility Vault and Christy.

2.2 OUTLET BOXES

A. NEMA 3R gutter, junction and pull boxes shall be fabricated from code gage galvanized steel with screw cover fronts and concentric knockouts in the bottom only. Any penetrations to the side, top or back shall be weatherproofed in an approved manner such as “MYERS” gasketed type hub or equal.

B. Steel outlet boxes and plaster rings shall be galvanized rigid assemblies, either one piece pressed or factory welded construction containing the size and number of knockouts required. Steel outlet boxes shall be manufactured, sized and installed in accordance with CEC Article 314. Device Outlet: Installation of one or two devices at common location, minimum 4” square, minimum 1 1/2" deep. Single or 2 gang flush device plaster ring. Raco Series 681 and 686 or equal. Refer to drawings for data/communication outlet boxes.

C. Luminaire Outlet: minimum 4” square with correct plaster ring depth, minimum 1 1/2” deep with 3/8” luminaire stud if required. Provide proper depth plaster ring on bracket outlets and on ceiling outlets.

D. Multiple Devices: Three or more devices at common location. Install 1 piece gang boxes with 1 piece device plastering. Install one device per gang unless otherwise allowed.

E. Construction: Provide galvanized steel interior outlet wiring boxes, of the type, shape and size, including depth of box, to suit each respective location and installation; constructed with stamped knockouts in back and sides, and with threaded holes with screws for securing box covers or wiring devices. Boxes shall be properly secured to the structure such that they are flush with the finish surface. Boxes shall be made structurally secure by means of the proper fastening devices.

F. Accessories: Provide outlet box accessories as required for each installation, including mounting brackets, wallboard hangers, extension rings, plaster rings, luminaire studs, cable clamps and metal straps for supporting outlet boxes, compatible with outlet boxes being used and meeting requirements of individual wiring situations.

2.3 WEATHERPROOF OUTLET BOXES

A. Construction: Provide corrosion-resistant cast iron, with zinc finish, weatherproof outlet wiring boxes, of the type, shape and size, including depth of box, with threaded conduit ends, cast metal face plate with spring-hinged waterproof cap suitably configured for each application,

including face plate gasket, blank plugs and corrosion proof fasteners. Weatherproof boxes to be constructed to have smooth sides, zinc, galvanized finish.

B. Cover plates on outlet boxes mounted flush in the wall shall be gasketed to the wall in a watertight manner. Weatherproof boxes in wet locations as described in CEC 406.9 (B) shall be provided with a “while-in-use” cover; red dot ‘CK’ Series of aluminum die-cast construction, NEMA 3R, with lacquer finish.

2.4 JUNCTION AND PULL BOXES

A. Construction: Provide galvanized sheet steel junction and pull boxes, with screw-on covers; of the type shape and size, to suit each respective location and installation; with welded seams and equipped with steel nuts, bolts, screws and washers.

B. Location:
1. Install junction boxes above accessible ceilings for drops into walls for receptacle outlets from overhead.
2. Install junction boxes and pull boxes as required to facilitate the installation of conductors and limiting the accumulated angular sum of bends between boxes, cabinets and appliances to 300 degrees.
3. Locations: Junction boxes shall be located only where necessary and only in equipment rooms, closets, and accessible attic and underfloor spaces. A horizontal distance of 24” shall separate outlet boxes on opposite sides of occupancy separation walls, fire-rated walls or partitions.
4. Labeling: Junction box covers shall be marked with indelible ink indicated the circuit numbers passing through the box.

2.5 BOX EXTENSION ADAPTER

A. Construction: Cast iron with gasket.

B. Location: Install over flush wall outlet boxes to permit flexible raceway extension from flush outlet to fixed or movable equipment.

2.6 CONDUIT FITTINGS

A. Requirements: Provide corrosion-resistant punched-steel box knockout closures, conduit locknuts and plastic conduit bushings of the type and size to suit each respective use and installation.

B. Steel boxes may allow for field knock-out modifications, but shall in all other ways conform to code requirements.

2.7 EXTERIOR IN-GRADE BOXES FOR NON-UTILITY COMPANY USE SHALL BE:

A. Precast concrete or polymer concrete type with full bottoms and draining into gravel drywell. . Pull boxes 24” x 36” and larger shall have full bottom, set on a minimum of 24” of crushed rock with drainage as detailed on plans.

B. Flushmount in hardscape and 1” above grade in softscape.

C. Provided with full vehicular type cover, stamped with “ELECTRIC”, “LIGHTING”, COMMUNICATIONS”, etc. cover identification as shown on the drawings or as applicable.

D. Provided with brass hold-down bolts in cover.

E. Provided with necessary box extensions to gain proper depth.

F. Seal all conduit in underground boxes with duct seal after conductors have been installed.

2.8 IN-GRADE UTILITY COMPANY BOXES AND VAULTS

A. In-grade boxes and pads for utility company, shall be as specified by the respective utility company with all of the company’s requirements and construction methods met.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Conduit systems listed below are for use in installations where they are permitted to be used by CEC and/or other occupancy restrictions. The below installation methods do not intend to suggest that these materials be installed in conflict with any applicable code. Special attention to applications shall be made in building types such as Educational, Health Care, wet location, hazardous locations, assembly occupancy and multi-story, but not limited to these. Requirements which are more restrictive than the CEC may be called for by the drawings and / or these specifications. These requirements must be adhered to. The Electrical Contractor shall be responsible to use the proper conduit system for the application. Exposed conduit is not allowed below ceilings or above slab of floor, without the permission and approval of the Architect. All conduits shall be concealed except in electrical and telecommunication rooms. All Metallic Conduit installed below grade shall be PVC coated type.

B. Non-Metallic Rigid Conduit shall be used in concrete slabs, below concrete slabs on grade, or underground outside of a building slab or foundation. Maintain minimum depth requirements and cover with appropriate fill material. Minimum 4” of bedding and cover of backfill material 1/4" size grain and smaller maximum. Conduit shall be heavy wall Schedule 40 or 80, rigid PVC only. Rigid utility P&C duct shall not be used in any application. Properly sized grounding conductors shall be installed per CEC article 250, in all non-metallic conduit branch circuit and feeder runs. PVC conduit shall be formed or field bent only with the use of properly approved bending tools such as to not decrease the internal bore of the conduit. All conduits shall be cut square and reamed of burrs. Approved and compatible glue shall be used on all PVC fittings to attain watertight joints.

C. Galvanized Rigid Steel (GRS) conduit shall be used where exposed less than 8'–0" above finished grade to 18" below finished grade and where subject to physical damage. Conduits shall be cut square and reamed to remove burrs and sharp edges. Strap conduit below 8' above grade at 5' intervals. Unless otherwise noted, threadless setscrew and threadless weathertight fittings may be used in lieu of threaded fittings. All threaded ends entering a junction box of any type shall require one locknut on the inside and one on the outside of the enclosure and be provided with a plastic bushing or grounding bushing where necessary for proper grounding. Where exposed to moisture, a watertight hub or other approved method shall be required. All conduits shall be stubbed up straight and uniform into junction boxes, panels, cabinets, etc., and shall be (GRS) properly supported and strapped. All GRS conduit located below grade, shall be Pvc Coated Type..

D. Electrical Metallic Tubing (EMT) shall be used as allowed by code and as permitted by this specification. It shall not be in contact with soil or the concrete slab on the ground floor of any structure. Connectors and couplings shall be steel insulated set screw type where installed in indoor dry locations not subject to moisture. Where the potential for moisture is present, compression type weathertight fittings are required. One hole conduit straps are permitted from 1/2" to 1" and two hole conduit straps are required for size 1 1/4" and larger. EMT shall not be allowed in areas subject to physical damage. Install copper ground wire sized per CEC 250-122 in all EMT conduits. EMT shall be color coded as follows: Yellow – 277/480Volts, Red – Fire Alarm Circuits, Silver – 120/208Volts, Blue – Low Voltage Circuits (Under 50Volts).

E. Flexible conduit may be used where concealed in building construction or above dropped ceilings, but shall meet the following criteria: No individual run from distribution panel to last device shall exceed a cumulative length of 6' of flexible conduit from start to end. Flexible conduit shall not exceed a total directional change of 270 bending degrees in any one run between conduit terminations. Squeeze type or Jake type steel flex fittings of a grounding type are required. Flexible conduit must be supported in accordance with CEC. Where exposed to the weather, moisture, or spray down flexible conduit shall be of the liquidtight type. Fittings shall be manufactured for use with liquidtight flexible conduit. All motor connections shall be made with liquidtight flex. Flexible conduit may not be used where exposed except for last 2' of equipment connection and unless otherwise noted or approved. A copper ground wire sized per CEC 250-122 shall be installed in all flexible conduit runs. Flexible conduit may not be used exposed. Weatherproof liquid tight conduit shall not be used at roof level for equipment connections with lengths exceeding 24" nor shall it be used to circumvent a rigid conduit system in a horizontal direction.

F. Underground conduits and transition to above grade/slab shall be:
   1. GRS elbows.
   2. GRS risers from GRS elbow below grade to equipment (device, outlet, panel, cabinet, etc.) above grade.
   3. GRS elbows/risers to be PVC coated or 10 MIL taped wrapped (1/2" lapped) to 3" above finish grade or top of slab.

G. Conduit Supports: Conduit runs may be supported by one-hole and two-hole straps or supports as manufactured by Unistrut, Minerallac, Caddy or equals. Supports may be fastened by means of anchors, shields, beam clamps, toggle bolts, or other approved methods appropriate for the application and size of conduit. Conduit support methods are subject to review by the engineer and authority having jurisdiction for adequacy. Installations deemed inadequate shall be corrected by the contractor at no cost to the Owner.

H. Bends and offsets shall be made with approved tools for the type of conduit being utilized. Bends shall be made without kinking or destroying the smooth bore of the conduit. Parallel conduits shall be run straight and true with bends uniform and symmetrical. Minimum radii shall be per CEC 344-24.

I. Conduit Stub-outs below grade shall be capped with plastic cap, and identified by placing a pull box marked with correctly identified utility such as “Elec”, “Tel”, etc. Dimension for exact location on field record drawings.

J. Conduit Seals: Where below grade conduits enter structure through slab or retaining wall of building or basement, seal the inside of each conduit as follows:
   1. Provide damming material around conductors 3” into conduit.
   2. Fill 3” of conduit with 3M #2123 sealing compound.
   3. Wrap conductors where they exit the conduit with 3M #2229 "Scotch Seal" mastic tape. Lap tape to approximate diameter of the raceway and wrap outside of conduit opening with (minimum) one turn.
   4. Use conduit sealing bushings type CSB (O-Z/Gedney) or equal.
   5. Empty conduits shall be sealed with standard non-hardening duct seal compound and then capped to prevent entrance of moisture and gases and to meet fire resistance requirements.
   6. Provide cable drip loop minimum 12” high.

K. Marker tape: Place plastic yellow marker tape at 12” below finish grade along and above buried conduits. Label tape "CAUTION: ELECTRICAL LINES BELOW" or similar wording.

L. Electrical and communications systems raceways routed underground shall not occupy the same trench as plumbing utilities such as sewer, water, storm drain, gas or other wet or dry gaseous utility system. A minimum of 12” of undisturbed earth is required. Where utilities must cross in closer proximity to each other due to physical constraints, 6” minimum crossing distances are allowed, however 18” on all sides of a utility crossing must be concrete encased.

M. Duct bank defined here-in shall be four or more conduits in a common trench, conduit spacers and saddles shall be required in all trenches where more than two conduits over 2” in diameter travel in the same trench. Proper spacing between systems as outlined above shall be required and spacers shall be located each 5’ (maximum) along trench route from point to point.

N. Conduits, routed below footings, slabs, grade beams, columns, and other structural elements shall be installed in strict compliance with structural details and criteria shown on structural plans. Clearances below structural elements and sleeves through structural elements must be carefully planned to avoid conflict and must be approved by the structural engineer if conflict arises.

O. All conduit or raceways passing through fire rated walls, floors, or ceilings shall be installed with a listed penetration method which protects the opening to the same rating as the assembly and is non hardening.

P. Location: Locate boxes and conduit bodies so as to ensure accessibility of electrical wiring.

Q. Anchoring: Secure boxes rigidly to the substrate upon which they are being mounted, or solidly embed boxes in concrete or masonry.

R. Special Application: Provide weatherproof outlets for locations exposed to weather or moisture.

S. Knockout Closures: Provide knockout closures to cap unused knockout holes where blanks have been removed.

T. Mount heights of outlet boxes, unless otherwise required by ADA, shall be as noted on drawings.

U. Coordinate all electrical device locations with the architectural floor plan and interior and exterior elevations to prevent mounting devices within elements that they may conflict such as cabinetry, mirrors, planters, etc.

V. Size outlet and junction boxes to minimum wire fill space requirements. Upsize box as required to allow ease of wire installation and device installation.

W. Outlet and junction boxes in fire rated walls shall be gauged and spaced so as not to exceed the maximum penetration allowed by the assembly without compromising the fire rating. If a conflict arises relative to a specific condition, the contractor shall follow the requirements of the fire authority and ask for guidance from the design team. At no time should a larger box be installed prior to resolution of conflict.

END OF SECTION 260533

SECTION 260546.13

ELECTRIC UTILITY SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section Includes:
   1. Manholes, handholes and ducts to form a complete underground raceway system.
   2. “Duct” and “conduit”, and “raceway” are used interchangeably in this specification and have the same meaning. Refer to Section 260533, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS for approved raceway and materials as well as execution.
   3. Scope of Work: Furnishing, installation and connection of manholes, handholes and ducts to form a complete underground raceway system for distribution of electrical and signal systems and utility service entrance facilities. This specification shall also provide guidance for construction of the utility company underground and substructure requirements. Contact serving company directly and obtain current detailed requirements of installation and adhere by same. Provide trenching, conduit, backfill, boxes and equipment pads as applicable. Nothing here in shall be construed to be in conflict with the requirements of the utility company, which shall take precedence over any possible conflicting requirement.

B. Related Work:
   1. SITEWORK.
   2. FLATWORK.
   3. LANDSCAPING.
   4. Section 260500, COMMON WORK RESULTS FOR ELECTRICAL.
   5. Section 260533, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS: Conduits, fittings and boxes for raceway systems.
   6. Section 260526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

1.3 SUBMITTALS

A. Submit in accordance with Section 260500, COMMON WORK RESULTS FOR ELECTRICAL.

B. Shop Drawings:
   1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.

2. Include manholes, handholes, duct materials, and hardware. Proposed deviations from details on the drawings shall be clearly marked on the submittals.
3. If necessary to locate manholes or handholes at locations other than shown on the drawings, show the proposed locations accurately on scaled site drawings.
4. Precast manholes and handholes: Submit detail drawings and design calculations for approval prior to installation.

1.4 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.

B. Underwriters Laboratories, Inc. (UL):
1. UL 467 Grounding and Bonding Equipment
2. UL 651 Schedule 40 and 80 Rigid PVC Conduit
3. UL 6 Electrical Rigid Metal Conduit-Steel

C. National Fire Protection Association (NFPA):
1. 70 California Electrical Code (CEC)

D. National Electrical Manufacturers Association (NEMA):
1. RN 1 Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
2. TC 2 Electrical Polyvinyl Chloride (PVC) Tubing And Conduit
3. TC 3 PVC Fittings For Use With Rigid PVC Conduit And Tubing

E. American Concrete Institute (ACI):
1. 318 Building Code Requirements For Structural Concrete

F. American Society for Testing and Materials (ASTM):
1. C478 Standard Specification for Precast Reinforced Concrete Manhole Sections
2. C478M Standard Specification for Precast Reinforced Concrete Manhole Sections (Metric).
3. F512 Standard Specification for Smooth-Wall Polyvinyl Chloride (PVC) Conduit and Fittings for Underground Installation

G. Utility company Handout Package and Construction Requirements for Underground and Substructure Installation.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Concrete: ACI 318, 3000 psi minimum 28 day compressive strength.

B. Reinforcing Steel: Number 4 minimum.

C. Manhole Hardware:
   1. Frames and covers (traffic type).
   2. Sump frames and gratings.
   3. Pulling Irons: 7/8” diameter hot dipped galvanized steel bar with exposed triangular shaped opening.
   4. Cable supports:
      a. Cable stanchions, hot rolled, heavy duty, hot dipped galvanized "T" section steel 2 1/4" by 1/4" in size and punched with 14 holes on 1 1/2" centers for attaching cable arms.
      b. Cable arms, 3/16” gage, hot rolled, hot dipped galvanized sheet steel pressed to channel shape. Arms shall be approximately 2 1/2" wide and 14” long.
      c. Insulators for cable supports, high glazed, wet process porcelain.
      d. Spares: Equip each cable stanchion with two spare cable arms and six spare insulators for future use.
      e. Miscellaneous hardware, hot dipped galvanized steel.

D. Handhole Hardware:
   1. Frames and covers configuration as shown on the drawings.
   2. Pulling irons, 7/8” diameter galvanized steel bar with exposed triangular shaped opening.

E. Ground Rod Sleeve: Provide a 3” PVC sleeve in manhole floors so that a driven ground rod may be installed.

F. Manholes and Handholes shall be precast units and be constructed as described below. Units shall comply with ASTM C478, C478M.
   1. Size: Plan area and clear height shall be not less than that shown on the drawings.
   2. Accessories, hardware, and facilities shall be the same as required for poured in place type.
   3. Assume ground water level 3’ below ground surface unless a higher water table is shown in the boring logs and adjust design accordingly.

G. Ducts:
   1. Size shall be as shown on drawings.
   2. Ducts (concrete encased):
      a. Plastic Conduit:
         1) NEMA TC6 & 8 and TC9 plastic utilities conduit UL 651 and 651A Schedule 40 PVC.
         2) Duct shall be suitable for use with 90 degree C rated conductors.
   3. Ducts (direct burial):
      a. Plastic duct:
         1) NEMA TC2 and TC3, EPC-40, Type II.
         2) UL 651 and 651A, Schedule 40 Schedule 80 PVC.
         3) Duct shall be suitable for use with 75 degree C rated conductors.
      b. Rigid metal conduit, PVC-coated: UL6 and NEMA RN1 galvanized rigid steel, threaded type, coated with PVC sheath bonded to the galvanized exterior surface, nominal 0.040” thick.

H. Ground Rods: Per Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

I. Ground Wire: Stranded bare copper No. 6 AWG minimum.

J. Conduit Spacers: Prefabricated plastic.

K. Warning Tape: Standard 4 mil polyethylene 3" wide tape, detectable type, red with black letters, imprinted with "CAUTION BURIED ELECTRIC CABLE BELOW".

L. Pull Rope: Plastic with 200 pound minimum tensile strength.

PART 3 - EXECUTION

3.1 TRENCHING

A. Refer to EARTHWORK section of specification for trenching back-filling, and compaction requirements.

B. Work with extreme care near existing ducts, conduits, cables, and other utilities to avoid damaging them.

C. Cut the trenches neatly and uniformly for utility company trenches, notify for inspections by utility company a minimum of 48 hours in advance.

D. Conduits to be installed under existing paved areas, roads, and railroad tracks which are not to be disturbed shall be protected into place. Conduits shall have a minimum of 36" cover.

E. Trench Preparation: Refer to details on drawings for conduits in trench requirements.

F. Excavation: Provide 6" gravel in bottom of excavated holes for subsurface transformers and all concrete boxes. Spare gravel shall be available for final adjustment. The Contractor is responsible for final grade level of enclosures and boxes. Non-conformance will be corrected by electrical contractor at his expense.

G. Conduit Routing: Sharp turns, bends, or other irregularities in the conduit must be avoided. Minimum radius bends shall be as required by the serving utility company. Every effort should be made to obtain a straight water tight conduit line. The end of all spare conduits must be capped. The utility company Inspector must approve deviation from layout.

H. Conformance: All work must conform to the utility company "handout package" and Specification specific to this project.

I. Joint Trenching: Maintain all required depths, clearance and separations as required by code, ordinance or utility company policies. Coordinate with other utilities to confirm requirements.

3.2 PADMOUNTED EQUIPMENT

A. Provide adequately sized and reinforced concrete pads with openings for conduit(s) as necessary by the utility company and or the equipment manufacturer.

B. A grounding system shall be installed at each padmounted piece of equipment including, but not limited to, a ground rod, grounding conductor, ufer, and ground grid (where indicated).

C. Padmounted equipment shall be bolted to concrete pad with minimum 5/8” x 7 1/2" anchor bolts, one in each of 4 corners of each section of padmounted equipment.

END OF SECTION 260546.13

SECTION 262200

LOW VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section Includes:
   1. Dry type general purpose transformers rated 600 volts and below.

B. Related Work:
   1. Section 260500, COMMON WORK RESULTS FOR ELECTRICAL.
   2. Section 260533, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS: Conduits.
   3. Section 260526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.

1.3 SUBMITTALS

A. Submit in accordance with Section 260500, COMMON WORK RESULTS FOR ELECTRICAL.

B. Shop Drawings:
   1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
   2. Include electrical rating, impedance, dimensions, weight, mounting details and materials, decibel rating, terminations, temperature rise, no load and full load losses, and connection diagrams.
   3. Complete nameplate data including manufacturer’s name and catalog number.

C. Manuals:
   1. Submit, simultaneously with the shop drawings, companion copies of complete operating and maintenance manuals including technical data sheets and wiring diagrams.

1.4 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements) form a part of this specification to the extent referenced. Publications are referenced in the text by designation only.

B. National Fire Protection Association (NEPA):
   1. 70-2022 California Electrical Code (CEC)

C. National Electrical Manufacturers Association (NEMA):
   1. ST 20 Dry-Type Transformers for General Applications
   2. TP-1 Energy Efficient Transformers
   3. DOE – 2022 Transformers

PART 2 - PRODUCTS

2.1 GENERAL PURPOSE DRY TYPE TRANSFORMERS

A. Unless otherwise specified, dry type transformers shall be in accordance with NEMA, CEC and as shown on the drawings. Transformers shall be UL listed or labeled. All transformers shall comply with NEMA TP-1 energy efficiency standards as adopted by the State of California. Efficiency shall be tested in accordance with NEMA TP2.

B. Dry type transformers shall have the following features:
   1. Copper wound.
   2. Self-cooled by natural convection, isolating windings, indoor, dry type. Autotransformers shall not be accepted unless otherwise stated.
   3. Rating and winding connections shall be as shown on the drawings.
   4. Ratings shown on the drawings are for continuous-duty without the use of cooling fans.
   5. Insulation systems:
      a. Transformers 30 KVA and larger: UL rated 220 degree C system having an average maximum rise by resistance of 115 degree C in a maximum ambient of 40 degree C.
      b. Transformers below 30 KVA: Same as for 30 KVA and larger or UL rated 115 degree C system having an average maximum rise by resistance of 80 degree C in a maximum ambient of 40 degree C.

   6. Core and coil assemblies:
      a. Rigidly braced to withstand the stresses caused by short circuit currents and rough handling during shipment.
      b. Cores shall be grain oriented, non-aging, silicon steel.
      c. Coils shall be continuous windings without splices except for taps.
      d. Coil loss and core loss shall be optimum for efficient operation. NEMA TP-1 type.
      e. Primary and secondary tap connections shall be brazed or pressure type.
      f. Coil windings shall have end fillers or tie downs for maximum strength.
      g. Terminals shall be rated 75 degrees C minimum.

7. Certified sound levels determined in accordance with NEMA, that do not exceed the following:

Transformer Rating	Sound Level Rating
0 - 9 KVA	40 dB
10 - 50 KVA	45 dB
51 - 150 KVA	50 dB
151 - 300 KVA	55 dB
301 - 500 KVA	60 dB

8. Nominal impedance shall be as permitted by NEMA.
9. Single phase transformers rated 15 KVA through 25 KVA shall have two, 5 percent full capacity taps below normal rated primary voltage. All transformers rated 30 KVA and larger shall have two, 2-1/2 percent full capacity taps above, and four, 2-1/2 percent full capacity taps below normal rated primary voltage.
10. Core assemblies shall be grounded to their enclosures by adequate flexible ground straps.
11. Enclosures:
    a. Temperature rise at hottest spot shall conform to NEMA Standards, and shall not bake and peel off the enclosure paint after the transformer has been placed in service.
    b. Ventilation openings shall prevent accidental access to live components.
    c. Thoroughly clean and paint at the factory with manufacturer's prime coat and standard finish.
12. Standard NEMA features and accessories including ground pad, lifting provisions and nameplate with the wiring diagram and sound level indicated on it.
13. Dimensions and configurations shall conform to the spaces designated for their installations.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation shall be in accordance with the CEC, and as shown on the drawings.

B. Install the transformers with adequate clearance at a minimum 6 inches or more from wall and adjacent equipment for air circulation to remove the heat produced by transformers and as recommended by the manufacturer to achieve U.L. listing.

C. Install transformers on vibration pads designed to suppress transformer noise and vibrations.

D. Use flexible metal sealtight conduit to contain the conductors from the transformer to the raceway system.

E. Transformers shall be secured to meet CBC seismic zone 4 requirements.

END OF SECTION 262200

SECTION 262413

SERVICE AND DISTRIBUTION SWITCHBOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section Includes:
   1. Service and distribution switchboard where shown on the contract drawings and specified herein.
   2. Terms distribution switchboard and distribution panel are used interchangeably on the documents.

1.3 QUALITY ASSURANCE

A. Conform to applicable Codes and NEMA, ANSI and IEEE Standards.

1.4 SUBMITTALS

A. Conform to applicable provisions of Section 03300 of Division 01, Submittals and of Section 260500, COMMON WORK RESULTS FOR ELECTRICAL.

B. Shop Drawings shall show and contain the following information:
   1. Plans showing top and bottom of switchboards.
   2. Front, rear and side elevations of switchboards.
   3. Schematic Wiring Diagrams showing the following:
      a. One-line diagram with each circuit numbered.
      b. Schedule showing circuit number, description and rating of protective device(s).
      c. Complete short circuit with standability of bus.
   4. One-half inch equal to one-foot scale drawings of electrical rooms or areas overall dimensions for equipment layout including space available for conduits and protective devices.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Each switchboard shall be U.L. listed deadfront, deadrear, completely self-supporting, with the required number of vertical sections bolted together to form one floorstanding switchboard.

Construction shall be NEMA Class II with line and load and main bus connections accessible from the front. Provide switchboards of 800 amperes or greater rating with line and load insulated bus bars. Overcurrent protective devices shall be grouped in convertible type construction. Vertical sections shall have full height bussing and where space for future devices is indicated on the Drawings all the necessary mounting hardware shall be furnished. Switchboards shall include all protective devices and other equipment indicated on the Contract Drawings with the necessary interconnections, instrumentation, and control wiring. Bus shall be solid copper. Bus bars shall be solid copper and mounted on supports of high impact-resistant, non-tracking insulating material, and braced to withstand the maximum available fault current as indicated on the Contract Drawings. Other ratings shall be as indicated on the Contract Drawings. Series-connected or "integrated equipment" short circuit ratings shall not be applied in lieu of, or to comply with, short circuit and interrupting capacity ratings indicated on the Drawings. Switchboards shall be as manufactured by Eaton, ABB or engineer approved equal.

B. Distribution sections shall contain circuit breakers, with shunt trips, ground fault protection, and other accessories, as indicated on the Drawings, as well as provisions for metering. Each disconnecting means shall be provided with a means for individual padlocking. Switches shall be heavy-duty, quick-make and quick-break, and horsepower rated through 500 HP. Switches rated over 600 amperes shall be bolted pressure contact type. Ratings of disconnecting means and overcurrent protective devices shall be as indicated on the Drawings.

C. Finish: Interior finish shall be a gray lacquer or enamel; exterior finish shall be a gray baked-on enamel or lacquer. Apply all finish coatings over a rust-inhibiting metal primer.

D. Identification: Each switchboard shall have an engraved laminated plastic nameplate identifying the switchboard as designated and located on the Contract Drawings, and indicating voltage, phase, and number of system conductors. For example, "Switchboard MS 277/480V. 3Ø 4W. Lettering shall be white on black finish and 2” high minimum. Nameplates shall be affixed by a minimum of two escutcheon pins or screws.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION

A. Switchboard(s) shall be securely bolted to the flooring or structure. Final attachment means shall be in compliance with the seismic requirements of governing authority. Shop Drawings indicating the bolt down requirements shall be provided by the manufacturer along with all necessary calculations and shall be submitted with the Shop Drawings of the switchboard equipment. Refer to other Sections of the Specifications related to seismic requirements.

B. Switchboard(s) shall be installed on a level floor, with shims provided where necessary to attain both horizontal and vertical "plumb" conditions.

C. Switchboard(s) equipment shall be protected during construction in such a manner to prevent plaster, paint, dust, etc. from defacing the finish of equipment. Prior to final acceptance of the equipment, the interior of the equipment shall be cleaned of all foreign materials and debris. Any blemishes or defects on the exterior of the equipment shall be repaired by painting the

equipment with paint supplied by the manufacturer of the equipment to match the factory finishes.

D. All floor mounted switchgear and panelboards shall be sealed with caulking between bottom of metal housing and the concrete pad or slab to prevent entrance of dust and debris.

E. All openings in switchgear and panelboards that are unused shall be sealed with bolts and washers. Use caulking where holes or openings cannot be sealed by way of a washer, or bolts or conduit seals.

F. All ventilated openings in panelboards and switchboards shall be furnished with dust filters to prevent entrance of dust and debris.

G. No operating handles in any switchboard shall be located above 6’- 6” above finish floor. Code clearances on all sides of the switchboard equipment shall be maintained.

H. Switchboards shall be mechanically grounded to the grounding system.

I. Furnish ammeters, voltmeters, current and potential transformers, test blocks, control switches, fuses and circuit breakers, and other devices as indicated on the Drawings. Meters shall be switchboard type semi-flush mounted, with phase selector switches. The height of all devices shall comply with Code and utility company requirements with the switchboard installed on a 2” high concrete pad.

J. For solidly grounded "wye" services of more than 150 volts to ground, but not exceeding 600 volts phase to phase, provide ground fault protection of equipment for each service disconnecting means for services rated 1000 amperes or more, without a single main disconnecting means. Provide ground fault protection of equipment for other systems as indicated on the Drawings.

K. Ground fault sensors shall be zero sequence type unless indicated otherwise on the drawings. Trip settings shall be as indicated on the drawings or as directed by the Engineer.

L. Protection: Keep switchboards covered during construction operations. Clean interior and exterior after all connections are completed. Factory connections shall be checked and re-torqued tight as required. Damage shall be field or factory repaired to a condition acceptable to the Engineer at no added cost to the Owner.

M. Operational Test of the ground fault protection system using the primary current injection method shall be performed by qualified personnel with suitable testing/recording equipment in the presence of the Owner. Provide the Owner with a "Certified Test Report" including test parameters.

3.2 ACCEPTANCE TESTING OF SWITCHGEAR AND SWITCHBOARD ASSEMBLIES

A. General:
   1. Inspect for physical damage.
   2. Compare equipment nameplate information with latest single line diagram and report discrepancies.
   3. Inspect for proper alignment, anchorage and grounding.

4. Check tightness of accessible bolted bus joints by calibrated torque wrench method. Refer to manufacturer's instruction for proper foot pound levels.
5. Key interlock systems shall be physically tested to insure proper function.
   a. Closure attempt shall be made on locked open devices. Opening attempt shall be made on locked closed devices.
   b. Key exchange shall be made with devices operated in off-normal positions.
6. All doors, panels and sections shall be inspected for paint, dents, scratches.

END OF SECTION 262413

SECTION 262416

PANELBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section Includes:
   1. Panelboards.

B. Related Work:
   1. Section 260500, COMMON WORK RESULTS FOR ELECTRICAL.
   2. Section 260533, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS.
   3. Section 260519, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW): Cables and wiring.
   4. Section 260526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.

1.3 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.

B. Underwriters Laboratories, Inc. (UL):
   1. No. 50 Enclosures for Electrical Equipment
   2. No. 67 Panelboards
   3. No. 489 Molded Case Circuit Breakers and Circuit Breaker enclosures

C. National Fire Protection Association (NFPA):
   1. No. 70-2019 California Electrical Code (CEC)

D. National Electrical Manufacturers Association (NEMA):
   1. No. PB-1 Panelboards.
   2. No. AB-3 Molded Case Circuit Breakers and Their Application.

PART 2 - PRODUCTS

2.1 PANELBOARDS

A. Panelboards shall be in accordance with UL, NEMA, NEC, CEC and as shown on the drawings. Approved manufacturers are Eaton, ABB or engineer approved equal.

B. Panelboards shall be standard manufactured products. All components of the panelboards shall be the product and assembly of the same manufacturer. All similar units of all panelboards to be of the same manufacturer.

C. All panelboards shall be dead front safety type. Arrange sections for easy removal without disturbing other sections.

D. All panelboards shall be completely factory assembled with molded case circuit breakers. All factory wiring shall be checked for correct tightness and visually inspected to insure that bussing and terminations have not become loose in transit to job site.

E. Panelboards shall have main breaker or main lugs, bus size, voltage, phase, top or bottom feed, and flush or surface mounting as scheduled on the drawings. Refer to single line diagram and panel schedules on drawings. Terminals shall be minimum 75 degree rated. Back fed main circuit breakers are not allowed. Main circuit breakers shall be vertically mounted.

F. Panelboards shall have the following features:
   1. Nonreduced size solid copper bus bars, and connection straps bolted together and rigidly supported on molded insulators. Bus bar taps for panels with single pole branches shall be arranged for sequence phasing of branch circuit devices.
   2. Full size neutral bar, mounted on insulated supports.
   3. Ground bar with sufficient terminals for all grounding wires. Buses braced for the available short circuit current.
   4. All breakers and phase bus connections shall be arranged so that it will be possible to substitute a 2-pole breaker for two single pole breakers, and a 3-pole breaker for three single pole breakers, when trip is 30 amps or less and frame size is 100 amperes or less, without having to drill and tap the main bus bars at bus straps. Where used for heating and air conditioning, and refrigeration equipment, use only HACR type U.L. listed circuit breakers.
   5. Design interior so that protective devices can be replaced without removing adjacent units, main bus connectors, and without drilling or tapping.
   6. Where designated on panel schedule as "space", include all necessary bussing, device support and connections. Provide blank cover for each space.
   7. Series rated panelboards are not permitted.

G. Panelboards serving as building mains shall be “service entrance rated” and UL Listed as “service equipment”.

2.2 CABINETS AND TRIMS

A. Cabinets:

1. Provide galvanized steel cabinets to house panelboards. Cabinets for outdoor panels shall be factory primed and suitably treated with a corrosion-resisting paint finish meeting UL standard for outdoor applications.
2. All ventilated openings in panelboards and switchboards, shall be furnished with dust filters to prevent entrance of dust and debris.
3. Cabinets for panelboards may be of one piece formed steel or of formed sheet steel with end and side panels welded, riveted, or bolted as required.
4. Provide necessary hardware for "in" and "out" adjustment of panel interior.
5. Cabinets for two section panelboards shall be arranged side by side, and shall be the same height. Flush mounted cabinets should be 1 1/2" apart and coupled by conduit nipple.
6. Gutter size in panel boxes, on all sides, shall be in accordance with the CEC. Penetrations through gutter to live area of the panelboard shall incorporate approved non-metallic-grommet type of insulation to protect wire passing through.

B. Trims:
1. Fabricate trim of sheet steel consisting of frame with door attached by concealed hinges. Provide flush or surface trim as shown on the drawings.
2. Flush trims shall overlap the box by at least 3/4" all around.
3. Surface trim shall have the same width and height as the box.
4. Flush or surface trims shall not have ventilating openings.
5. Secure trims to back boxes by indicating trim clamps.
6. Provide a welded angle on rear of trim to support and align trim to cabinet.
7. Provide separate trims for each section of multiple section panelboards. Trims and doors of sections shall be of the same height.

C. Doors:
1. Provide doors with flush type latch and manufacturer's standard lock. Doors over 48 inches in height shall have a vault handle and a three-point catch, arranged to fasten door at top, bottom, and center.
2. In making switching devices accessible, doors shall not uncover any live parts.
3. Provide concealed hinges welded to the doors and trims.
4. For lighting or power contactors incorporated in panelboards, provide separate doors for the contactors.
5. Provide keyed alike system for all panelboards.
6. Provide a directory card, metal holder, and transparent cover. Permanently mount holders on inside of doors.

D. Painting:
1. Thoroughly clean and paint trims and doors at the factory with primer and manufacturer's standard finish.

2.3 MOLDED CASE CIRCUIT BREAKERS FOR PANELBOARDS

A. Breakers shall be UL listed and labeled, in accordance with the CEC, as shown on the drawings, and as specified.

B. Circuit breakers in panelboards shall be bolt on type on phase bus bar or branch circuit bar.
1. Molded case circuit breakers for lighting and appliance branch circuit panelboards shall have minimum interrupting rating as indicated.

2. Molded case circuit breakers shall have automatic, trip free, non-adjustable, inverse time, and instantaneous magnetic trips for 100 ampere frame or less. Magnetic trip shall be adjustable from 3 times to 10 times for breakers with 600 ampere frames and higher. Factory setting shall be HI, unless otherwise noted.

C. Breaker features shall be as follows:
1. Integral housing of molded insulating material.
2. Silver alloy contacts.
3. Arc quenchers and phase barriers for each pole.
4. Quick-make, quick-break, operating mechanisms.
5. A trip element for each pole, thermal magnetic type with long time delay and instantaneous characteristics, a common trip bar for all poles and a single operator.
6. Electrically and mechanically trip free.
7. An operating handle which indicates ON, TRIPPED, and OFF positions.
   a. Line connections shall be bolted.
   b. Interrupting rating shall not be less than the maximum short circuit current available at the line terminals as indicated on the drawings. The interrupting rating shall not be less than the minimum identified requirement.
8. An overload on one pole of a multipole breaker shall automatically cause all the poles of the breaker to open.

2.4 SEPARATELY ENCLOSED MOLDED CASE CIRCUIT BREAKERS

A. Where separately enclosed molded case circuit breakers are shown on the drawings, provide circuit breakers in accordance with the applicable requirements of those specified for panelboards.

B. Enclosures are to be of the NEMA types shown on the drawings. Where the types are not shown, they are to be the NEMA type most suitable for the environmental conditions where the breakers are being installed.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation shall be in accordance with CEC, as shown on the drawings, and as specified.

B. Locate panelboards so that the present and future conduits can be conveniently connected. Coordinate the sizes and layout of cabinets within the designated spaces. All equipment must be dimensioned in order to physically fit in the spaces provided and to comply with all code required clearances.

C. Install a typewritten schedule of circuits in each panelboard. Include the room numbers (as finally described by the Owner) and items served on the cards. Obtain final room numbers from Architect prior to creating schedule.

D. Mount the panelboard so that maximum height of the top circuit breaker above finished floor shall not exceed 78 inches.

E. For panelboards located in areas accessible to the public, paint the exposed surfaces of the trims, doors, and boxes with finishes to match surrounding surfaces after the panelboards have been installed.

F. Circuit numbers shall correspond to the approved panel schedule. Provide as-built drawings showing the actual circuit numbers being used for each device on each branch circuit if changes are required.

G. Verify depth of all flushmounted enclosures in walls to be certain wall depth will accommodate panel depth prior to installation.

H. All openings in switchgear and panelboards that are unused shall be sealed with bolts and washers. Use caulking where holes or openings cannot be sealed by way of a washer, or bolts or conduit seals.

I. Contractor shall include the services of an independent testing company to test GFI circuit breakers in distribution and main panelboards.

END OF SECTION 262416

SECTION 262726

WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section Includes:
   1. Wiring devices.

B. Related Work:
   1. Section 260500, COMMON WORK RESULTS FOR ELECTRICAL.
   2. Section 26 0533, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS.
   3. Section 260519, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.
   4. Section 260526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

PART 2 - PRODUCTS

2.1 RECEPTACLES

A. General: All receptacles shall be listed by Underwriters Laboratories, Inc.
   1. Mounting straps shall be plated steel, with break-off plaster ears and shall include a self-grounding feature (this feature does not substitute for a grounding conductor terminated on grounding strap of device). Terminal screws shall be brass, brass plated or a copper alloy metal.

   2. Receptacles shall be of a screw terminal type, “pressure type quick wire” terminations are not allowed.
   3. Duplex receptacles shall be premium grade single phase, 20 ampere, 120 volts, 2-pole, 3-wire, and conform to the NEMA 5-20R configuration in NEMA WD 6. The duplex type shall have bussing break-off feature for two-circuit operation. The ungrounded pole of each receptacle shall be provided with a separate terminal.

   4. Wiring device color selection to be provided by Architect. Contractor to verify device color with Architect prior to procurement.

   5. Ground Fault Interrupter Duplex Receptacles: Shall be an integral unit suitable for mounting in a standard outlet box.

a. Ground fault interrupter shall be commercial grade and consist of a differential current transformer, solid state sensing circuitry and a circuit interrupter switch. It shall be rated for operation on a 60 Hz, 120 volt, 20-ampere branch circuit. Device shall meet CEC requirements. Device shall have a minimum nominal tripping time of 1/30th of a second. Devices shall meet UL 943.

B. Receptacles; 20, 30 and 50 ampere, 250 volts: Shall be complete and match with appropriate cord grip plug. Devices shall meet UL 231.

C. Weatherproof Receptacles: Shall consist of a listed cast aluminum weather resistant duplex receptacle, mounted in box with a gasketed, weatherproof, cast, while in use cover plate and cap receptacle opening. The cap shall be permanently attached to the cover plate by a spring-hinged flap.

2.2 WALL PLATES

A. Wall plates for switches and receptacles shall be stainless steel.

B. Standard NEMA design, so that products of different manufacturers will be interchangeable. Dimensions for openings in wall plates shall be accordance with NEMA WD1.

C. For receptacles or switches ganged together, wall plates shall be a single ganged plate.

D. Wall plates for data, telephone or other communication outlets shall be as specified in the associated specification.

E. Surface mounted boxes, NEMA1, shall be industrial grade raised galvanized steel covers. In shop areas all receptacles shall be dust proof and or waterproof where applicable.

F. Waterproof device covers shall be cast iron, 4-corner screw type, for FS and FD type mounting. Device covers shall be zinc galvanized finish. Weatherproof covers shall be lockable.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Switches installed in hazardous areas shall be explosion proof type in accordance with the CEC and as shown on the drawings.

B. Installation shall be in accordance with the CEC, NECA “Standard of Installation”, and as shown as on the drawings.

C. Ground terminal of each receptacle shall be bonded to the outlet box with an approved green bonding jumper, and also be connected to the green equipment grounding conductor.

D. General: Devices shall be of the type specified herein. All devices shall be installed with “pigtailed” leads from the outlet box. No device shall be used in the “feed through” application.

Screw terminals shall be used to connect all devices to the circuit and shall be grounded by means of a ground wire where grounding terminals are provided in the device.

E. Installation: Devices and plates shall be installed in a “plumb” condition and must be flush with the finish surface of the wall where boxes are recessed.

F. Mounting heights: All control and convenience devices shall comply with California Code of Regulations Title 24 and ADA with respect to accessibility requirements. Mounting heights are indicated on plans.

G. Install receptacles with the ground down.

H. Install switches with the off position down.

I. Clean debris from outlet boxes.

J. device for proper polarity.

END OF SECTION 262726

SECTION 265600

SITE LIGHTING

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies the furnishing, installation, and connection of exterior luminaires, controls, poles and supports.

1.2 RELATED WORK

A. Section 260500, COMMON WORK RESULTS FOR ELECTRICAL.

B. Section 260533, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS: Conduits, fittings, and boxes for raceway systems.

C. Section 260519, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW): Low voltage power and lighting wiring.

D. Section 260546.13, ELECTRIC UTILITY SYSTEMS: Underground handholes and conduits.

E. Section 260526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.

F. Section 265670, LIGHTING ACCEPTANCE TESTING.

1.3 SUBMITTALS

A. Submit in accordance with Section 260500, COMMON WORK RESULTS FOR ELECTRICAL.

B. Shop Drawings:
   1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
   2. Include electrical ratings, dimensions, mounting, details, materials, required clearances, terminations, wiring and connection diagrams, photometric data, ballasts, poles, luminaires, effective projected area (EPA), lamps and controls.

1.4 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.

B. American Society for Testing and Materials (ASTM).

C. American Concrete Institute (ACI).

D. American National Standards Institute (ANSI).

E. Aluminum Association Inc. (AA).

F. Illuminating Engineering Society of North America (IESNA).

G. National Electrical Manufacturers Association (NEMA).

H. National Fire Protection Association (NFPA).

I. Underwriters Laboratories, Inc. (UL).

1.5 DELIVERY, STORAGE, AND HANDLING

A. Poles: Do not store poles on ground. Store poles so they are at least one foot above ground level. Do not remove factory-applied pole wrappings until just prior to installation of pole.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Materials and equipment shall be in accordance with CEC, UL, ANSI, and as shown on the drawings and specified.

2.2 POLES

A. General:
   1. Poles shall be steel as specified in fixture schedule and as shown on the drawings. Finish shall be as approved by the Architect. Assume custom color for bidding.
   2. The pole and arm assembly shall be designed for wind loading of 100 miles per hour, with an additional 30 percent gust factor, supporting luminaire(s) having the effective projected areas indicated per manufacturer data.
   3. Poles shall anchor-bolt type designed for use with underground supply conductors. Poles shall have handhole with a minimum clear opening of 2.5” x 5”. Handhole cover shall be secured by stainless steel captive screws.
   4. Provide a steel grounding stud opposite hand hole openings.

B. Provide a base cover matching the pole in material and color to conceal the mounting hardware pole-base welds and anchor bolts.

C. Hardware: All necessary hardware shall be 300 series tamperproof stainless steel.

2.3 FOUNDATIONS FOR POLES

A. Foundations shall be cast-in-place concrete.

B. Foundations shall support the effective projected area of the specified pole, arm(s), and luminaire(s) under wind conditions previously specified in this section.

C. Place concrete in spirally wrapped treated paper forms for round foundations, and construct forms for square foundations.

D. Rub-finish and round all above-grade concrete edges to approximately 1/4" radius unless otherwise detailed.

E. Concrete shall have 3000 psi minimum 28 day compressive strength.

F. Anchor bolt assemblies and reinforcing of concrete foundations shall be as shown on the drawings and meet ACI 318. Anchor bolts shall be in a welded cage or properly positioned by the tie wire to stirrups.

G. Install a copperclad ground rod, not less than 3/4" diameter by 10' long in pullbox adjacent to each fixture. Where rock or layered rock is present, drill a hole not less than 2" in diameter and 6' deep, backfill with tamped fine sand and drive the rod into the hole. Bond the rod to the pole with not less than number 6 AWG bare copper wires. The method of bonding shall be approved for the purpose.

H. After leveling of pole grout base solid between plate and footing with dry pack concrete for vibration reduction.

2.4 LUMINAIRES

A. UL 1598 and ANSI C136.17. Luminaries shall be weatherproof, heavy duty, outdoor types designed for efficient light utilization, adequate dissipation of lamp and ballast heat and safe cleaning and relamping.

B. Light emitting diode (LED)-based solid state lighting (SSL) products shall be factory tested in accordance to the International Engineering Society (IES) LM-79 recommendations and meet ANSI C78.377-2008 standards.

C. LED light sources shall be factory tested in accordance to IES LM-80 recommendations.

D. LED-based SSL product shall incorporate an external heat sink, integral to the luminaire.

E. IESNA HB-9 and RP-8 light distribution pattern types shall be as indicated on the drawings.

F. Incorporate associated drivers within the luminaire housing.

G. Lenses shall be frame-mounted heat-resistant, borosilicate glass, prismatic refractors. Attach the frame to the luminaire housing by hinges or chain.

H. Pre-wire internal components to terminal strips at the factory.

I. Bracket mounted luminaries shall have leveling provisions and clamp type adjustable slip-fitters with locking screws.

J. Materials shall be rustproof. Latches and fittings shall be non-ferrous metal.

K. LED-based SSL luminaires shall be manufactured specifically for LED lamps with drivers integral to the luminaire housing.

L. Shall be listed by either U.L. or equal listing agency and comply with IEEE C.62.41-1991, Class A operation.

M. Provide a minimum power factor of 0.9.

N. Minimum operating temperature appropriate for outdoor environments.

O. Shall operate at a frequency greater than or equal to 120Hz.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install lighting in accordance with the CEC, as shown on the drawings, and in accordance with manufacturer's recommendations.

B. Poles:
1. Provide pole foundations with galvanized steel anchor bolts, threaded at the top end and bent 1.57 rad 90 degrees at the bottom end. Provide galvanized nuts, washers, and ornamental covers for anchor bolts. Thoroughly compact backfill with compacting arranged to prevent pressure between conductor, jacket, or sheath and the end of conduit elbow. Adjust poles as necessary to provide a permanent vertical position with the bracket arm in proper position for luminaire location.
2. After the poles have been installed, shimmed and plumbed, grout the spaces between the pole bases and the concrete base with non-shrink concrete grout material. Provide a plastic or copper tube, of not less than 3/8" inside diameter, through the grout tight to the top of the concrete base for moisture weeping.

C. Foundation Excavation: Depth shall be as indicated on drawings. Dig holes large enough to permit the proper use of tampers to the full depth of the hole. Place backfill in the hole in 6" maximum layers and thoroughly tamp. Place surplus earth around the pole in a conical shape and pack tightly to drain water away.

3.2 GROUNDING

A. Ground noncurrent-carrying parts of equipment including metal poles, luminaries, mounting arms, brackets, and metallic enclosures as specified in Section 260526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS. Where copper grounding conductor is connected to a metal other than copper, provide specially treated or alloyed connectors suitable and listed for this purpose.

END OF SECTION 265600

SECTION 265670

LIGHTING ACCEPTANCE TESTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section Includes:
   1. A Certificate of Acceptance will be required to be filed (by the Contractor) with and approved by the enforcement agency prior to receiving a final occupancy permit. The Certificate of Acceptance will indicate that the Contractor has demonstrated acceptance requirements of the plans and specifications, that current requirements for installation certificates are met, and that currently required operating and maintenance information (as well as the Certificate of Acceptance) were provided to the building Owner.
   2. Testing, evaluation and calibration of lighting controls equipment provided, installed and connected in Division 26.
   3. Documentation of test results, completion of "Certificate of Acceptance" and "Certificate of Installation" forms and filing with the enforcement agency for approval.
   4. Specific Jobsite Conditions:
      a. Acceptance testing must be tailored for each specific design, job site, and climactic conditions. While the steps for conducting each test remain consistent, the application of the tests to a particular site may vary. The Contractor shall review the construction documents and include all required time, material, testing equipment, etc. as required to complete the requirements of this section.

B. Related Work:
   1. Section 260500, COMMON WORK RESULTS FOR ELECTRICAL.
   2. Section 265600, SITE LIGHTING.

1.3 REFERENCES

A. Acceptance Testing Criteria: 2022 Building Energy Efficiency Standards Non-Residential Compliance Manual.

1.4 SYSTEM DESCRIPTION

A. Performance Requirements:

1. All material, equipment, labor and technical supervision to perform tests, calibrations and documentation specified herein.

B. Scope of Testing, Evaluation and Calibration (as applicable):
1. Automatic (master) time switches.
2. Photo electric sensors.
3. Outdoor astronomical time switches.

1.5 SUBMITTALS

A. Test Reports:
1. Written record of all tests and completion of forms included in this section.
2. At completion of project, assemble a final test report. Submit report to the enforcement agency and the Owner prior to final occupancy to include:
a. Summary of project.
b. Description of systems and equipment tested.
c. Visual inspection report.
d. Description of tests.
e. Test results.
f. Conclusions and recommendations.
3. Report shall be bound in booklet form, include on the Contractor's letterhead the title of the report and the systems tested.

B. Constructability Plan Review
1. The Contractor shall review the construction drawings and specifications to understand the scope of the acceptance tests and raise critical issues that might affect the success of the acceptance tests prior to starting construction. Any constructability issues associated with the lighting system should be forwarded to the design team for review/modifications prior to equipment procurement and installation. The Contractor shall submit on company letterhead, with the lighting control equipment required by Section 260500, COMMON WORK RESULTS FOR ELECTRICAL, 1.4B, a letter confirming that the constructability review has been completed and their company has reviewed and is prepared to complete the lighting acceptance testing required by this section. The lighting acceptance testing shall be included in this letter at the time of equipment submittals.

PART 2 - PRODUCTS

2.1 FORMS

A. Lighting acceptance testing forms and verification procedures for lighting systems that require acceptance testing can be downloaded from the CEC website.

B. These completed forms will be the deliverable product to the enforcement agency and Owner as described in 1.4 of this section.

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

A. Tests:
   1. Contractor's Responsibilities:
      a. Perform all required tests required by this section.
      b. Schedule testing with building Owner.
      c. Provide window/skylight masking material required to simulate dark conditions of test during evening hours.
      d. Calibration of equipment such as light meters, photo electric controls, etc.
      e. Programming of time switches (interior/exterior lighting) for operations as directed by the Owner.

3.2 ADJUSTING

A. Final Settings: The Contractor shall be responsible for implementing all final settings and adjustments on controls equipment as required for a complete and operating system.

END OF SECTION 265670