

**CITY OF BEAUMONT
PUBLIC WORKS AGREEMENT**

This PUBLIC WORKS AGREEMENT ("Agreement") is made and effective August 19, 2025, by and between the City of Beaumont, a municipal corporation ("CITY"), and ZECO INC., a California Corporation ("CONTRACTOR"). In consideration of the mutual covenants and conditions set forth herein, the parties agree as follows:

RECITALS

This Agreement is entered into on the basis of the following facts, understandings, and intentions of the parties to this Agreement:

- A. The CITY Public Works Department desires to engage CONTRACTOR to provide Construction Services for the Sports Park. Services shall be performed under the P-04 Sports Park Field Lighting and Expansion project budget; and,
- B. The CITY published an Invitation to Bid, using the Formal Bidding Procedure, on May 28, 2025; The Invitation to Bid is attached hereto as Exhibit A; and,
- C. The CONTRACTOR responded to the Invitation on July 1, 2025; CONTRACTOR's Bid response is attached hereto as Exhibit B; and,
- D. The CITY desires to engage CONTRACTOR to provide the services provided for in the Invitation to Bid.

I. SCOPE OF WORK

The CONTRACTOR shall perform within the time set forth in Article 2 of this Agreement and shall furnish all labor, materials, equipment, tools, utility services, and transportation and perform and complete all work required in connection with the P-04 Sports Park Field Lighting and Expansion (hereinafter "Project"). CITY's Invitation for Bids ("Invitation") for the Project, dated May 28, 2025, and CONTRACTOR's Bid in response to the Invitation, dated July 1, 2025, are attached hereto as Exhibits A and B, respectively, and incorporated herein by this reference. The Scope of Work for the Project is set forth in the Invitation. In the event that any terms of the Bid are different from the Invitation for Bids, the Invitation for Bids shall control. Any additional terms in the Bid that purport to bind the City to any additional terms not contained in this Agreement and related attachments shall not be binding on the City.

By entering into this Agreement, CONTRACTOR acknowledges that there may be other contractors on the site whose work will be coordinated with that of its own.

CONTRACTOR expressly warrants and agrees that it will cooperate with other contractors and will do nothing to delay, hinder, or interfere with the work of other separate contractors, the CITY, the Construction Manager, the Engineer, or utilities. CONTRACTOR also expressly agrees that, in the event its work is hindered, delayed, interfered with, or otherwise affected by a separate contractor, its sole remedy will be a direct action against the separate contractor. To the extent allowed by law, the CONTRACTOR will have no remedy, and hereby expressly waives any remedy against the CITY, the Construction Manager (if any), and the Engineer on account of delay, hindrance, interference or other events.

II. TIME FOR PROJECT COMPLETION

All of CONTRACTOR's work on the Project shall be completed within durations established for the individual activities. All work shall commence ten (10) calendar days after receiving a written Notice of Award from the CITY or Construction Manager, if a Construction Manager is employed by CITY on the Project. CONTRACTOR shall refer to the invitations for bids, and Project Plans and Specifications, all of which, as set forth below, are incorporated herein by reference, for contractual obligations regarding individual activity durations.

III. THE CONTRACT SUM

The CITY shall pay to the CONTRACTOR for the performance of this Agreement, subject to any additions and deductions provided in the Project documents, the sum of THREE MILLION, NINE HUNDRED FIFTY-SEVEN THOUSAND, SIX HUNDRED SIXTY-ONE DOLLARS AND 00/100 (\$3,957,661.00).

IV. PROGRESS PAYMENTS

Based upon Applications for Payment submitted to the Engineer by the CONTRACTOR and Certificates for Payment issued by the Engineer, the CITY shall make progress payments on account of the Contract Sum to the CONTRACTOR as provided in the General Conditions, which are fully incorporated into this Agreement by this reference.

This Agreement is subject to the provisions of Article 1.7 (commencing at Section 20104.50) of Division 2, Part 3 of the Public Contract Code regarding prompt payment of contractors by local governments. Article 1.7 mandates certain procedures for the payment of undisputed and properly submitted payment requests within 30 days after receipt, for the review of payment requests, for notice to Contractor of improper payment requests, and provides for the payment of interest on progress payment requests which are not timely made in accordance with that Article. This Agreement hereby incorporates the provisions of Article 1.7 as though fully set forth herein.

V. INDEMNITY, DEFENSE AND HOLD HARMLESS AGREEMENT

CONTRACTOR shall indemnify, defend with legal counsel approved by CITY, and hold harmless CITY, its officers, officials, employees and volunteers from and against all liability, loss, damage, expense, cost (including without limitation reasonable legal counsel fees, expert fees and all other costs and fees of litigation) of every nature arising out of or in connection with CONTRACTOR's negligence, recklessness or willful misconduct in the performance of work hereunder or its failure to comply with any of its obligations contained in this Agreement, except such loss or damage which is caused by the sole or active negligence or willful misconduct of the CITY. Should conflict of interest principles preclude a single legal counsel from representing both CITY and CONTRACTOR, or should CITY otherwise find CONTRACTOR's legal counsel unacceptable, then CONTRACTOR shall reimburse the CITY its costs of defense, including without limitation reasonable legal counsels fees, expert fees and all other costs and fees of litigation. The CONTRACTOR shall promptly pay any final judgment rendered against the CITY (and its officers, officials, employees and volunteers) with respect to claims determined by a trier of fact to have been the result of the CONTRACTOR's negligent, reckless or wrongful performance. It is expressly understood and agreed that the foregoing provisions are intended to be as broad and inclusive as is permitted by the law of the State of California and will survive termination of this Agreement.

CONTRACTOR obligations under this section apply regardless of whether or not such claim, charge, damage, demand, action, proceeding, loss, stop notice, cost, expense, judgment, civil fine or penalty, or liability was caused in part or contributed to by an Indemnitee. However, without affecting the rights of CITY under any provision of this agreement, CONTRACTOR shall not be required to indemnify and hold harmless CITY for liability attributable to the active negligence of CITY, provided such active negligence is determined by agreement between the parties or by the findings of a court of competent jurisdiction. In instances where CITY is shown to have been actively negligent and where CITY active negligence accounts for only a percentage of the liability involved, the obligation of CONTRACTOR will be for that entire portion or percentage of liability not attributable to the active negligence of CITY.

VI. PREVAILING WAGES

- A. Contractor shall comply with all applicable laws and regulations relating to prevailing wages. Wage rates for this Project shall be in accordance with the "General Wage Determination Made By the Director of Industrial Relations Pursuant To California Labor Code, Part 7, Chapter 1, Article 2, Sections 1770, 1773 and 1773.1", for Riverside County. Wage rates shall conform with those posted at Beaumont City Hall and the Project site.

B. The following Labor Code sections are hereby referenced and made a part of this Agreement:

1. Section 1775 - Penalty for Failure to Comply with Prevailing Wage Rates.
2. Section 1777.4 - Apprenticeship Requirements.
3. Section 1777.5 - Apprenticeship Requirements.
4. Section 1813 - Penalty for Failure to Pay Overtime.
5. Sections 1810 and 1811 - Working Hour Restrictions.
6. Section 1775 - Payroll Records.
7. Section 1773.8 - Travel and Subsistence Pay.

VII. RECORD AUDIT

In accordance with Government Code, Section 8546.7, records of both the CITY and the CONTRACTOR shall be subject to examination and audit by the Auditor General for a period of three (3) years after final payment.

VIII. FINAL PAYMENT

Final payment, constituting the entire unpaid balance of the Agreement Sum, shall be paid by the CITY to the CONTRACTOR no sooner than thirty-five (35) days after a Notice of Completion has been recorded, unless otherwise stipulated in the Notice of Completion, provided the work has then been completed, the Agreement fully performed, and a final Certificate for Payment has been issued by the Engineer.

IX. CONTRACTOR'S FAILURE TO PROCURE COMPLETION OF PROJECT

In the event CONTRACTOR fails to furnish tools, equipment, or labor in the necessary quantity or quality, or fails to prosecute the work or any part thereof contemplated by this Agreement in a diligent and workmanlike manner, and if the CONTRACTOR for a period of three (3) calendar days after receipt of written demand from CITY or its designated representative to do so, fails to furnish tools, equipment, or labor in the necessary quantity or quality, and to prosecute its work and all parts thereof in a diligent and workmanlike manner, or after commencing to do so within said three (3) calendar days, fails to continue to do so; then the CITY may exclude the CONTRACTOR from the premises, or any portion thereof, and take possession of said premises or any portion thereof, together with all material and equipment thereon, and may complete the work contemplated by this Agreement or any portion of said work, either by furnishing the tools, equipment, labor or material necessary, or by letting the unfinished portion of said work, or the portion taken over by the CITY to another contractor or by a combination of such methods. In any event, the procuring of the completion of said work, or the portion thereof taken over by the CITY, shall be a charge against the CONTRACTOR, and may be deducted from any money due or becoming due to CONTRACTOR from

the CITY, or the CONTRACTOR shall pay the CITY the amount of said charge, or the portion thereof unsatisfied. The sureties, provided for under this Agreement shall become liable for payment should CONTRACTOR fail to pay in full any said cost incurred by the CITY.

X. INSURANCE

Prior to the beginning of and throughout the duration of the Project, CONTRACTOR and its subcontractors shall maintain insurance in conformance with the requirements set forth below. Attached hereto as Exhibit C are copies of Certificates of Insurance and the waiver of subrogation endorsement as required by Section 6.B.1. 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.

A. Types 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:

- 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 \$1,000,000 per occurrence, \$2,000,000 general aggregate, for bodily injury, personal injury, and property damage, and a \$2,000,000 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.
- 2. 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.

3. Umbrella or excess liability insurance. If CONTRACTOR is using umbrella coverage to meet part of its liability insurance requirements under Paragraph 1 of this Section, CONTRACTOR shall obtain and maintain an umbrella or excess liability insurance that will provide bodily injury, personal injury, completed operations and property damage liability coverage at least as broad as the primary coverages set forth above, including commercial general 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.

4. Workers' compensation insurance. 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, along with the certificate of insurance, a Waiver of Subrogation endorsement in favor of CITY, its officers, agents, employees and volunteers.

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 CITY, its officials, officers, agents, and employees, shall be included as insureds under the policy.

1. Builder's Risk Insurance. Upon commencement of construction and with approval of CITY, CONTRACTOR shall obtain and maintain builder's risk insurance for the entire duration of the Project until only the

CITY has an insurable interest. The Builder's Risk coverage shall include the coverages as specified below.

The named insureds shall be CONTRACTOR and CITY, including its officers, officials, employees, and agents. All Subcontractors (excluding those solely responsible for design Work) of any tier and suppliers shall be included as additional insureds as their interests may appear. CONTRACTOR shall not be required to maintain property insurance for any portion of the Project following transfer of control thereof to CITY. The policy shall contain a provision that all proceeds from the builder's risk policy shall be made payable to the CITY. The CITY will act as a fiduciary for all other interests in the Project.

Policy shall be provided for replacement value on an "all risk" basis for the completed value of the project. There shall be no coinsurance penalty or provisional limit provision in any such policy. Policy must include: (1) coverage for any ensuing loss from faulty workmanship, Nonconforming Work, omission or deficiency in design or specifications; (2) coverage against machinery accidents and operational testing; (3) coverage for removal of debris, and insuring the buildings, structures, machinery, equipment, materials, facilities, fixtures and all other properties constituting a part of the Project; (4) Ordinance or law coverage for contingent rebuilding, demolition, and increased costs of construction; (5) transit coverage (unless insured by the supplier or receiving contractor), with sub-limits sufficient to insure the full replacement value of any key equipment item; (6) Ocean marine cargo coverage insuring any Project materials or supplies, if applicable; (7) coverage with sub-limits sufficient to insure the full replacement value of any property or equipment stored either on or off the Site or any staging area. Such insurance shall be on a form acceptable to CITY to ensure adequacy of terms and sublimits and shall be submitted to the CITY prior to commencement of construction.

B. Other provisions or requirements

- 1. Proof of insurance.** CONTRACTOR shall provide certificates of insurance to CITY as evidence of the insurance coverage required herein, along with a waiver of subrogation endorsement for workers' compensation. Insurance certificates and endorsements must be approved by CITY's risk manager prior to commencement of performance. Current certification of insurance shall be kept on file with CITY at all times during the term of this contract. CITY reserves the right to require complete, certified copies of all required insurance policies, at any time.

- 2. Duration of coverage.** CONTRACTOR shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property, which may arise from or in connection with the performance of the Work hereunder by CONTRACTOR, his agents, representatives, employees or subcontractors. CONTRACTOR must maintain general liability and umbrella or excess liability insurance for as long as there is a statutory exposure to completed operations claims. CITY and its officers, officials, employees, and agents shall continue as additional insureds under such policies.
- 3. 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.
- 4. 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.
- 5. 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 CITY's risk manager.
- 6. 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 and insurance clauses from each of its subconsultants.

7. **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.
8. **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.
9. **Notice of cancellation.** CONTRACTOR agrees to oblige its insurance agent or broker and insurers to provide to CITY 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.
10. **Additional insured status.** General liability policies 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.
11. **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.
12. **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.
13. **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.

14. 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.

15. 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.

16. 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.

17. 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.

XI. CONTRACTOR'S LICENSE

CONTRACTOR must possess at the time of commencing work and throughout the Project duration, a Contractor's License, issued by the State of California, which is current and in good standing. CONTRACTOR shall ensure that any subcontractor working on the Project possesses at the time of commencing work and throughout the Project duration, a Contractor's License, issued by the State of California, which is current and in good standing.

XII. REGISTRATION REQUIREMENTS

A. Pursuant to Section 1771.1(a) of the Labor Code:

"A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code,

or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.”

B. CONTRACTOR must be registered with the Department of Industrial Relations (DIR) of the State of California in order to be eligible to work on public works projects. CONTRACTOR must ensure registration with the DIR that is active and in good standing.

C. No contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) 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 1771.1(a)].

No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) 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.

C. The CONTRACTOR is not subject to public works requirements (including registration with the DIR) if the public works project is under \$1,000, unless the CITY knows that the same CONTRACTOR will be awarded total project costs in excess of \$1,000 for a given year.

IXIII. CORPORATION IN GOOD STANDING

If CONTRACTOR is a corporation, the undersigned hereby represents and warrants that the corporation is duly incorporated and in good standing in the State of California, and that Robert M Matich whose title is President is authorized to act for and bind the corporation.

XIV. PROVISIONS REQUIRED BY LAW

Each and every provision of law and clause required by law to be inserted in this Agreement shall be deemed to be inserted herein and the Agreement shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not currently inserted, then upon application of either party the Agreement shall forthwith be physically amended to make such insertion or correction.

XV. SUBSURFACE HAZARDOUS MATERIALS

- A. In the event trenches or other excavations extend deeper than four (4) feet below the surface, the CONTRACTOR shall promptly, and before the following conditions are disturbed, notify the CITY in writing of any:
 - 1. Material that the CONTRACTOR believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code that is required to be removed to a Class I, Class II or Class III disposal site in accordance with the provisions of existing law.
 - 2. Subsurface or latent physical conditions at the site differing from those indicated.
 - 3. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in the Work or the character provided for in the CONTRACT.
- B. Upon receipt of said notification the CITY will 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 the time required for performance of any part of the work, the CITY will issue a change order under the procedures described in the General Conditions.
- C. 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 Agreement, but shall proceed with all work to be performed under the Agreement. The CONTRACTOR shall retain any and all rights provided either by Agreement or by law which pertain to the resolution of disputes and protests between the contracting parties.

XVI. COMPONENT PARTS OF THE CONTRACT

This Agreement entered into consists of the following CONTRACT DOCUMENTS, all of which are component parts of the Agreement as if herein set out in full or attached hereto:

X Notice Inviting Bids	X Faithful Performance Bond
X Scope of Work Summary	X Labor and Materials Payment
X Information for Bidders	Bond
X Bid Form	X General and Supplemental
X Non-Collusion Affidavit	Conditions

X Special Conditions	X Plans and Specifications
X Project Construction Schedule	X Addenda
X Proposed Subcontractors	X Drawings
X Bid Bond	X Change Orders
X Information Required of Bidder	X Shop Drawing Transmittals
X Certificate Regarding Worker's Compensation	

All of the above named CONTRACT DOCUMENTS are intended to be complementary. Work required by one of the above named CONTRACT DOCUMENTS and not by others shall be done as if required by all.

XVII. ENTIRE CONTRACT

This Agreement constitutes the entire contract of the parties. No other agreements or contracts, whether oral or written, pertaining to the work to be performed, exists between the parties. This Agreement can be modified only by an amendment in writing, signed by both parties.

[Signatures on following page.]

SIGNATURE PAGE TO

**CITY OF BEAUMONT
PUBLIC WORKS AGREEMENT**

CITY:

CITY OF BEAUMONT

By: _____
Mike Lara, Mayor

CONTRACTOR:

ZECO, INC.

By: _____

Print Name: Amin Nazaremi

Title: President

ATTEST:

By: _____
Nicole Wheelwright, Deputy City Clerk

APPROVED AS TO FORM:

By: _____
John O. Pinkney, City Attorney

**CITY OF BEAUMONT
PUBLIC WORKS AGREEMENT**

EXHIBIT "A"

CITY'S INVITATION FOR BIDS

(Insert behind this page.)



Website:
<http://beaumontca.gov/>

Address:
550 E. 6th Street
Beaumont, CA 92223

Phone:
951.769.8520

**REQUEST FOR BID
FOR:
CIP P-04
SPORTS PARK FIELD LIGHTING
AND EXPANSION PROJECT**

CRITICAL BID DATES, TIMES, & LOCATIONS

Bid Published:	May 28, 2025
Bids Must Be Received By:	July 1, 2025 @ 11:00 A.M.
Place of Bid Receipt:	550 E. Sixth Street (City Hall)
Questions In By:	June 11, 2025 @ 12:00 P.M.
Bid Opening Date:	July 1, 2025 @ 11:05 A.M.
Bid Opening Location:	550 E. Sixth Street (City Hall), Room 4

CONTACTS:

Raveena Chara
Procurement and Contracts Specialist
rchara@beaumontca.gov

RFB AVAILABLE:

City of Beaumont Planet Bids Portal
<https://vendors.planetbids.com/portal/66785/bo/bo-search>



**CITY OF BEAUMONT
CALIFORNIA
PUBLIC WORKS DEPARTMENT
CONTRACT DOCUMENTS & SPECIFICATIONS
FOR:

CIP P-04
SPORTS PARK FIELD LIGHTING
AND EXPANSION PROJECT**

Prepared Under the Supervision of:

A blue ink signature of Robert L. Vestal, written in a cursive style, is positioned above the name line.

Robert L. Vestal, P.E., Public Works Director/City Engineer

05/21/2025

Date



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NOTICE INVITING BIDS

The City of Beaumont, Public Works Department ("City") is soliciting bids for:

CIP P-04 SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

Bid Published:	May 28, 2025
Bids Must Be Received By:	July 1, 2025 @ 11:00 A.M.
Place Of Bid Receipt:	550 E. Sixth Street (City Hall)
Questions In By:	June 11, 2025 @ 12:00 P.M.
Bid Opening Date:	July 1, 2025 @ 11:05 A.M.
Bid Opening Location:	550 E. Sixth Street (City Hall), Room 4

Bids received after this time will be discarded. Bids shall be valid for 90 calendar days after the bid opening date. Bids must be submitted on the City's Bid Forms. Bids must be prepared on the approved Bid forms and in the manner prescribed in the Instructions to Bidders. Bids must be submitted with the following subject:

"CIP P-04 SPORTS FIELD LIGHTING AND EXPANSION PROJECT"

LOCATION OF WORK:

The work to be completed is located at 39200 Brookside Avenue in the City of Beaumont and is defined in Appendix A - Construction Plans.

DESCRIPTION OF WORK:

The proposed work shall be performed in accordance with the contract documents, including but not limited to the general conditions, special conditions, technical specifications, contract drawings, permits, and all other reference documents.

In general, the work includes, but is not limited to renovating an existing park by upgrading the lighting and amenities, including the removal of the existing turf and replacement with artificial turf, retrofitting the existing field sports lighting system, installation of new storm drain facilities, concrete curb and gutter, sidewalk and fencing, etc.

CONTRACT LENGTH:

The work for this contract shall not exceed **140 working days**. Contract time shall commence upon issuance of the Notice to Proceed from the City. If The Work is not completed as stated in the Contract Documents, there will be liquidated damages in a sum of \$2,000 per calendar day as stated in General Conditions, Article 43.

AWARD OF CONTRACT:

The City shall award the Contract for the Project to the lowest responsive, responsible

INSTRUCTIONS TO BIDDERS



bidder as determined from the base bid. The City reserves the right to reject any or all bids or to waive any irregularities or informalities in any bids or in the bidding process.

The City of Beaumont hereby affirmatively ensures that minority business enterprises will be afforded full opportunity to submit Bids in response to this Notice, and that minorities nor minority business enterprises will not be discriminated against on the basis of race, color, national origin, ancestry, sex, or religion in any consideration leading to the award of contract. For further information, please see the form titled "Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)" within the Bid Documents.

CONTRACT DOCUMENTS AND SPECIFICATION:

Copies of the Contract Documents and Specification are available for inspection at no cost to the bidder at City Hall. The documents can also be downloaded from the City's Website (<https://vendors.planetbids.com/portal/66785/bo/bo-search>) and reviewed at no cost.

BID & BIDDER:

Bids must be accompanied by cash, a certified or cashier's check, or a Bid Bond in favor of the City in an amount not less than ten percent (10%) of the submitted Total Bid Price.

Each bid shall be accompanied by the security referred to in the Contract Documents, the non-collusion affidavit, the list of proposed subcontractors, and all additional documentation required by the Instructions to Bidders.

The successful bidder will be required to furnish the City with a Performance Bond equal to 100% of the successful bid, and a Payment (Labor and Materials) Bond equal to 100% of the successful bid, prior to execution of the Contract. All bonds are to be secured from a surety that meets all of the State of California bonding requirements, as defined in Code of Civil Procedure Section 995.120, and is admitted by the State of California.

Each bidder shall be a licensed contractor pursuant to the Business and Professions Code and shall be licensed in the following appropriate classification(s) of contractor's license(s), for the work bid upon, and must maintain the license(s) throughout the duration of the Contract:

- California Class "A"

FOR FURTHER INFORMATION CONTACT:

Raveena Chara

E-mail: rchara@beaumontca.gov

INSTRUCTIONS TO BIDDERS



INSTRUCTIONS TO BIDDERS

AVAILABILITY OF CONTRACT DOCUMENTS:

Bids must be submitted to the City on the Bid Forms which are a part of the Bid Package for the Project. Prospective bidders may obtain one (1) complete set of Contract Documents at no cost. Contract Documents may be obtained from the City at the location(s) and at the time(s) indicated in the Notice Inviting Bids. Prospective bidders are encouraged to telephone in advance to determine the availability of Contract Documents. Any applicable charges for the Contract Documents are outlined in the Notice Inviting Bids. The City may also make the Contract Documents available for review at one or more plan rooms, as indicated in the Notice Inviting Bids. Please Note: Prospective bidders who choose to review the Contract Documents at a plan room must contact the City to obtain the required Contract Documents if they decide to submit a bid for the Project.

EXAMINATION OF CONTRACT DOCUMENTS:

The City has made copies of the Contract Documents available, as indicated above. Bidders shall be solely responsible for examining the Project Site and the Contract Documents, including any Addenda issued during the bidding period, and for informing itself with respect to local labor availability, means of transportation, necessity for security, laws and codes, local permit requirements, wage scales, local tax structure, contractors' licensing requirements, availability of required insurance, and other factors that could affect the Work. Bidders are responsible for consulting the standards referenced in the Contract. Failure of Bidder to so examine and inform itself shall be at its sole risk, and no relief for error or omission will be given except as required under State law.

INTERPRETATION OF CONTRACT DOCUMENTS

Discrepancies in, and/or omissions from the Plans, Specifications, or other Contract Documents or questions as to their meaning shall be immediately brought to the attention of the City by submission of a written request for an interpretation or correction to the City. Such submission, if any, must be sent to Vincent Lopez, Project Manager by emailing vlopez@beaumontca.gov. Any interpretation of the Contract Documents will be made only by written addenda duly issued and mailed or delivered to each person or firm who has purchased a set of Contract Documents. The City will not be responsible for any explanations or interpretations provided in any other manner. No person is authorized to make any oral interpretation of any provision in the Contract Documents to any bidder, and no bidder should rely on any such oral interpretation. Bids shall include complete compensation for all items that are noted in the Contract Documents as the responsibility of the Contractor.

INSPECTION OF SITE:

Each prospective bidder is responsible for fully acquainting itself with the conditions of the Project Site (which may include more than one site), as well as those relating to the construction and labor of the Project, to fully understand the facilities, difficulties and

INSTRUCTIONS TO BIDDERS



restrictions which may impact the cost or effort required to complete the Project.

ADDENDA:

The City reserves the right to revise the Contract Documents prior to the bid opening date. Revisions, if any, shall be made by written Addenda. All addenda issued by the City shall be included in the bid and made part of the Contract Documents. Pursuant to Public Contract Code Section 4104.5, if the City issues an Addendum which includes material changes to the Project less than 72 hours prior to the deadline for submission of bids, the City will extend the deadline for submission of bids. The City may determine, in its sole discretion, whether an Addendum warrants postponement of the bid submission date. Each prospective bidder shall provide City a name, address and facsimile number to which Addenda may be sent, as well as a telephone number by which the City can contact the bidder. Copies of Addenda will be furnished by facsimile, first class mail, express mail or other proper means of delivery without charge to all parties who have obtained a copy of the Contract Documents and provided such current information. Please Note: Bidders are responsible for ensuring that they have received any and all Addenda. To this end, each bidder should contact the Public Works Department to verify that he has received all Addenda issued, if any, prior to the bid opening.

ALTERNATE BIDS

If alternate bid items are called for in the Contract Documents, the lowest bid will be determined on the basis of the base bid only. However, the City may choose to award the contract on the basis of the base bid alone or the base bid and any alternate or combination of alternates. The time required for completion of the alternate bid items has been factored into the Contract duration and no additional Contract time will be awarded for any of the alternate bid items. The City may elect to include one or more of the alternate bid items, or to otherwise remove certain work from the Project scope of work, accordingly each Bidder must ensure that each bid item contains a proportionate share of profit, overhead and other costs or expenses which will be incurred by the Bidder.

COMPLETION OF BID FORMS

Bids shall only be prepared using copies of the Bid Forms which are included in the Contract Documents. The use of substitute bid forms other than clear and correct photocopies of those provided by the City will not be permitted. Bids shall be executed by an authorized signatory as described in these Instructions to Bidders. In addition, Bidders shall fill in all blank spaces (including inserting "N/A" where applicable) and initial all interlineations, alterations, or erasures to the Bid Forms. Bidders shall neither delete, modify, nor supplement the printed matter on the Bid Forms nor make substitutions thereon. **USE OF BLACK OR BLUE INK, INDELIBLE PENCIL, COMPUTER OR A TYPEWRITER IS REQUIRED.** Deviations in the bid form may result in the bid being deemed non-responsive.



MODIFICATIONS OF BIDS:

Each Bidder shall submit its Bid in strict conformity with the requirements of the Contract Documents. Unauthorized additions, modifications, revisions, conditions, limitations, exclusions or provisions attached to a Bid may render it non-responsive and may cause its rejection. Bidders shall neither delete, modify, nor supplement the printed matter on the Bid Forms, nor make substitutions thereon. Oral, telephonic and electronic modifications will not be considered, unless the Notice Inviting Bids authorizes the submission of electronic bids and modifications thereto and such modifications are made in accordance with the Notice Inviting Bids.

DESIGNATION OF SUBCONTRACTORS:

Pursuant to the funding regulation, the Bidders must designate the name and location of each subcontractor who will perform work or render services for in excess of one-half of 1 percent of the prime contractor's total bid or ten thousand dollars (\$10,000), whichever is greater, as well as the portion of work each such subcontractor will perform on the form provided herein by the City. No additional time will be provided to bidders to submit any of the requested information in the Designation of Subcontractor form.

LICENSING REQUIREMENTS:

Pursuant to Section 7028.15 of the Business and Professions Code and Section 3300 of the Public Contract Code, all bidders must possess proper licenses for performance of this Contract. Subcontractors must possess the appropriate licenses for each specialty subcontracted. Pursuant to Section 7028.5 of the Business and Professions Code, the City shall consider any bid submitted by a contractor not currently licensed in accordance with state law and pursuant to the requirements found in the Contract Documents to be nonresponsive, and the City shall reject the Bid. The City shall have the right to request, and Bidders shall provide within five (5) calendar days, evidence satisfactory to the City of all valid license(s) currently held by that Bidder and each of the Bidder's subcontractors, before awarding the Contract. Please also note that, pursuant to Public Contract Code Section 20676, sellers of "mined material" must be on an approved list of sellers published pursuant to Public Resources Code Section 2717(b) in order to supply mined material for this Contract.

SIGNING OF BIDS:

All Bids submitted shall be executed by the Bidder or its authorized representative. Bidders may be asked to provide evidence in the form of an authenticated resolution of its Board of Directors or a Power of Attorney evidencing the capacity of the person signing the Bid to bind the Bidder to each Bid and to any Contract arising therefrom. If a Bidder is a joint venture or partnership, it may be asked to submit an authenticated Power of Attorney executed by each joint venturer or partner appointing and designating one of the joint venturers or partners as a management sponsor to execute the Bid on behalf of Bidder. Only that joint venturer or partner shall execute the Bid. The Power of Attorney shall also: (1) authorize that particular joint venturer or partner to act for and bind Bidder in all matters relating to the Bid; and (2) provide that each venturer or partner shall be

INSTRUCTIONS TO BIDDERS



jointly and severally liable for any and all of the duties and obligations of Bidder assumed under the Bid and under any Contract arising therefrom. The Bid shall be executed by the designated joint venturer or partner on behalf of the joint venture or partnership in its legal name.

BID GUARANTEE (BOND):

Each bid shall be accompanied by: (a) cash; (b) a certified check made payable to the City; (c) a cashier's check made payable to the City; or (d) a bid bond payable to the City executed by the bidder as principal and surety as obligor in an amount not less than 10% of the maximum amount of the bid. Personal sureties and unregistered surety companies are unacceptable. The surety insurer shall be California admitted surety insurer, as defined in Code of Civil Procedure Section 995.120. The cash, check or bid bond shall be given as a guarantee that the bidder shall execute the Contract if it be awarded to the bidder, shall provide the payment and performance bonds and insurance certificates and endorsements as required herein within ten (10) calendar days after notification of the award of the Contract to the bidder. Failure to provide the required documents may result in forfeiture of the bidder's bid deposit or bond to the City and the City may award the Contract to the next lowest responsive, responsible bidder, or may call for new bids.

SUBMISSION OF BIDS:

Once the Bid and supporting documents have been completed and signed as set forth herein, they shall be mailed or hand delivered to the City at the place and to the attention of the person indicated in the Notice Inviting Bids. No oral or telephonic bids will be considered. No forms transmitted via facsimile, or any other electronic means will be considered unless specifically authorized by City as provided herein.

Only where expressly permitted in the Notice Inviting Bids, may Bidders submit their bids via electronic transmission pursuant to Public Contract Code Sections 1600 and 1601. The acceptable method(s) of electronic transmission shall be stated in the Notice Inviting Bids. City reserves the right to not accept electronically transmitted bids where not specifically authorized in the Notice Inviting Bids, and may reject any bid not strictly complying with City's designated methods for delivery.

DELIVERY AND OPENING OF BIDS

Bids will be received by the City at the address shown in the Notice Inviting Bids up to the date and time shown therein. It is the Bidder's sole responsibility to ensure that its Bid is received as specified. Bids may be submitted earlier than the dates(s) and time(s) indicated.

Bids will be opened at the date and time stated in the Notice Inviting Bids, and the amount of each Bid will be read aloud and recorded. All Bidders may, if they desire, attend the opening of Bids at the address specified in the NIB. The City may in its sole discretion, elect to postpone the opening of the submitted Bids. City reserves the right to reject any or all Bids and to waive any informality or irregularity in any Bid. In the event of a

INSTRUCTIONS TO BIDDERS



discrepancy between the written amount of the Bid Price and the numerical amount of the Bid Price, the written amount shall govern.

WITHDRAWAL OF BID:

Prior to bid opening, a Bid may be withdrawn by the Bidder only by means of a written request signed by the Bidder or its properly authorized representative.

BASIS OF AWARD; BALANCED BIDS:

The City shall award the Contract to the lowest responsive, responsible Bidder submitting a responsive Bid. The City may reject any Bid which, in its opinion when compared to other bids received or to the City's internal estimates, does not accurately reflect the cost to perform the Work. The City may reject as non-responsive any bid which unevenly weights or allocates costs, including but not limited to overhead and profit to one or more particular bid items.

DISQUALIFICATION OF BIDDERS; INTEREST IN MORE THAN ONE BID:

No bidder shall be allowed to make, submit or be interested in more than one bid. However, a person, firm, corporation or other entity that has submitted a subproposal to a bidder, or that has quoted prices of materials to a bidder, is not thereby disqualified from submitting a subproposal or quoting prices to other bidders submitting a bid to the City. No person, firm, corporation, or other entity may submit subproposal to a bidder, or quote prices of materials to a bidder, when also submitting a prime bid on the same Project.

INSURANCE REQUIREMENTS:

The successful bidder shall procure the insurance in the form and in the amount specified in the Contract Documents.

AWARD PROCESS:

Once all Bids are opened and reviewed to determine the lowest responsive and responsible Bidder, the City Council may award the contract. The apparent successful Bidder should begin to prepare the following documents: (1) the Performance Bond; (2) the Payment (Labor and Materials) Bond; and (3) the required insurance certificates and endorsements. Once the City notifies the Bidder of the award, the Bidder will have ten (10) consecutive calendar days from the date of this notification to execute the Contract and supply the City with all of the required documents and certifications. Regardless of whether the Bidder supplies the required documents and certifications in a timely manner, the Contract time will begin to run ten (10) calendar days from the date of the notification. Once the City receives all of the properly drafted and executed documents and certifications from the Bidder, the City shall issue a Notice to Proceed to that Bidder.

FILING OF BID PROTESTS

Bidders may file a "protest" of a Bid with the City's City Engineer. In order for a Bidder's protest to be considered valid, the protest must:

- Be filed in writing within five (5) calendar days after the bid opening date;

INSTRUCTIONS TO BIDDERS



- Clearly identify the specific irregularity or accusation;
- Clearly identify the specific City staff determination or recommendation being protested;
- Specify, in detail, the grounds of the protest and the facts supporting the protest; and
- Include all relevant, supporting documentation with the protest at time of filing.

If the protest does not comply with each of these requirements, it will be rejected as invalid. If the protest is valid, the City's City Engineer, or other designated City staff member, shall review the basis of the protest and all relevant information. The City Engineer will provide a written decision to the protestor. The protestor may then appeal the decision of the City Engineer to the City Manager.

WORKERS COMPENSATION:

Each bidder shall submit the Contractor's Certificate Regarding Workers' Compensation form.

SUBSTITUTION OF SECURITY:

The Contract Documents call for monthly progress payments based upon the percentage of the work completed. The City will retain five percent (5%) of each progress payment as provided by the Contract Documents. At the request and expense of the successful Bidder, the City will substitute securities for the amount so retained in accordance with Public Contract Code Section 22300.

PREVAILING WAGES:

Pursuant to Section 1773 of the Labor Code, the general prevailing wage rates, including the per diem wages applicable to the work, and for holiday and overtime work, including employer payments for health and welfare, pension, vacation, and similar purposes, in the County of Riverside in which the work is to be done, have been determined by the Director of the Department of Industrial Relations, State of California. 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 www.dir.ca.gov. Future effective 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. Pursuant to SB 854, which amended the Prevailing Wage Laws, this Contract is subject to compliance monitoring and enforcement by the DIR. Beginning March 1, 2015, with very limited exceptions, no contractor or subcontractor may be listed on a bid proposal for this Contract unless registered with the DIR pursuant to Labor Code section 1725.5. Beginning April 1, 2015, no contractor or subcontractor may be awarded this Contract unless registered with the DIR pursuant to Labor Code section 1725.5. The DIR registration number for each contractor and subcontractor must be identified on the bid proposal - failure to identify this number could result in the bid being rejected as non-responsive. It is each bidder's responsibility to ensure that they have fully complied with

INSTRUCTIONS TO BIDDERS



SB 854. The City will report all necessary contracts to the DIR as required by the Prevailing Wage Laws.

DEBARMENT OF CONTRACTORS AND SUBCONTRACTORS:

In accordance with the provisions of the Labor Code, contractors or subcontractors may not perform work on a public works project with a subcontractor who is ineligible to perform work on a public project pursuant to Section 1777.1 or Section 1777.7 of the Labor Code. Any contract on a public works project entered into between a contractor and a debarred subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on a public works contract. Any public money that is paid to a debarred subcontractor by the Contractor for the Project shall be returned to the City. The Contractor shall be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the Project.

PERFORMANCE AND PAYMENT BOND REQUIREMENTS:

Within the time specified in the Contract Documents, the Bidder to whom a Contract is awarded shall deliver to the City four identical counterparts of the Performance Bond and Payment (Labor and Materials) Bond in the form supplied by the City and included in the Contract Documents. Failure to do so may, in the sole discretion of City, result in the forfeiture of the Bid Guarantee. The surety supplying the bond must be an admitted surety insurer, as defined in Code of Civil Procedure Section 995.120, authorized to do business as such in the State of California and satisfactory to the City. The Performance Bond and the Payment (Labor and Materials) Bond shall be for one hundred percent (100%) of the Total Bid Price.

REQUEST FOR SUBSTITUTIONS

The successful bidder shall comply with the substitution request provisions set forth in the Special Conditions, including any deadlines for substitution requests which may occur prior to the bid opening date.

SALES AND OTHER APPLICABLE TAXES, PERMITS, LICENSES AND FEES

Contractor and its subcontractors performing work under this Contract will be required to pay California sales tax and other applicable taxes, and to pay for permits, licenses and fees required by the agencies with authority in the jurisdiction in which the work will be located, unless otherwise expressly provided by the Contract Documents.

EXECUTION OF CONTRACT

As required herein the Bidder to whom an award is made shall execute the Contract in the amount determined by the Contract Documents. The City may require appropriate evidence that the persons executing the Contract are duly empowered to do so.

END OF INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS



BID FORM

NAME OF BIDDER: _____

The undersigned, hereby declare that we have carefully examined the location of the proposed Work, and have read and examined the Contract Documents, including all plans, specifications, and all addenda, if any, for the following Project:

CIP P-04 SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

We hereby propose to furnish all labor, materials, equipment, tools, transportation, and services, and to discharge all duties and obligations necessary and required to perform and complete the Project for the following BASE BID TOTAL BID PRICE:

BASE BID	BASE BID PRICE (IN WRITTEN FORM)	BID PRICE (IN NUMBERS)
TOTAL BID PRICE		

In case of discrepancy between the written price and the numerical price, the written price shall prevail.



BASE BID
BID SCHEDULE
CIP P-04 SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

ITEM NO.	DESCRIPTION OF ITEMS	EST. QUANTITY/ UNIT		UNIT PRICE (FIGURES)	TOTAL COST (FIGURES)
1	MOBILIZATION	1	LS		
2	STORMWATER POLLUTION CONTROL (PREPARATION AND IMPLEMENTATION OF SWPPP)	1	LS		
3	CLEARING AND GRUBBING	1	LS		
4	SITE DEMOLITION	1	LS		
5	SITE GRADING	1	LS		
6	CONSTRUCT 12 X 12 CATCH BASIN CAST IN PLACE CONCRETE	10	EA		
7	CONSTRUCT 6" CONCRETE HEADWALL (4)	54	LF		
8	CONSTRUCT 6" RIP RAP	324	SF		
9	CONSTRUCT SD3 - 8" PVC SDR35 STORM DRAIN	600	LF		
10	CONSTRUCT SD4 - NDS EZFLOW 6" FRENCH DRAIN	430	LF		
11	CONSTRUCT SD5 - SUBSURFACE DRAIN FOR TURF FIELDS	4,733	LF		
12	ABANDON EXISTING (4") SEWER LINE AND INSTALL PVC SEWER MAINLINE (6") AND SEWER CLEANOUTS INCLUDING ALL APPURTENANCES AS PER APPENDIX B	1	LS		
13	INSTALL SYNTHETIC TURF - NATURAL PLAY INFILL & PAD	136,000	SF		
14	INSTALL 6' HT BLACK AMERISTAR FENCE	1,554	LF		
15	CONSTRUCT 8"X8" CIP CURB AT FENCE	1,554	LF		
16	INSTALL 6' HIGH TUBULAR STEEL GATE	1	EA		
17	INSTALL 6' HIGH DOUBLE LEAF TUBULAR STEEL GATE	1	EA		
18	INSTALL (4) 20' HIGH NETTING	320	LF		



ITEM NO.	DESCRIPTION OF ITEMS	EST. QUANTITY/ UNIT		UNIT PRICE (FIGURES)	TOTAL COST (FIGURES)
19	CONSTRUCT DECOMPOSED GRANITE (4" ORGANIC LOCK)	18,000	SF		
20	REMOVE AND REPLACE CONCRETE PAVING 4" BROOM FINISH	2,050	SF		
21	CONSTRUCT CONCRETE PAVING 6" VEHICULAR RATED - BROOM FINISH	4,450	SF		
22	FURNISH AND INSTALL MUSCO LIGHTING STANDARDS (PROPOSED AT BASEBALL AND SYNTHETIC TURF SOCCER FIELDS)	13	EA		
23	MODIFICATION AT EXISTING BUILDING FOR MUSCO LIGHTING CONNECTIONS	2	EA		
24	FURNISH AND INSTALL PATHWAY LIGHTING AT SOUTH END CONNECTION TO FIELDS U-12 AND U-19	1	EA		
25	INSTALL IRRIGATION SYSTEM	1	LS		
26	INSTALL FIELD HOSE DOWN SYSTEM – QCV (12)	1	LS		
27	PLANT 36" BOX TREE	15	EA		
28	PLANT 5 GALLON SHRUB	163	EA		
29	PLANT 1 GALLON SHRUB	678	EA		
30	INSTALL 3" SHREDDED BARK MULCH	154	CY		
PROJECT BASE BID SUBTOTAL:					

In case of discrepancy between the unit price and the item cost set forth for a unit basis item, the unit price shall prevail and, shall be utilized as the basis for determining the lowest responsive, responsible bidder. However, if the amount set forth as a unit price is ambiguous, unintelligible or uncertain for any cause, or is omitted, or is the same amount as the entry in the "Item Cost" column, then the amount set forth in the "Item Cost" column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price. Final payment shall be determined by the Engineer from measured quantities of work performed based upon the unit price. In case of discrepancy between the written price and the numerical price, the written price shall prevail.



BID CERTIFICATION

Bidder certifies that it is licensed in accordance with the law providing for the registration of Contractors,

License No. _____

Expiration Date _____

Class of license _____

If the bidder is a joint venture, each member of the joint venture must include the above information.

The undersigned acknowledges receipt, understanding and full consideration of the following addenda to the Contract Documents:

1. Addenda No. _____ thru _____
2. Attached is the required bid security in the amount of not less than 10% of the Total Bid Price.
3. Attached is the fully executed Non-Collusion Affidavit form.
4. Attached is the completed Designation of Subcontractors form.
5. Attached is the completed Bidder Information Form.
6. Attached is the completed Contractor's Certificate Regarding Workers' Compensation form.

Bidder acknowledges and understands that, pursuant to Public Contract Code Section 20676, sellers of "mined material" must be on an approved list of sellers published pursuant to Public Resources Code Section 2717(b) in order to supply mined material for this Contract.

I hereby certify under penalty of perjury under the laws of the State of California, that all of the information submitted in connection with this Bid and all of the representations made herein are true and correct.

Name of Bidder _____

Signature _____

Name and Title _____

Dated _____



CONTRACTOR'S CERTIFICATE REGARDING WORKERS' COMPENSATION

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

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.

Name of Bidder _____

Signature _____

Name and Title _____

Dated _____



BID BOND

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

The makers of this bond are,

as Principal, and

as Surety

and are held and firmly bound unto the City of Beaumont, hereinafter called the City, in the penal sum of TEN PERCENT (10%) OF THE TOTAL BID PRICE of the Principal submitted to CITY for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted the accompanying bid dated _____, 20__, for

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

If the Principal does not withdraw its bid within the time specified in the Contract Documents; and if the Principal is awarded the Contract and provides all documents to the City as required by the Contract Documents; then this obligation shall be null and void. Otherwise, this bond will remain in full force and effect.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents shall in affect its obligation under this bond, and Surety does hereby waive notice of any such changes.

In the event a lawsuit is brought upon this bond by the City and judgment is recovered, the Surety shall pay all litigation expenses incurred by the City in such suit, including reasonable attorneys' fees, court costs, expert witness fees and expenses.



IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals this _____ day of _____, 20____, the name and corporate seal of each corporation.

(Corporate Seal)

Principal

By

Title

(Corporate Seal)

Surety

By

Attorney-in-Fact

(Attach Attorney-in-Fact Certificate)

Title

On this _____ day of _____, in the year 20____, before me,
_____, a Notary Public in and for said state, personally
appeared _____, known to me to be the person
whose name is subscribed to the within instrument as the Attorney-In-Fact of the
(Surety) acknowledged to me that he subscribed the name of the
_____ (Surety) thereto and his own name as Attorney-In-
Fact.

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DESIGNATION OF SUBCONTRACTORS

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

In compliance with the Subletting and Subcontracting Fair Practices Act of the Public Contract Code of the State of California, each bidder shall set forth below: (a) the name and the location of the place of business and (b) the portion of the work which will be done by each subcontractor who will perform work or labor or render service to the Contractor in excess of one-half of 1 percent of the prime contractor's total bid or ten thousand dollars (\$10,000), whichever is greater.

Portion of the Work	Subcontractor	Location of Business	% of Work

DESIGNATION OF SUBCONTRACTORS



Portion of the Work	Subcontractor	Location of Business	% of Work

Name of Bidder _____

Signature _____

Name and Title _____

Dated _____



INFORMATION REQUIRED OF BIDDERS

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

A. INFORMATION ABOUT BIDDER

[**Indicate not applicable ("N/A") where appropriate.**]

NOTE: Where Bidder is a joint venture, pages shall be duplicated and information provided for all parties to the joint venture.

1.0 Name of Bidder: _____

2.0 Type, if Entity: _____

3.0 Bidder Address: _____

Facsimile Number

Telephone Number

4.0 License Information:

License No.	Class of License	Expiration Date

DIR Registration No.

5.0 How many years has Bidder's organization been in business as a Contractor?

5.1 How many years has Bidder's organization been in business under its present name? _____

6.0 Under what other or former names has Bidder's organization operated?

7.0 If Bidder's organization is a corporation, answer the following:

INFORMATION REQUIRED OF BIDDERS



- 7.1 Date of Incorporation: _____
- 7.2 State of Incorporation: _____
- 7.3 President's Name: _____
- 7.4 Vice-President's Name(s): _____
- 7.5 Secretary's Name: _____
- 7.6 Treasurer's Name: _____
- 8.0 If an individual or a partnership, answer the following:
- 8.1 Date of Organization: _____
- 8.2 Name and address of all partners (state whether general or limited partnership): _____

- 9.0 If other than a corporation or partnership, describe organization and name principals: _____

- 10.0 List other states in which Bidder's organization is legally qualified to do business.

- 11.0 What type of work does the Bidder normally perform with its own forces?

- 12.0 Has Bidder ever failed to complete any work awarded to it? If so, note when,

INFORMATION REQUIRED OF BIDDERS



where, and why:

13.0 Within the last five years, has any officer or partner of Bidder's organization ever been an officer or partner of another organization when it failed to complete a contract?

If so, attach a separate sheet of explanation:

14.0 List Trade References:

15.0 List Bank References (Bank and Branch Address):

16.0 Name of Bonding Company and Name and Address of Agent:



B. LIST OF CURRENT PROJECTS (Backlog)

[**Duplicate Page if needed for listing additional current projects.**]

Project	Description of Bidder's Work	Completion Date	Cost of Bidder's Work	Contact Name & Phone



C. LIST OF COMPLETED PROJECTS - LAST THREE YEARS

[**Duplicate Page if needed for listing additional completed projects.**]

Please include only those projects which are similar enough to demonstrate Bidder's ability to perform the required Work.

Project Client	Description of Bidder's Work	Period of Performance	Cost of Bidder's Work	Contact Name & Phone



D. EXPERIENCE AND TECHNICAL QUALIFICATIONS QUESTIONNAIRE

Personnel:

The Bidder shall identify the key personnel to be assigned to this project in a management, construction supervision or engineering capacity.

1. List each person's job title, name and percent of time to be allocated to this project:

2. Summarize each person's specialized education:

3. List each person's years of construction experience relevant to the project:

4. Summarize such experience:

Bidder agrees that personnel named in this Bid will remain on this Project until completion of all relevant Work, unless substituted by personnel of equivalent experience and qualifications approved in advance by the City.



Additional Bidder's Statements:

If the Bidder feels that there is additional information which has not been included in the questionnaire above, and which would contribute to the qualification review, it may add that information in a statement here or on an attached sheet, appropriately marked:

E. VERIFICATION AND EXECUTION

These Bid Forms shall be executed only by a duly authorized official of the Bidder:
I declare under penalty of perjury under the laws of the State of California that the foregoing information is true and correct:

Name of Bidder _____

Signature _____

Name and Title _____

Dated _____



NON-COLLUSION AFFIDAVIT

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

I, _____, being first duly sworn, deposes and says that he is of _____ the party making the attached bid; 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.

I certify (or declare) under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Name of Bidder _____

Signature _____

Name and Title _____

Dated _____



PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS:

THAT WHEREAS, _____ (hereinafter referred to as "City")
has awarded to _____, (hereinafter referred to as the "Contractor")
_____ an agreement for _____
(hereinafter referred to as the "Project").

WHEREAS, the work to be performed by the Contractor is more particularly set forth in
the Contract Documents for the Project dated _____, (hereinafter referred
to as "Contract Documents"), the terms and conditions of which are expressly
incorporated herein by reference; and

WHEREAS, the Contractor is required by said Contract Documents to perform the terms
thereof and to furnish a bond for the faithful performance of said Contract Documents.

NOW, THEREFORE, we, _____, the undersigned Contractor and
_____ as Surety, a corporation
organized and duly authorized to transact business under the laws of the State of
California, are held and firmly bound unto the City in the sum of
_____ DOLLARS, (\$ _____), said sum being not less
than one hundred percent (100%) of the total amount of the Contract, for which amount
well and truly to be made, we bind ourselves, our heirs, executors and administrators,
successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that, if the Contractor, 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 agreements in the
Contract Documents and any alteration thereof made as therein provided, on its part, to
be kept and performed at the time and in the manner therein specified, and in all respects
according to their intent and meaning; and shall faithfully fulfill all obligations including the
one-year guarantee of all materials and workmanship; and shall indemnify and save
harmless the City, its officers and agents, as stipulated in said Contract Documents, 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 enforcing such obligation.

As a condition precedent to the satisfactory completion of the Contract Documents,
unless otherwise provided for in the Contract Documents, the above obligation shall hold
good for a period of one (1) year after the acceptance of the work by City, during which



time if Contractor shall fail to make full, complete, and satisfactory repair and replacements and totally protect the City from loss or damage resulting from or caused by defective materials or faulty workmanship. The obligations of Surety hereunder shall continue so long as any obligation of Contractor remains. Nothing herein shall limit the City's rights or the Contractor or Surety's obligations under the Contract, law or equity, including, but not limited to, California Code of Civil Procedure section 337.15.

Whenever Contractor shall be, and is declared by the City to be, in default under the Contract Documents, the Surety shall remedy the default pursuant to the Contract Documents, or shall promptly, at the City's option:

- (1) Take over and complete the Project in accordance with all terms and conditions in the Contract Documents; or
- (2) Obtain a bid or bids for completing the Project in accordance with all terms and conditions in the Contract Documents and upon determination by Surety of the lowest responsive and responsible bidder, arrange for a Contract between such bidder, the Surety and the City, and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the City under the Contract and any modification thereto, less any amount previously paid by the City to the Contractor and any other set offs pursuant to the Contract Documents.
- (3) Permit the City to complete the Project in any manner consistent with California law and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the City under the Contract and any modification thereto, less any amount previously paid by the City to the Contractor and any other set offs pursuant to the Contract Documents.

Surety expressly agrees that the City may reject any contractor or subcontractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Contractor.

Surety shall not utilize Contractor in completing the Project nor shall Surety accept a bid from Contractor for completion of the Project if the CITY, when declaring the Contractor in default, notifies Surety of the City's objection to Contractor's further participation in the completion of the Project.



The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents or to the Project to be performed thereunder shall in any way 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 Contract Documents or to the Project.

[Remainder of Page Left Intentionally Blank.]



IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day
of _____, 20__.

CONTRACTOR/PRINCIPAL

Name

By _____

SURETY:

By: _____
Attorney-In-Fact

The rate of premium on this bond is _____ per thousand. The total amount of
premium charges, \$_____.
(The above must be filled in by corporate attorney.)

THIS IS A REQUIRED FORM

Any claims under this bond may be addressed to:

(Name and Address of Surety) _____

(Name and Address of Agent or
Representative for service of
process in California, if different
from above) _____

(Telephone number of Surety and _____
Agent or Representative for service
of process in California



STATE OF CALIFORNIA)
) ss.
CITY OF _____)

On this _____ day of _____, in the year 20____, before me,
_____, a Notary Public in and for said state, personally
appeared _____, known to me to be the person
whose name is subscribed to the within instrument as the Attorney-In-Fact of the (Surety)
acknowledged to me that he subscribed the name of the
_____ (Surety) thereto and his own name as Attorney-In-
Fact.

Notary Public in and for said State

(SEAL)

Commission expires: _____

NOTE: A copy of the Power-of-Attorney to local representatives of the bonding
company must be attached hereto.



PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS That

WHEREAS, the City of Beaumont (hereinafter designated as the "City"), by action taken or a resolution passed _____, 20__ has awarded to _____ hereinafter designated as the "Principal," a contract for the work described as follows:

_____ (the "Project"); and

WHEREAS, said Principal is required to furnish a bond in connection with said contract; providing that if said Principal or any of its Subcontractors shall fail to pay for any materials, provisions, provender, equipment, or other supplies used in, upon, for or about the performance of the work contracted to be done, or for any work or labor done thereon of any kind, or for amounts due under the Unemployment Insurance Code or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of said Principal and its Subcontractors with respect to such work or labor the Surety on this bond will pay for the same to the extent hereinafter set forth.

NOW THEREFORE, we, the Principal and _____ as Surety, are held and firmly bound unto the City in the penal sum of _____ Dollars (\$_____) lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal, his or its subcontractors, heirs, executors, administrators, successors or assigns, shall fail to pay any of the persons named in Section 3181 of the Civil Code, fail to pay for any materials, provisions or other supplies, used in, upon, for or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or amounts due under the Unemployment Insurance Code with respect to work or labor performed under the contract, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department or Franchise Tax Board from the wages of employees of the contractor and his subcontractors pursuant to Section 18663 of the Revenue and Taxation Code, with respect to such work and labor the Surety or Sureties will pay for the same, in an amount not exceeding the sum herein above specified, and also, in case suit is brought upon this bond, all litigation expenses incurred by the City in such suit, including reasonable attorneys' fees, court costs, expert witness fees and investigation expenses.

This bond shall inure to the benefit of any of the persons named in Section 3181 of the Civil Code so as to give a right of action to such persons or their assigns in any suit brought upon this bond.



It is further stipulated and agreed that the Surety on this bond shall not be exonerated or released from the obligation of this bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described, or pertaining or relating to the furnishing of labor, materials, or equipment therefore, nor by any change or modification of any terms of payment or extension of the time for any payment pertaining or relating to any scheme or work of improvement herein above described, nor by any rescission or attempted rescission or attempted rescission of the contract, agreement or bond, nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond, nor by any fraud practiced by any person other than the claimant seeking to recover on the bond and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given, and under no circumstances shall Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the owner or City and original contractor or on the part of any obligee named in such bond, but the sole conditions of recovery shall be that claimant is a person described in Section 3110 or 3112 of the Civil Code, and has not been paid the full amount of his claim and that Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned.

IN WITNESS WHEREOF, two (2) identical counterparts of this instrument, each of which shall for all purposes be deemed unoriginal thereof, have been duly executed by the Principal and Surety above named, on the _____ day of _____ 20____ the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

(Corporate Seal of Principal,
if corporation)

Principal (Property Name of Contractor)

By _____
(Signature of Contractor)

(Seal of Surety)

Surety

By _____
Attorney in Fact

(Attached Attorney-In-Fact Certificate and Required Acknowledgements)

*Note: Appropriate Notarial Acknowledgments of Execution by Contractor and +surety and a power of Attorney MUST BE ATTACHED.



02 GENERAL CONDITIONS

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT



03 TECHNICAL SPECIFICATIONS

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT



04 SPECIAL CONDITIONS

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT



05 SUPPLEMENTAL SPECIAL CONDITIONS

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT



06 CONTRACT DRAWINGS

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT



07 PUBLIC WORKS AGREEMENT

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT



08 APPENDICES

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT



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GENERAL CONDITIONS



GC01. DEFINITIONS

- a. Acceptable, Acceptance or words of similar import shall be understood to be the acceptance of the Engineer and/or the City.
- b. Act of God an Act of God is an earthquake of magnitude 3.5 on the Richter scale and tidal waves.
- c. Approval means written authorization by the Engineer and/or City.
- d. Contract Documents include all documents as stated in the Contract.
- e. City and Contractor are those stated in the Contract. The terms City and Owner may be used interchangeably.
- f. Day shall mean calendar day unless otherwise specifically designated.
- g. Engineer shall mean the General Manager, or his or her designee, of the Department of Public Works for the City of Beaumont, acting either directly or through properly authorized agents, such as agents acting within the scope of the particular duties entrusted to them. Also sometimes referred to as the "City's Representative" or "Representative" in the Contract Documents.
- h. Equal, Equivalent, Satisfactory, Directed, Designated, Selected, As Required and similar words shall mean the written approval, selection, satisfaction, direction, or similar action of the Engineer and/or City.
- i. Indicated, Shown, Detailed, Noted, Scheduled or words of similar meaning shall mean that reference is made to the drawings unless otherwise noted. It shall be understood that the direction, designation, selection, or similar import of the Engineer and/or City is intended unless stated otherwise.
- j. Install means the complete installation of any item, equipment, or material.
- k. Material shall include machinery, equipment, manufactured articles, or construction such as formwork, fasteners, etc., and any other classes of material to be furnished in connection with the Contract. All materials shall be new unless specified otherwise.
- l. Perform shall mean that the Contractor, at the Contractor's expense, shall take all actions necessary to complete The Work, including the furnishing of necessary labor, tools, and equipment, and providing and installing Materials that are indicated, specified, or required to complete such performance.

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- m. Project is The Work planned by the City as provided in the Contract Documents.
- n. Provide shall include provide complete in place, that is furnish, install, test and make ready for use.
- o. Recyclable Waste Materials shall mean materials removed from the Project site which are required to be diverted to a recycling center rather than an area landfill. Recyclable Waste Materials include asphalt, concrete, brick, concrete block, and rock.
- p. Specifications means that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the work. Except for Sections 1-9 of the Standard Specifications for Public Works Construction ("Greenbook"), 2015 Edition which are specifically excluded from incorporation into these Contract Documents, the Work shall be done in accordance with the Greenbook, including all current supplements, addenda, and revisions thereof. In the case of conflict between the Greenbook and the Contract Documents, the Contract Documents shall prevail.
- q. The Work means the entire improvement planned by the City pursuant to the Contract Documents.
- r. Work means labor, equipment and materials incorporated in, or to be incorporated in the construction covered by the Contract Documents.

GC02. CONTRACT DOCUMENTS

- a. **Contract Documents.** The Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all.
- b. **Interpretations.** The Contract Documents are intended to be fully cooperative and to be complementary. If Contractor observes that any documents are in conflict, the Contractor shall promptly notify the Engineer in writing. In case of conflicts between the Contract Documents, the order of precedence shall be as follows:
 - 1. Change Orders or Work Change Directives
 - 2. Addenda
 - 3. Special Provisions (or Special Conditions)
 - 4. Technical Specifications
 - 5. Plans (Contract Drawings)
 - 6. Contract
 - 7. General Conditions
 - 8. Instructions to Bidders
 - 9. Notice Inviting Bids

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10. Contractor's Bid Forms
11. Greenbook Standard Specifications (Sections 1-9 Excluded)
12. Standard Plans
13. Reference Documents

With reference to the Drawings, the order of precedence shall be as follows:

1. Figures govern over scaled dimensions
 2. Detail drawings govern over general drawings
 3. Addenda or Change Order drawings govern over Contract Drawings
 4. Contract Drawings govern over Standard Drawings
 5. Contract Drawings govern over Shop Drawings
- c. **Conflicts in Contract Documents.** Notwithstanding the orders of precedence established above, in the event of conflicts, the higher standard shall always apply.
- d. **Organization of Contract Documents.** Organization of the Contract Documents into divisions, sections, and articles, and arrangement of drawings shall not control the Contractor in dividing The Work among subcontractors or in establishing the extent of Work to be performed by any trade.

GC03. CONTRACTS DOCUMENTS: COPIES & MAINTENANCE

The contractor will be furnished, free of charge, **five (5)** copies of the Contract Documents. Additional copies may be obtained at the cost of reproduction.

The contractor shall maintain a clean, undamaged set of Contract Documents at the Project site.

GC04. DETAIL DRAWINGS AND INSTRUCTIONS

- a. **Examination of Contract Documents.** Before commencing any portion of The Work, the Contractor shall again carefully examine all applicable Contract Documents, the Project site, and other information given to the Contractor as to materials and methods of construction and other Project requirements. The Contractor shall immediately notify the Engineer of any potential error, inconsistency, ambiguity, conflict, or lack of detail or explanation. If Contractor performs, permits, or causes the performance of any Work which is in error, inconsistent or ambiguous, or not sufficiently detailed or explained, Contractor shall bear any and all resulting costs, including, without limitation, the cost of correction. In no case shall the Contractor or any subcontractor proceed with Work if uncertain as to the applicable requirements.
- b. **Additional Instructions.** After notification of any error, inconsistency, ambiguity, conflict or lack of detail or explanation, the Engineer will provide any required

GENERAL CONDITIONS



additional instructions, by means of drawings or other written direction, necessary for proper execution of Work.

- c. **Quality of Parts, Construction and Finish.** All parts of The Work shall be of the best quality of their respective kinds and the Contractor must use all diligence to inform itself fully as to the required construction and finish. In no case shall Contractor proceed with The Work without obtaining first from the Engineer such Approval may be necessary for the proper performance of Work.
- d. **Contractor's Variation from Contract Document Requirements.** If it is found that the Contractor has varied from the requirements of the Contract Documents including the requirement to comply with all applicable laws, ordinances, rules, and regulations, the Engineer may at any time, before or after completion of the Work, order the improper Work removed, remade or replaced by the Contractor at the Contractor's expense.

GC05. EXISTENCE OF UTILITIES AT THE WORK SITE

- a. The City has endeavored to determine the existence of utilities at the Project site from the records of the owners of known utilities in the vicinity of the Project. The positions of these utilities as derived from such records are shown on the Plans.
- b. No excavations were made to verify the locations shown for underground utilities. The service connections to these utilities are not shown on the plans. It shall be the responsibility of the Contractor to determine the exact location of all service connections. The Contractor shall make its own investigations, including exploratory excavations, to determine the locations and type of service connections, prior to commencing Work which could result in damage to such utilities. The Contractor shall immediately notify the City and Engineer in writing of any utility discovered in a different position than shown on the Plans or which is not shown on the Plans.
- c. All water meters, water valves, fire hydrants, electrical utility vaults, telephone vaults, gas utility valves, and other subsurface structures shall be relocated or adjusted to final grade by the Contractor. Locations of existing utilities shown on the Plans are approximate and may not be complete. The Contractor shall be responsible for coordinating its Work with all utility companies during the construction of The Work.
- d. Notwithstanding the above, pursuant to Section 4215 of the Government Code, the City has the responsibility to identify, with reasonable accuracy, main or trunkline facilities on the plans and specifications. In the event that main or trunkline utility facilities are not identified with reasonable accuracy in the plans

GENERAL CONDITIONS



and specifications made a part of the invitation for bids, City shall assume the responsibility for their timely removal, relocation, or protection.

- e. Contractor, except in an emergency, shall contact the appropriate regional notification center, Southern California Underground Service Alert at 1-800-227-2600 at least two working days prior to commencing any excavation if the excavation will be performed in an area which is known, or reasonably should be known, to contain subsurface installations other than the underground facilities owned or operated by the City, and obtain an inquiry identification number from that notification center. No excavation shall be commenced or carried out by the Contractor unless such an inquiry identification number has been assigned to the Contractor or any subcontractor of the Contractor and the City has been given the identification number by the Contractor.

GC06. SCHEDULE

- a. **Estimated Schedule.** Within fourteen (14) days after the issuance of the Notice to Proceed, Contractor shall prepare a Project schedule and shall submit this to the Engineer for Approval. The receipt or Approval of any schedules by the Engineer or the City shall not in any way relieve the Contractor of its obligations under the Contract Documents. The Contractor is fully responsible to determine and provide for any and all staffing and resources at levels which allow for good quality and timely completion of the Project. Contractor's failure to incorporate all elements of Work required for the performance of the Contract or any inaccuracy in the schedule shall not excuse the Contractor from performing all Work required for a completed Project within the specified Contract time period. If the required schedule is not received by the time the first payment under the Contract is due, Contractor shall not be paid until the schedule is received, reviewed and accepted by the Engineer.
- b. **Schedule Contents.** The schedule shall allow enough time for inclement weather. The schedule shall indicate the beginning and completion dates of all phases of construction; critical path for all critical, sequential time related activities; and "float time" for all "slack" or "gaps" in the non-critical activities. The schedule shall clearly identify all staffing and other resources which in the Contractor's judgment are needed to complete the Project within the time specified for completion. Schedule duration shall match the Contract time. Schedules indicating early completion will be rejected.
- c. **Schedule Updates.** Contractor shall continuously update its construction schedule. Contractor shall submit an updated and accurate construction schedule to the Engineer whenever requested to do so by Engineer and with each progress payment request. The Engineer may withhold progress payments or other

GENERAL CONDITIONS



amounts due under the Contract Documents if Contractor fails to submit an updated and accurate construction schedule.

GC07. SUBSTITUTIONS

- a. Pursuant to Public Contract Code Section 3400(b) the City may make a finding that is described in the invitation for bids that designates certain products, things, or services by specific brand or trade name.
- b. Unless specifically designated in the Contract Documents, whenever any material, process, or article is indicated or specified by grade, patent, or proprietary name or by name of manufacturer, such Specifications shall be deemed to be used for the purpose of facilitating the description of the material, process or article desired and shall be deemed to be followed by the words "or equal." Contractor may, unless otherwise stated, offer for substitution any material, process or article which shall be substantially equal or better in every respect to that so indicated or specified in the Contract Documents. However, the City may have adopted certain uniform standards for certain materials, processes and articles.
- c. Contractor shall submit requests, together with substantiating data, for substitution of any "or equal" material, process or article no later than thirty-five (35) days after award of the Contract. To facilitate the construction schedule and sequencing, some requests may need to be submitted before thirty-five (35) days after award of Contract. Provisions regarding submission of "or equal" requests shall not in any way authorize an extension of time for performance of this Contract. If a proposed "or equal" substitution request is rejected, Contractor shall be responsible for providing the specified material, process or article. The burden of proof as to the equality of any material, process or article shall rest with the Contractor. The City has the complete and sole discretion to determine if a material, process or article is an "or equal" material, process or article that may be substituted.
- d. Data required to substantiate requests for substitutions of an "or equal" material, process or article data shall include a signed affidavit from the Contractor stating that, and describing how, the substituted "or equal" material, process or article is equivalent to that specified in every way except as listed on the affidavit. Substantiating data shall include any and all illustrations, specifications, and other relevant data including catalog information which describes the requested substituted "or equal" material, process or article, and substantiates that it is an "or equal" to the material, process or article. The substantiating data must also include information regarding the durability and lifecycle cost of the requested substituted "or equal" material, process or article. Failure to submit all the required substantiating data, including the signed affidavit, to the City in a timely fashion will result in the rejection of the proposed substitution.

GENERAL CONDITIONS



- e. The Contractor shall bear all of the City's costs associated with the review of substitution requests.
- f. The Contractor shall be responsible for all costs related to a substituted "or equal" material, process or article.
- g. Contractor is directed to the Special Conditions (if any) to review any findings made pursuant to Public Contract Code section 3400.

GC08. SHOP DRAWINGS

- a. Contractor shall check and verify all field measurements and shall submit with such promptness as to provide adequate time for review and cause no delay in his own Work or in that of any other contractor, subcontractor, or worker on the Project, six (6) copies of all shop or setting drawings, calculations, schedules, and materials list, and all other provisions required by the Contract. Contractor shall sign all submittals affirming that submittals have been reviewed and approved by Contractor prior to submission to Engineer. Each signed submittal shall affirm that the submittal meets all the requirements of the Contract Documents except as specifically and clearly noted and listed on the cover sheet of the submittal.
- b. Contractor shall make any corrections required by the Engineer, and file with the Engineer six (6) corrected copies each, and furnish such other copies as may be needed for completion of the Work. Engineer's approval of shop drawings shall not relieve Contractor from responsibility for deviations from the Contract Documents unless Contractor has, in writing, called Engineer's attention to such deviations at time of submission and has secured the Engineer's written Approval. Engineer's Approval of shop drawings shall not relieve Contractor from responsibility for errors in shop drawings.

GC09. SUBMITTALS

- a. Contractor shall furnish to the Engineer for approval, prior to purchasing or commencing any Work, a log of all samples, material lists and certifications, mix designs, schedules, and other submittals, as required in the specifications. The log shall indicate whether samples will be provided in accordance with other provisions of this Contract.
- b. Contractor will provide samples and submittals, together with catalogs and supporting data required by the Engineer, to the Engineer within a reasonable time period to provide for adequate review and avoid delays in the Work.
- c. These requirements shall not authorize any extension of time for performance of this Contract. Engineer will check and approve such samples, but only for conformance with design concept of work and for compliance with information

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given in the Contract Documents. Work shall be in accordance with approved samples and submittals.

GC10. MATERIALS

- a. Except as otherwise specifically stated in the Contract Documents, Contractor shall provide and pay for all materials, labor, tools, equipment, water, lights, power, transportation, superintendence, temporary constructions of every nature, and all other services and facilities of every nature whatsoever necessary to execute and complete this Contract within specified time.
- b. Unless otherwise specified, all materials shall be new and the best of their respective kinds and grades as noted and/or specified, and workmanship shall be of good quality.
- c. Materials shall be furnished in ample quantities and at such times as to ensure uninterrupted progress of The Work and shall be stored properly and protected as required by the Contract Documents. Contractor shall be entirely responsible for damage or loss by weather or other causes to materials or Work.
- d. No materials, supplies, or equipment for Work under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. Contractor warrants good title to all material, supplies, and equipment installed or incorporated in the work and agrees upon completion of all work to deliver the Project, to the City free from any claims, liens, or charges.
- e. Materials shall be stored on the Project site in such manner so as not to interfere with any operations of the City or any independent contractor.

GC11. CONTRACTOR'S SUPERVISION

Contractor shall continuously keep at the Project site, a competent and experienced full-time Project superintendent approved by the City. Superintendent must be able to proficiently speak, read and write in English. Contractor shall continuously provide efficient supervision of the Project.

GC12. WORKERS

- a. Contractor shall at all times enforce strict discipline and good order among its employees. Contractor shall not employ on the Project any unfit person or any one not skilled in the Work assigned to him or her.

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- b. Any person in the employ of the Contractor whom the City may deem incompetent or unfit shall be dismissed from The Work and shall not be employed on this Project except with the written Approval of the City.

GC13. SUBCONTRACTORS

- a. Contractor agrees to bind every subcontractor to the terms of the Contract Documents as far as such terms are applicable to subcontractor's portion of The Work. Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors and of persons either directly or indirectly employed by its subcontractors, as Contractor is for acts and omissions of persons directly employed by Contractor. Nothing contained in these Contract Documents shall create any contractual relationship between any subcontractor and the City.
- b. The City reserves the right to Approve all subcontractors. The City's Approval of any subcontractor under this Contract shall not in any way relieve Contractor of its obligations in the Contract Documents.
- c. Prior to substituting any subcontractor listed in the Bid Forms, Contractor must comply with the requirements of the Subletting and Subcontracting Fair Practices Act pursuant to California Public Contract Code section 4100 et seq.

GC14. PERMITS AND LICENSES

Permits and licenses necessary for prosecution of The Work shall be secured and paid for by Contractor, unless otherwise specified in the Contract Documents.

- a. Contractor shall obtain and pay for all other permits and licenses required for The Work, including excavation permit and for plumbing, mechanical and electrical work and for operations in or over public streets or right of way under jurisdiction of public agencies other than the City.
- b. The Contractor shall arrange and pay for all off-site inspection of the Work related to permits and licenses, including certification, required by the specifications, drawings, or by governing authorities, except for such off-site inspections delineated as the City's responsibility pursuant to the Contract Documents.
- c. Before Acceptance of the Project, the Contractor shall submit all licenses, permits, certificates of inspection and required approvals to the City.

GC15. UTILITY USAGE

- a. All temporary utilities, including but not limited to electricity, water, gas, and telephone, used on the Work shall be furnished and paid for by Contractor.

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Contractor shall Provide necessary temporary distribution systems, including meters, if necessary, from distribution points to points on The Work where the utility is needed. Upon completion of The Work, Contractor shall remove all temporary distribution systems.

- b. Contractor shall provide necessary and adequate utilities and pay all costs for water, electricity, gas, oil, and sewer charges required for completion of the Project.
- c. All permanent meters Installed shall be listed in the Contractor's name until Project Acceptance.
- d. If the Contract is for construction in existing facilities, Contractor may, with prior written Approval of the City, use the City's existing utilities by compensating the City for utilities used by Contractor.

GC16. INSPECTION FEES FOR PERMANENT UTILITIES

All inspection fees and other municipal charges for permanent utilities including, but not limited to, sewer, electrical, phone, gas, water, and irrigation shall be paid for by the City. Contractor shall be responsible for arranging the payment of such fees, but inspection fees and other municipal fees relating to permanent utilities shall be paid by the City. Contractor may either request reimbursement from the City for such fees, or shall be responsible for arranging and coordination with City for the payment of such fees.

GC17. TRENCHES

- a. Trenches Five Feet or More in Depth. The Contractor shall submit to the City, in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping or other provisions to be made for worker protection from the hazard of caving ground during the excavation of any trench or trenches five feet or more in depth. If the plan varies from shoring system standards, the plan shall be prepared by a registered civil or structural engineer. The plan shall not be less effective than the shoring, bracing, sloping, or other provisions of the Construction Safety Orders, as defined in the California Code of Regulations.
- b. Excavations Deeper than Four Feet. If work under this Contract involves digging trenches or other excavation that extends deeper than four feet below the surface, Contractor shall promptly, and before the following conditions are disturbed, notify the City, in writing, of any:
 - 1) Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.

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- 2) Subsurface or latent physical conditions at the site differing from those indicated.
- 3) 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.

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

In the event that a dispute arises between the City and the Contractor as to 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. Contractor shall retain any and all rights provided either by contract or by law which pertain to the resolution of disputes and protests between the parties.

- c. Groundwater and Dewatering. The Contractor is responsible for all necessary trench and excavation dewatering operations. No additional compensation will be provided should groundwater levels be encountered that are different than those described in the plans and specifications. Discharge of all water must comply with the State Water Resources Control Board's NPDES permit requirements, as described in these specifications.

GC18. DIVERSION OF RECYCLABLE WASTE MATERIALS

In compliance with the applicable City's waste reduction and recycling efforts, Contractor shall divert all Recyclable Waste Materials to appropriate recycling centers. Contractor will be required to submit weight tickets and written proof of diversion with its monthly progress payment requests. Contractor shall complete and execute any certification forms required by City or other applicable agencies to document Contractor's compliance with these diversion requirements. All costs incurred for these waste diversion efforts shall be the responsibility of the Contractor.

GC19. REMOVAL OF HAZARDOUS MATERIALS

Should Contractor encounter material reasonably believed to be polychlorinated biphenyl (PCB) or other toxic wastes and hazardous materials which have not been rendered harmless at the Project site, the Contractor shall immediately stop work at the affected

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Project site and shall report the condition to the City in writing. The City shall contract for any services required to directly remove and/or abate PCBs and other toxic wastes and hazardous materials, if required by the Project site(s), and shall not require the Contractor to subcontract for such services. The Work in the affected area shall not thereafter be resumed except by written agreement of the City and Contractor.

GC20. SANITARY FACILITIES

Contractor shall provide sanitary temporary toilet buildings for the use of all workers. All toilets shall comply with local codes and ordinances. Toilets shall be kept supplied with toilet paper and shall have workable door fasteners. Toilets shall be serviced no less than once weekly and shall be present in a quantity of not less than 1 per 20 workers as required by CAL-OSHA regulation. The toilets shall be maintained in a sanitary condition at all times. Use of toilet facilities in The Work under construction shall not be permitted. Any other Sanitary Facilities required by CAL-OSHA shall be the responsibility of the Contractor.

GC21. AIR POLLUTION CONTROL

Contractor shall comply with all air pollution control rules, regulations, ordinances and statutes. All containers of paint, thinner, curing compound, solvent or liquid asphalt shall be labeled to indicate that the contents fully comply with the applicable material requirements.

GC22. COMPLIANCE WITH STATE STORM WATER PERMIT

- a. Contractor shall be required to comply with all conditions of the State Water Resources Control Board ("State Water Board") National Pollutant Discharge Elimination System General Permit for Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity ("Permit") for all construction activity which results in the disturbance of in excess of one acre of total land area or which is part of a larger common area of development or sale. Contractor shall be responsible for filing the Notice of Intent and for obtaining the Permit. Contractor shall be solely responsible for preparing and implementing a Storm Water Pollution Prevention Plan ("SWPPP") prior to initiating Work. In bidding on this Contract, it shall be Contractor's responsibility to evaluate the cost of procuring the Permit and preparing the SWPPP as well as complying with the SWPPP and any necessary revision to the SWPPP. Contractor shall comply with all requirements of the State Water Resources Control Board. Contractor shall include all costs of compliance with specified requirements in the Contract amount.
- b. Contractor shall be responsible for procuring, implementing and complying with the provisions of the Permit and the SWPPP, including the standard provisions,



monitoring and reporting requirements as required by the Permit. Contractor shall provide copies of all reports and monitoring information to the Engineer.

- c. Contractor shall comply with the lawful requirements of any applicable municipality, the City, drainage district, and other local agencies regarding discharges of storm water to separate storm drain system or other watercourses under their jurisdiction, including applicable requirements in municipal storm water management programs.
- d. Storm, surface, nuisance, or other waters may be encountered at various times during construction of The Work. Therefore, the Contractor, by submitting a Bid, hereby acknowledges that it has investigated the risk arising from such waters, has prepared its Bid accordingly, and assumes any and all risks and liabilities arising therefrom.
- e. Failure to comply with the Permit is in violation of federal and state law. Contractor hereby agrees to indemnify and hold harmless City, its officials, officers, agents, employees and authorized volunteers from and against any and all claims, demands, losses or liabilities of any kind or nature which City, its officials, officers, agents, employees and authorized volunteers may sustain or incur for noncompliance with the Permit arising out of or in connection with the Project, except for liability resulting from the sole established negligence, willful misconduct or active negligence of the City, its officials, officers, agents, employees or authorized volunteers. City may seek damages from Contractor for delay in completing the Contract in accordance with the Contract Documents, caused by Contractor's failure to comply with the Permit.

GC23. CLEANING UP

- a. Contractor at all times shall keep premises free from debris such as waste, rubbish, and excess materials and equipment. Contractor shall not store debris under, in, or about the premises. Upon completion of Work, Contractor shall clean the interior and exterior of the building or improvement including fixtures, equipment, walls, floors, ceilings, roofs, window sills and ledges, horizontal projections, and any areas where debris has collected so surfaces are free from foreign material or discoloration. Contractor shall clean and polish all glass, plumbing fixtures, and finish hardware and similar finish surfaces and equipment and contractor shall also remove temporary fencing, barricades, planking and construction toilet and similar temporary facilities from site. Contractor shall also clean all buildings, asphalt and concrete areas to the degree necessary to remove oil, grease, fuel, or other stains caused by Contractor operations or equipment.

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- b. Contractor shall fully clean up the site at the completion of The Work. If the Contractor fails to immediately clean up at the completion of The Work, the City may do so and the cost of such clean up shall be charged back to the Contractor.

GC24. LAYOUT AND FIELD ENGINEERING

All field engineering required for laying out The Work and establishing grades for earthwork operations shall be furnished by the Contractor at its expense. Layout shall be done by a registered civil engineer Approved by the Engineer. Any required “as-built” drawings of the Work shall be prepared by the registered civil engineer.

GC25. EXCESSIVE NOISE

- a. The Contractor shall use only such equipment on the work and in such state of repair so that the emission of sound therefrom is within the noise tolerance level of that equipment as established by CAL-OSHA.
- b. The Contractor shall comply with the most restrictive of the following: (1) local sound control and noise level rules, regulations and ordinances and (2) the requirements contained in these Contract Documents, including hours of operation requirements. No internal combustion engine shall be operated on the Project without a muffler of the type recommended by the manufacturer. Should any muffler or other control device sustain damage or be determined to be ineffective or defective, the Contractor shall promptly remove the equipment and shall not return said equipment to the job until the device is repaired or replaced. Said noise and vibration level requirements shall apply to all equipment on the job or related to the job, including but not limited to, trucks, transit mixers or transit equipment that may or may not be owned by the Contractor.

GC26. TESTS AND INSPECTIONS

- a. If the Contract Documents, the Engineer, or any instructions, laws, ordinances, or public authority require any part of The Work to be tested or Approved, Contractor shall provide the Engineer at least two (2) working days notice of its readiness for observation or inspection. If inspection is by a public authority other than the City, Contractor shall promptly inform the City of the date fixed for such inspection. Required certificates of inspection (or similar) shall be secured by Contractor. Costs for City testing and City inspection shall be paid by the City. Costs of tests for Work found not to be in compliance shall be paid by the Contractor.
- b. If any Work is done or covered up without the required testing or approval, the Contractor shall uncover or deconstruct the Work, and the Work shall be redone after completion of the testing at the Contractor’s cost in compliance with the Contract Documents.

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- c. Where inspection and testing are to be conducted by an independent laboratory or agency, materials or samples of materials to be inspected or tested shall be selected by such laboratory or agency, or by the City, and not by Contractor. All tests or inspections of materials shall be made in accordance with the commonly recognized standards of national organizations.
- d. In advance of manufacture of materials to be supplied by Contractor which must be tested or inspected, Contractor shall notify the City so that the City may arrange for testing at the source of supply. Any materials which have not satisfactorily passed such testing and inspection shall not be incorporated into The Work.
- e. If the manufacture of materials to be inspected or tested will occur in a plant or location outside the geographic limits of City, the Contractor shall pay for any excessive or unusual costs associated with such testing or inspection, including but not limited to excessive travel time, standby time and required lodging.
- f. Reexamination of Work may be ordered by the City. If so ordered, Work must be uncovered or deconstructed by Contractor. If Work is found to be in accordance with the Contract Documents, the City shall pay the costs of reexamination and reconstruction. If such work is found not to be in accordance with the Contract Documents, Contractor shall pay all costs.

GC27. PROTECTION OF WORK AND PROPERTY

- a. The Contractor shall be responsible for all damages to persons or property that occur as a result of The Work. Contractor shall be responsible for the proper care and protection of all materials delivered and Work performed until completion and final Acceptance by the City. All Work shall be solely at the Contractor's risk. Contractor shall adequately protect adjacent property from settlement or loss of lateral support as necessary. Contractor shall comply with all applicable safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to the Project site where Work is being performed. Contractor shall erect and properly maintain at all times, as required by field conditions and progress of work, all necessary safeguards, signs, barriers, lights, and watchmen for protection of workers and the public, and shall post danger signs warning against hazards created in the course of construction.
- b. In an emergency affecting safety of life or of work or of adjoining property, Contractor, without special instruction or authorization from the Engineer, is hereby permitted to act to prevent such threatened loss or injury; and Contractor shall so act, without appeal, if so authorized or instructed by the Engineer or the City. Any compensation claimed by Contractor on account of emergency work shall be determined by and agreed upon by the City and the Contractor.

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- c. Contractor shall provide such heat, covering, and enclosures as are necessary to protect all Work, materials, equipment, appliances, and tools against damage by weather conditions.
- d. Contractor shall take adequate precautions to protect existing sidewalks, curbs, pavements, utilities, and other adjoining property and structures, and to avoid damage thereto, and Contractor shall repair any damage thereto caused by The Work operations. Contractor shall:
 - 1) Enclose the working area with a substantial barricade, and arrange work to cause minimum amount of inconvenience and danger to the public.
 - 2) Provide substantial barricades around any shrubs or trees indicated to be preserved.
 - 3) Deliver materials to the Project site over a route designated by the Engineer.
 - 4) Provide any and all dust control required and follow the Applicable air quality regulations as appropriate. If the Contractor does not comply, the City shall have the immediate authority to provide dust control and deduct the cost from payments to the Contractor.
 - 5) Confine Contractor's apparatus, the storage of materials, and the operations of its workers to limits required by law, ordinances, permits, or directions of the Engineer. Contractor shall not unreasonably encumber the Project site with its materials.
 - 6) Take care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners. If such markers are disturbed by accident, they shall be replaced by an approved civil engineer or land surveyor, at no cost to the City.
 - 7) Ensure that existing facilities, fences and other structures are all adequately protected and that, upon completion of all Work, all facilities that may have been damaged are restored to a condition acceptable to the City.
 - 8) Preserve and protect from injury all buildings, pole lines and all direction, warning and mileage signs that have been placed within the right-of-way.
 - 9) At the completion of work each day, leave the Project site in a clean, safe condition.
 - 10) Comply with any stage construction and traffic handling plans. Access to residences and businesses shall be maintained at all times.

These precautionary measures will apply continuously and not be limited to normal working hours. Full compensation for the Work involved in the preservation of life,

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safety and property as above specified shall be considered as included in the prices paid for the various contract items of Work, and no additional allowance will be made therefor.

- e. Should damage to persons or property occur as a result of The Work, Contractor shall be responsible for proper investigation, documentation, including video or photography, to adequately memorialize and make a record of what transpired. The City shall be entitled to inspect and copy any such documentation, video, or photographs.

GC28. CONTRACTORS MEANS AND METHODS

Contractor is solely responsible for the means and methods utilized to Perform The Work. In no case shall the Contractor's means and methods deviate from commonly used industry standards.

GC29. INSPECTOR'S FIELD OFFICE

- a. The Contractor shall be responsible for providing the inspector's field office. The Office shall be a substantial waterproof construction with adequate natural light and ventilation by means of stock design windows. Door shall have a key type lock or padlock clasp. The office shall have heating and air conditioning and shall be equipped with a telephone, a telephone answering machine, and a fax machine at Contractor's expense.
- b. A table satisfactory for the study of plans and two chairs shall be Provided by Contractor. Contractor shall Provide and pay for adequate electric lights, local telephone service, and adequate heat and air conditioning for the field office until authorized removal.

GC30. AUTHORIZED REPRESENTATIVES

The City shall designate representatives, who shall have the right to be present at the Project site at all times. The City may designate an inspector who shall have the right to observe all of the Contractor's Work. The inspector is not authorized to make changes in the Contract Documents. The inspector shall not be responsible for the Contractor's failure to carry out The Work in accordance with the Contract Documents. Contractor shall provide safe and proper facilities for such access.

GC31. HOURS OF WORK

- a. Eight (8) hours of work shall constitute a legal day's work. The Contractor and each subcontractor shall forfeit, as penalty to the City, twenty-five dollars (\$25) for each worker employed in the execution of Work by the Contractor or any subcontractor for each day during which such worker is required or permitted to

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work more than eight (8) hours in any one day and forty (40) hours in any week in violation of the provisions of the Labor Code, and in particular, Section 1810 to Section 1815, except as provided in Labor Code Section 1815.

- b. Work shall be accomplished on a regularly scheduled eight (8) hour per day work shift basis, Monday through Friday, between the hours of 7:00 a.m. and 5:00 p.m.
- c. It shall be unlawful for any person to operate, permit, use, or cause to operate any of the following at the Project site, other than between the hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, with no Work allowed on City-observed holidays, unless otherwise approved by the Engineer:
 - 1) Powered Vehicles
 - 2) Construction Equipment
 - 3) Loading and Unloading Vehicles
 - 4) Domestic Power Tool.

GC32. PAYROLL RECORDS

- a. Pursuant to Labor Code Section 1776, the Contractor and each subcontractor shall maintain weekly certified payroll records showing the name, address, social security number, work classification, straight time and overtime hours paid each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker or other employee employed in connection with the work. Contractor shall certify under penalty of perjury that records maintained and submitted by Contractor are true and accurate. Contractor shall also require subcontractor(s) to certify weekly payroll records under penalty of perjury.
- b. The payroll records described herein shall be certified and submitted by the Contractor at a time designated by the City. The Contractor shall also provide the following:
 - 1) A certified copy of the employee's payroll records shall be made available for inspection or furnished to such employee or his or her authorized representative on request.
 - 2) A certified copy of all payroll records described herein shall be made available for inspection or furnished upon request of the Department of Industrial Relations ("DIR").

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- c. The certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement ("DLSE") of the DIR or shall contain the same information as the forms provided by the DLSE.
- d. Any copy of records made available for inspection and furnished upon request to the public 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 or any subcontractor shall not be marked or obliterated.
- e. In the event of noncompliance with the requirements of this Section, the Contractor shall have ten (10) days in which to comply subsequent to receipt of written notice specifying any item or actions necessary to ensure compliance with this section. Should noncompliance still be evident after such ten (10) day period, the Contractor shall, as a penalty to the City, forfeit Twenty-five Dollars (\$25.00) for each day, or portion thereof, for each worker until strict compliance is effectuated. Upon the request of the DIR, such penalties shall be withheld from contract payments.

GC33. PREVAILING RATES OF WAGES

- a. The Contractor is aware of the requirements of Labor Code Sections 1720 et seq. and 1770 et seq., as well as California Code of Regulations, Title 8, Section 16000 et seq. ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on certain "public works" and "maintenance" projects. Since this Project involves an applicable "public works" or "maintenance" project, as defined by the Prevailing Wage Laws, and since the total compensation is \$1,000 or more, Contractor agrees to fully comply with such Prevailing Wage Laws. The Contractor shall obtain a copy of the prevailing rates of per diem wages at the commencement of this Agreement from the website of the Division of Labor Statistics and Research of the Department of Industrial Relations located at www.dir.ca.gov/dlsr/. In the alternative, the Contractor may view a copy of the prevailing rates of per diem wages at the City. Contractor shall make copies of the prevailing rates of per diem wages for each craft, classification or type of worker needed to perform work on the Project available to interested parties upon request, and shall post copies at the Contractor's principal place of business and at the Project site. Contractor shall defend, indemnify and hold the City, its elected officials, officers, employees and agents free and harmless from any claims, liabilities, costs, penalties or interest arising out of any failure or allege failure to comply with the Prevailing Wage Laws.
- b. The Contractor and each subcontractor shall forfeit as a penalty to the City not more than fifty dollars (\$50) for each calendar day, or portion thereof, for each worker paid less than the stipulated prevailing wage rate for any work done by him, or by any subcontract under him, in violation of the provisions of the Labor Code.

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The difference between such stipulated prevailing wage rate and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the stipulated prevailing wage rate shall be paid to each worker by the Contractor.

- c. Contractor shall post, at appropriate conspicuous points on the Project site, a schedule showing all determined general prevailing wage rates and all authorized deductions, if any, from unpaid wages actually earned.
- d. If the Work involves federal funds or otherwise requires compliance with the Davis-Bacon Fair Labor Standards Act, the Contractor and all its subcontractors shall comply with the higher of the state or federal prevailing wage rates.

GC34. EMPLOYMENT OF APPRENTICES

The Contractor's attention is directed to the provisions of Sections 1777.5, 1777.6, and 1777.7 of the Labor Code concerning employment of apprentices by the Contractor or any subcontractor. The Contractor shall obtain a certificate of apprenticeship before employing any apprentice pursuant to Section 1777.5, 1777.6, and 1777.7 of the Labor Code. Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, the Administrator of Apprenticeships, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

GC35. NONDISCRIMINATION/EQUAL EMPLOYMENT OPPORTUNITY

Pursuant to Labor Code Section 1735 and other applicable provisions of law, the Contractor and its subcontractors shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, age, political affiliation, marital status, or handicap on this Project. The Contractor will take affirmative action to insure that employees are treated during employment or training without regard to their race, color, religion, sex, national origin, age, political affiliation, marital status, or handicap.

GC36. LABOR/EMPLOYMENT SAFETY

The Contractor shall maintain emergency first aid treatment for his employees which complies with the Federal Occupational Safety and Health Act of 1970 (29 U.S.C. § 651 et seq.), and California Code of Regulations, Title 8, Industrial Relations Division 1, Department of Industrial Relations, Chapter 4.

GC37. WORKERS' COMPENSATION INSURANCE

The Contractor shall Provide, during the life of this Contract, workers' compensation insurance for all of the employees engaged in Work under this Contract, on or at the

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Project site, and, in case any of sublet Work, the Contractor shall require the subcontractor similarly to provide workers' compensation insurance for all the latter's employees as prescribed by State law. Any class of employee or employees not covered by a subcontractor's insurance shall be covered by the Contractor's insurance. In case any class of employees engaged in work under this Contract, on or at the Project site, is not protected under the Workers' Compensation Statutes, the Contractor shall provide or shall cause a subcontractor to provide, adequate insurance coverage for the protection of such employees not otherwise protected. The Contractor is required to secure payment of compensation to his employees in accordance with the provisions of Section 3700 of the Labor Code. The Contractor shall file with the City certificates of his insurance protecting workers. Company or companies providing insurance coverage shall be acceptable to the City, if in the form and coverage as set forth in the Contract Documents.

GC38. EMPLOYER'S LIABILITY INSURANCE

Contractor shall provide during the life of this Contract, Employer's Liability Insurance, including Occupational Disease, in the amount of, at least, one million dollars (\$1,000,000.00) per person per accident. Contractor shall provide City with a certificate of Employer's Liability Insurance. Such insurance shall comply with the provisions of the Contract Documents. The policy shall be endorsed, if applicable, to provide a Borrowed Servant/Alternate Employer Endorsement and contain a Waiver of Subrogation in favor of the City.

GC39. COMMERCIAL GENERAL LIABILITY INSURANCE

- a. Contractor shall procure and maintain during the life of this Contract and for such other period as may be required herein, at its sole expense, Commercial General Liability insurance coverage, including but not limited to, premises liability, contractual liability, products/completed operations if applicable, personal and advertising injury – which may arise from or out of Contractor's operations, use, and management of the Project site, or the performance of its obligations hereunder. Policy limits shall not be less than **\$2,000,000** per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit.
- b. Such policy shall comply with all the requirements of this Article. The limits set forth herein shall apply separately to each insured against whom claims are made or suits are brought, except with respect to the limits of liability. Further the limits set forth herein shall not be construed to relieve the Contractor from liability in excess of such coverage, nor shall it limit Contractor's indemnification obligations to the City, and shall not preclude the City from taking such other actions available to the City under other provisions of the Contract Documents or law.

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- c. Contractor shall make certain that any and all subcontractors hired by Contractor are insured in accordance with this Contract. If any subcontractor's coverage does not comply with the foregoing provisions, Contractor shall indemnify and hold the City harmless from any damage, loss, cost, or expense, including attorneys' fees, incurred by the City as a result thereof.
- d. All general liability policies provided pursuant to the provisions of this Article shall comply with the provisions of the Contract Documents.
- e. All general liability policies shall be written to apply to all bodily injury, including death, property damage, personal injury, owned and non-owned equipment, blanket contractual liability, completed operations liability, explosion, collapse, under-ground excavation, removal of lateral support, and other covered loss, however occasioned, occurring during the policy term, and shall specifically insure the performance by Contractor of that part of the indemnification contained in these General Conditions, relating to liability for injury to or death of persons and damage to property. If the coverage contains one or more aggregate limits, a minimum of 50% of any such aggregate limit must remain available at all times; if over 50% of any aggregate limit has been paid or reserved, the City may require additional coverage to be purchased by Contractor to restore the required limits. Contractor may combine primary, umbrella, and as broad as possible excess liability coverage to achieve the total limits indicated above. Any umbrella or excess liability policy shall include the additional insured endorsement described in the Contract Documents.

GC40. AUTOMOBILE LIABILITY INSURANCE

Contractor shall take out and maintain at all times during the term of this Contract Automobile Liability Insurance in the amount of, at least, one million dollars (\$1,000,000). Such insurance shall provide coverage for bodily injury and property damage including coverage for non-owned and hired vehicles, in a form and with insurance companies acceptable to the City. Such insurance shall comply with the provisions of Article 30 below.

GC41. BUILDER'S RISK ["ALL RISK"]

- a. It is the Contractor's responsibility to maintain or cause to be maintained Builder's Risk ["All Risk"] extended coverage insurance on all work, material, equipment, appliances, tools, and structures which are a part of the Contract and subject to loss or damage by fire, and vandalism and malicious mischief, in an amount to cover 100% of the replacement cost. The City accepts no responsibility until the Contract is formally accepted by the Governing Board for the work. The Contractor is required to file with the City a certificate evidencing fire insurance coverage.

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- b. Provide insurance coverage on completed value form, all-risk or special causes of loss coverage.
 - 1) Insurance policies shall be so conditioned as to cover the performance of any extra work performed under the Contract.
 - 2) Coverage shall include all materials stored on site and in transit.
 - 3) Coverage shall include Contractor's tools and equipment.
 - 4) Insurance shall include boiler, machinery and material hoist coverage.
- c. Such insurance shall comply with the provisions of the Contract Documents.

GC42. FORM AND PROOF OF CARRIAGE OF INSURANCE

- a. Any insurance carrier providing insurance coverage required by the Contract Documents shall be admitted to and authorized to do business in the State of California unless waived, in writing, by the City Risk Manager. Carrier(s) shall have an A.M. Best rating of not less than an A:VIII. Insurance deductibles or self-insured retentions must be declared by the Contractor, and such deductibles and retentions shall have the prior written consent from the City. At the election of the City the Contractor shall either 1) reduce or eliminate such deductibles or self-insured retentions, or 2) procure a bond which guarantees payment of losses and related investigations, claims administration, and defense costs and expenses.
- b. Contractor shall cause its insurance carrier(s) to furnish the City with either 1) a properly executed original Certificates(s) of Insurance and certified original copies of Endorsements effecting coverage as required herein, or 2) if requested to do so in writing by the City Risk Manager, provide original Certified copies of policies including all Endorsements and all attachments thereto, showing such insurance is in full force and effect. The City, its Director's and officers, employees, agents or representatives are named as Additional Insureds and Provide a Waiver of Subrogation in favor of those parties. Further, said Certificates(s) and policies of insurance shall contain the covenant of the insurance carrier(s) that shall provide no less than thirty (30) days written notice be given to the City prior to any material modification or cancellation of such insurance. In the event of a material modification or cancellation of coverage, the City may terminate or Stop Work pursuant to the Contract Documents, unless the City receives, prior to such effective date, another properly executed original Certificate of Insurance and original copies of endorsements or certified original policies, including all endorsements and attachments thereto evidencing coverages set forth herein and the insurance required herein is in full force and effect. Contractor shall not take possession, or use the Project site, or commence operations under this Agreement



until the City has been furnished original Certificate(s) of Insurance and certified original copies of Endorsements or policies of insurance including all Endorsements and any and all other attachments as required in this Section. The original Endorsements for each policy and the Certificate of Insurance shall be signed by an individual authorized by the insurance carrier to do so on its behalf.

- c. It is understood and agreed to by the parties hereto and the insurance company(s), that the Certificate(s) of Insurance and policies shall so covenant and shall be construed as primary, and the City's insurance and/or deductibles and/or self-insured retentions or self-insured programs shall not be construed as contributory.
- d. The City reserves the right to adjust the monetary limits of insurance coverage's during the term of this Contract including any extension thereof-if in the City's reasonable judgment, the amount or type of insurance carried by the Contractor becomes inadequate.
- e. Contractor shall pass down the insurance obligations contained herein to all tiers of sub-contractors working under this Contract.

GC43. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

- a. **Time for Completion/Liquidated Damages.** Work shall be commenced within ten (10) days of the date stated in the City's Notice to Proceed and shall be completed by Contractor in the time specified in the Contract Documents. The City is under no obligation to consider early completion of the Project; and the Contract completion date shall not be amended by the City's receipt or acceptance of the Contractor's proposed earlier completion date. Furthermore, Contractor shall not, under any circumstances, receive additional compensation from the City (including but not limited to indirect, general, administrative or other forms of overhead costs) for the period between the time of earlier completion proposed by the Contractor and the Contract completion date. If The Work is not completed as stated in the Contract Documents, it is understood that the City will suffer damage. In accordance with Government Code section 53069.85, being impractical and infeasible to determine the amount of actual damage, it is agreed that Contractor shall pay to the City as fixed and liquidated damages, and not as a penalty, **the sum of \$2,000 for each day of delay** until The Work is fully completed. Contractor and its surety shall be liable for any liquidated damages. Any money due or to become due the Contractor may be retained to cover liquidated damages.
- b. **Inclement Weather.** Contractor shall abide the Engineer's determination of what constitutes inclement weather. Time extensions for inclement weather shall only be granted when the Work stopped during inclement weather is on the critical path of the Project schedule.

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- c. **Extension of Time.** Contractor shall not be charged liquidated damages because of any delays in completion of The Work due to unforeseeable causes beyond the control and without the fault or negligence of Contractor (or its subcontractors or suppliers). Contractor shall within five (5) Days of identifying any such delay notify the City in writing of causes of delay. The City shall ascertain the facts and extent of delay and grant extension of time for completing The Work when, in its judgment, the facts justify such an extension. Time extensions to the Project shall be requested by the Contractor as they occur and without delay. No delay claims shall be permitted unless the event or occurrence delays the completion of the Project beyond the Contract completion date.
- d. **No Damages for Reasonable Delay.** The City's liability to the Contractor for delays for which the City is responsible shall be limited to only an extension of time unless such delays were unreasonable under the circumstances. In no case shall the City be liable for any costs which are borne by the Contractor in the regular course of business, including, but not limited to, home office overhead and other ongoing costs. Damages caused by unreasonable City delay, including delays caused by items that are the responsibility of the City pursuant to Government Code section 4215, shall be based on actual costs only, no proportions or formulas shall be used to calculate any delay damages.

GC44. COST BREAKDOWN AND PERIODIC ESTIMATES

Contractor shall furnish on forms Approved by the City:

- a. Within ten (10) days of award of the Contract a detailed estimate giving a complete breakdown of the Contract price;
- b. A monthly itemized estimate of Work done for the purpose of making progress payments. In order for the City to consider and evaluate each progress payment application, the Contractor shall submit a detailed measurement of Work performed and a progress estimate of the value thereof before the tenth (10th) Day of the following month.
- c. Contractor shall submit, with each of its payment requests, an adjusted list of actual quantities, verified by the Engineer, for unit price items listed, if any, in the Bid Form.
- d. Following the City's Acceptance of the Work, the Contractor shall submit to the City a written statement of the final quantities of unit price items for inclusion in the final payment request.
- e. The City shall have the right to adjust any estimate of quantity and to subsequently correct any error made in any estimate for payment.

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The Contractor shall certify under penalty of perjury, that all cost breakdowns and periodic estimates accurately reflect the Work on the Project.

GC45. MOBILIZATION

- a. When a bid item is included in the Bid Form for mobilization, the costs of Work in advance of construction operations and not directly attributable to any specific bid item will be included in the progress estimate ("Initial Mobilization"). When no bid item is provided for "Initial Mobilization," payment for such costs will be deemed to be included in the other items of The Work. The bid amount for Mobilization shall **not exceed 5%** of the contract amount.
- b. Payment for Initial Mobilization based on the lump sum provided in the Bid Form, which shall constitute full compensation for all such Work. No payment for Initial Mobilization will be made until all of the listed items have been completed to the satisfaction of the Engineer. The scope of the Work included under Initial Mobilization shall include, but shall not be limited to, the following principal items:
 1. Obtaining and paying for all bonds, insurance, and permits.
 2. Moving on to the Project site of all Contractor's plant and equipment required for first month's operations.
 3. Installing temporary construction power, wiring, and lighting facilities.
 4. Establishing fire protection system.
 5. Developing and installing a construction water supply.
 6. Providing and maintaining the field office trailers for the Contractor and the Engineer, complete, with all specified furnishings and utility services including telephones, telephone appurtenances, computer and printer, and copying machine.
 7. Providing on-site communication facilities for the Owner and the Engineer, including telephones, radio pagers, and fax machines.
 8. Providing on-site sanitary facilities and potable water facilities as specified per Cal-OSHA and these Contract Documents.
 9. Furnishing, installing, and maintaining all storage buildings or sheds required for temporary storage of products, equipment, or materials that have not yet been installed in the Work. All such storage shall meet manufacturer's specified storage requirements, and the specific provisions

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of the specifications, including temperature and humidity control, if recommended by the manufacturer, and for all security.

10. Arranging for and erection of Contractor's work and storage yard, including required project signage.
11. Posting all OSHA required notices and establishment of safety programs per Cal-OSHA.
12. Full-time presence of the Contractor's superintendent at the job site as required herein.
13. Submittal of Construction Schedule as required by the Contract Documents.

GC46. PAYMENTS

- a. The City shall make monthly progress payments following receipt of undisputed and properly submitted payment requests. Contractor shall be paid a sum equal to ninety percent (95%) of the value of Work performed up to the last day of the previous month, less the aggregate of previous payments.
- b. The Contractor shall, after the full completion of The Work, submit a final payment application. All prior progress estimates shall be subject to correction in the final estimate and payment.
- c. Unless otherwise required by law, the final payment of five percent (5%) of the value of the Work, if unencumbered, shall be paid no later than thirty-five (35) days after the date of recordation of the Notice of Completion.
- d. Acceptance by the Contractor of the final payment shall constitute a waiver of all claims against the City arising from this Contract.
- e. Payments to the Contractor shall not be construed to be an acceptance of any defective work or improper materials or to relieve the Contractor of its obligations under the Contract Documents.
- f. The Contractor shall submit with each payment request the Contractor's conditional waiver of lien for the entire amount covered by such payment request, as well as a valid unconditional waiver of lien from the Contractor and all subcontractors and materialmen for all work and materials included in any prior invoices. Waivers of lien shall be in the forms prescribed by California Civil Code Section 3262. Prior to final payment by the City, the Contractor shall submit a final waiver of lien for the Contractor's work, together with releases of lien from any subcontractor or materialmen.

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GC47. PAYMENTS WITHHELD AND BACKCHARGES

In addition to amounts which the City may retain under other provisions of the Contract Documents the City may withhold payments due to the Contractor as may be necessary to cover:

- a. Stop Notice Claims.
- b. Defective work not remedied.
- c. Failure of Contractor to make proper payments to its subcontractors or suppliers.
- d. Completion of the Contract if there exists a reasonable doubt that the work can be completed for balance then unpaid.
- e. Damage to another contractor or third party.
- f. Amounts which may be due to the City for claims against Contractor.
- g. Failure of the Contractor to keep the record ("as-built") drawings up to date.
- h. Failure to provide updates on the construction schedule.
- i. Site clean up.
- j. Failure of the Contractor to comply with requirements of the Contract Documents.
- k. Liquidated damages.
- l. Legally permitted penalties.

Upon completion of the Contract, the City will reduce the final Contract amount to reflect costs charged to the Contractor, backcharges or payments withheld pursuant to the Contract Documents.

GC48. CHANGES AND EXTRA WORK

a. **Change Order Work.**

- 1) The City, without invalidating the Contract, may order changes in the Work consisting of additions, deletions or other revisions, the Contract amount and Contract time being adjusted accordingly. All such changes in the Work shall be authorized by Change Order, and shall be performed under the applicable conditions of the Contract Documents. A Change Order signed by the Contractor indicates the Contractor's agreement therewith, including any adjustment in the Contract amount or the Contract time, and the full and

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final settlement of all costs (direct, indirect and overhead) related to the Work authorized by the Change Order.

- 2) All claims for additional compensation to the Contractor shall be presented in writing before the expense is incurred and will be adjusted as provided herein. No work shall be allowed to lag pending such adjustment, but shall be promptly executed as directed, even if a dispute arises. No claim will be considered after the work in question has been done unless a written contract change order has been issued or a timely written notice of claim has been made by the Contractor. The Contractor shall not be entitled to claim or bring suit for damages, whether for loss of profits or otherwise, on account of any decrease or omission of any item or portion of Work to be done. Whenever any change is made as provided for herein, such change shall be considered and treated as though originally included in the Contract, and shall be subject to all terms, conditions and provisions of the original Contract.
- 3) Owner Initiated Change. The Contractor must submit a complete cost proposal, including any change in the Contract time, within seven (7) Days after receipt of a scope of a proposed change order, unless the City requests that proposals be submitted in less than seven (7) Days.
- 4) Contractor Initiated Change. The Contractor must give written notice of a proposed change order required for compliance with the Contract Documents within seven (7) Days of discovery of the facts giving rise to the proposed change order.
- 5) Whenever possible, any changes to the Contract amount shall be in a lump sum mutually agreed to by the Contractor and the City.
- 6) Price quotations from the Contractor shall be accompanied by sufficiently detailed supporting documentation to permit verification by the City.
- 7) If the Contractor fails to submit the cost proposal within the seven (7) Day period (or as requested), the City has the right to order the Contractor in writing to commence the work immediately on a force account basis and/or issue a lump sum change to the contract price in accordance with the City's estimate of cost. If the change is issued based on the City estimate, the Contractor will waive its right to dispute the action unless within fifteen (15) Days following completion of the added/deleted work, the Contractor presents written proof that the City's estimate was in error.

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- 8) Estimates for lump sum quotations and accounting for cost-plus-percentage work shall be limited to direct expenditures necessitated specifically by the subject extra work, and shall be segregated as follows:
- (a) Labor. The costs of labor will be the actual cost for wages prevailing locally for each craft or type of worker at the time the extra work is done, plus employer payments of payroll taxes and insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State or local laws, as well as assessment or benefits required by lawful collective bargaining agreements. The use of a labor classification which would increase the extra work cost will not be permitted unless the contractor establishes the necessity for such additional costs. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.
 - (b) Materials. The cost of materials reported shall be at invoice or lowest current price at which such materials are locally available in the quantities involved, plus sales tax, freight and delivery. Materials cost shall be based upon supplier or manufacturer's invoice. If invoices or other satisfactory evidence of cost are not furnished within fifteen (15) Days of delivery, then the Engineer shall determine the materials cost, at its sole discretion.
 - (c) Tool and Equipment Use. No payment will be made for the use of small tools, tools which have a replacement value of \$1,000 or less. Regardless of ownership, the rates to be used in determining equipment use costs shall not exceed listed rates prevailing locally at equipment rental agencies, or distributors, at the time the work is performed.
 - (d) Overhead, Profit and Other Charges. The mark-up for overhead (including supervision) and profit on work added to the Contract shall be according to the following:
 - i. "Net Cost" is defined as consisting of costs of labor, materials and tools and equipment only excluding overhead and profit. The costs of applicable insurance and bond premium will be reimbursed to the Contractor and subcontractors at cost only, without mark-up.
 - ii. For Work performed by the Contractor's forces the added cost for overhead and profit shall not exceed fifteen (15%) percent of the Net Cost of the Work.

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- iii. For Work performed by a subcontractor, the added cost for overhead and profit shall not exceed fifteen (15%) percent of the Net Cost of the Work to which the Contractor may add five (5%) percent of the subcontractor's Net Cost.
 - iv. For Work performed by a sub-subcontractor the added cost for overhead and profit shall not exceed fifteen (15 %) percent of the Net Cost for Work to which the subcontractor and general contractor may each add an additional five (5 %) percent of the Net Cost of the lower tier subcontractor.
 - iv. No additional mark up will be allowed for lower tier subcontractors, and in no case shall the added cost for overhead and profit payable by City exceed twenty-five (25%) percent of the Net Cost as defined herein.
- 9) For added or deducted Work by subcontractors, the Contractor shall furnish to the City the subcontractor's signed detailed estimate of the cost of labor, material and equipment, including the subcontractor markup for overhead and profit. The same requirement shall apply to sub-subcontractors.
- 10) For added or deducted work furnished by a vendor or supplier, the Contractor shall furnish to the City a detailed estimate or quotation of the cost to the Contractor, signed by such vendor or supplier.
- 11) Any change in The Work involving both additions and deletions shall indicate a net total cost, including subcontracts and materials. Allowance for overhead and profit, as specified herein, shall be applied if the net total cost is an extra; overhead and profit allowances shall not be applied if the net total cost is a credit. The estimated cost of deductions shall be based on labor and material prices on the date the Contract was executed.
- 12) The Contractor shall not reserve a right to assert impact costs, extended job site costs, extended overhead, constructive acceleration and/or actual acceleration beyond what is stated in the change order for work. No claims shall be allowed for impact, extended overhead costs, constructive acceleration and/or actual acceleration due to a multiplicity of changes and/or clarifications. The Contractor may not change or modify the City's change order form in an attempt to reserve additional rights.
- 13) If the City disagrees with the proposal submitted by the Contractor, it will notify the Contractor and the City will provide its opinion of the appropriate price and/or time extension. If the Contractor agrees with the City, a change order will be issued by the City. If no agreement can be reached, the City

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shall have the right to issue a unilateral change order setting forth its determination of the reasonable additions or savings in costs and time attributable to the extra or deleted work. Such determination shall become final and binding if the Contractor fails to submit a claim in writing to the City within fifteen (15) Days of the issuance of the unilateral change order, disputing the terms of the unilateral change order.

- 14) No dispute, disagreement or failure of the parties to reach agreement on the terms of the change order shall relieve the Contractor from the obligation to proceed with performance of the work, including extra work, promptly and expeditiously.
- 15) Any alterations, extensions of time, extra work or any other changes may be made without securing consent of the Contractor's surety or sureties.

GC49. OCCUPANCY

The City reserves the right to occupy or utilize any portion of The Work at any time before completion, and such occupancy or use shall not constitute Acceptance of any part of Work covered by this Contract. This use shall not relieve the Contractor of its responsibilities under the Contract.

GC50. INDEMNIFICATION

Contractor shall defend (with counsel of City's choosing), indemnify and hold the City, its officials, officers, agents, employees, and representatives free and harmless from any and all claims, demands, causes of action, costs, expenses, liabilities, losses, damages or injuries, in law or equity, regardless of whether the allegations are false, fraudulent, or groundless, to property or persons, including wrongful death, to the extent arising out of or incident to any acts, omissions or willful misconduct of Contractor, its officials, officers, employees, agents, consultants and contractors arising out of or in connection with the performance of the Work or this Contract, including claims made by subcontractors for nonpayment, including without limitation the payment of all consequential damages and attorney's fees and other related costs and expenses. The Contractor shall defend, at the Contractor's own cost, expense, and risk, with counsel of the City's choosing, any and all such aforesaid suits, actions or other legal proceedings of every kind that may be brought or instituted against the City, its officials, officers, agents, employees and representatives. To the extent of its liability, the Contractor shall pay and satisfy any judgment, award or decree that may be rendered against the City, its officials, officers, employees, agents, employees, and representatives, in any such suit, action or other legal proceeding. The Contractor shall reimburse the City, its officials, officers, agents, employees, and representatives for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided. The only limitations on this provision shall be those imposed by Civil Code Section 2782.

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GC51. RECORD ("AS BUILT") DRAWINGS

- a. Contractor shall prepare and maintain a complete set of record drawings (herein referred to as "as-builts") and shall require each trade to prepare its own as-builts. The as-builts must show the entire site for each major trade, including but not limited to water, sewer, electrical, data, telephone, cable, fire alarm, gas, and plumbing. The Contractor shall mark the as-builts to show the actual installation where the installation varies from the Work as originally shown. The Contractor shall mark whichever drawings are most capable of showing conditions fully and where shop drawings are used, the Contractor must record a cross-reference at the corresponding location on the contract drawings. The Contractor shall give particular attention to concealed elements that would be difficult to measure and record at a later date. The Contractor shall use colors to distinguish variations in separate categories of The Work.
- b. Contractor shall note related change order numbers where applicable. Contractor shall organize as-builts into manageable sets, bound with durable paper cover sheets and shall print suitable title, dates and other identification on the cover of each set. Contractor to also provide an electronic version of the as-builts. The suitability of the as-builts will be determined by the Engineer.

GC52. RESOLUTION OF CONSTRUCTION CLAIMS

- a. In accordance with Public Contract Code Sections 20104 *et seq.* and other applicable law, public works claims of \$375,000 or less which arise between the Contractor and the City shall be resolved under the following the statutory procedure unless the City has elected to resolve the dispute pursuant to Public Contract Code Section 10240 *et seq.*
- b. **All Claims:** All claims shall be submitted in writing and accompanied by substantiating documentation. Claims must be filed on or before the date of final payment unless other notice requirements are provided in the contract. "Claim" means a separate demand by the claimant for (1) a time extension, (2) payment of money or damages arising from work done by or on behalf of the claimant and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled, or (3) an amount the payment of which is disputed by the City.
- c. **Claims Under \$50,000.** The City shall respond in writing to the claim within 45 days of receipt of the claim, or, the City may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses or claims the City may have. If additional information is needed thereafter, it shall be provided upon mutual agreement of the City and the claimant. The City's written response shall be submitted 15 days after receiving the



additional documentation, or within the same period of time taken by the claimant to produce the additional information, whichever is greater.

- d. **Claims over \$50,000 but less than or equal to \$375,000.** The City shall respond in writing within 60 days of receipt, or, may request in writing within 30 days of receipt of the claim, any additional documents supporting the claim or relating to defenses or claims the City may have against the claimant. If additional information is needed thereafter, it shall be provided pursuant to mutual agreement between the City and the claimant. The City's response shall be submitted within 30 days after receipt of the further documents, or within the same period of time taken by the claimant to produce the additional information or documents, whichever is greater. The Contractor shall make these records and documents available at all reasonable times, without any direct charge.
- e. The Contractor will submit the claim justification in the following format:
 - 1) Summary of claim merit and price, and Contract clause pursuant to which the claim is made.
 - 2) List of documents relating to claim
 - (a) Specifications
 - (b) Drawings
 - (c) Clarifications (Requests for Information)
 - (d) Schedules
 - (e) Other
 - 3) Chronology of events and correspondence
 - 4) Analysis of claim merit
 - 5) Analysis of claim cost
 - 6) Analysis of time impact analysis in CPM format
 - 7) Cover letter and certification of validity of the claim
- f. If the claimant disputes the City's response, or if the City fails to respond within the statutory time period(s), the claimant may so notify the City within 15 days of the receipt of the response or the failure to respond, and demand an informal

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conference to meet and confer for settlement. Upon such demand, the City shall schedule a meet and confer conference within 30 Days.

- g. If following the meet and confer conference, the claim or any portion thereof remains in dispute, the claimant may file a claim pursuant to Government Code 900 et seq. and Government Code 910 et seq. For purposes of those provisions, the time within which a claim must be filed shall be tolled from the time the claimant submits the written claim until the time the claim is denied, including any time utilized for the meet and confer conference.
- h. Submission of a claim, properly certified, with all required supporting documentation, and written rejection or denial of all or part of the claim by City, is a condition precedent to any action, proceeding, litigation, suit, general conditions claim, or demand for arbitration by Contractor.

GC53. CITY'S RIGHT TO TERMINATE CONTRACT

- a. **Termination for Cause:** The City may, without prejudice to any other right or remedy, serve written notice upon Contractor of its intention to terminate this Contract if the Contractor: (i) refuses or fails to prosecute The Work or any part thereof with such diligence as will ensure its completion within the time required; (ii) fails to complete The Work within the required time; (iii) should file a bankruptcy petition or be adjudged a bankrupt; (iv) should make a general assignment for the benefit of its creditors; (v) should have a receiver appointed; (vi) should persistently or repeatedly refuse or fail to supply enough properly skilled workers or proper materials to complete the work; (vii) should fail to make prompt payment to subcontractors or for material or labor; (viii) persistently disregard laws, ordinances, other requirements or instructions of the City; or (ix) should violate any of the provisions of the Contract Documents.

The notice of intent to terminate shall contain the reasons for such intention to terminate. Unless within ten (10) Days after the service of such notice, such condition shall cease or satisfactory arrangements (acceptable to the City) for the required correction are made, this Contract shall be terminated. In such case, Contractor shall not be entitled to receive any further payment until the Project has been finished. The City may take over and complete The Work by any method it may deem appropriate. Contractor and its surety shall be liable to the City for any excess costs or other damages incurred by the City to complete the Project. If the City takes over The Work, the City may, without liability for so doing, take possession of and utilize in completing The Work such materials, appliances, plant, and other property belonging to the Contractor as may be on the Project site.



- b. **Termination For Convenience:** The City may terminate performance of The Work in whole or, in part, if the City determines that a termination is in the City's interest.

The Contractor shall terminate all or any part of The Work upon delivery to the Contractor of a Notice of Termination specifying that the termination is for the convenience of the City, the extent of termination, and the effective date of such termination.

After receipt of Notice of Termination, and except as directed by the City, the Contractor shall, regardless of any delay in determining or adjusting any amounts due under this Termination for Convenience clause, immediately proceed with the following obligations:

- 1) Stop Work as specified in the Notice.
- 2) Complete any Work specified in the Notice of Termination in a least cost/shortest time manner while still maintaining the quality called for under the Contract Documents.
- 3) Leave the property upon which the Contractor was working and upon which the facility (or facilities) forming the basis of the Contract Documents is situated in a safe and sanitary manner such that it does not pose any threat to the public health or safety.
- 4) Terminate all subcontracts to the extent that they relate to the portions of The Work terminated.
- 5) Place no further subcontracts or orders, except as necessary to complete the remaining portion of The Work.
- 6) Submit to the City, within ten (10) Days from the effective date of the Notice of Termination, all of the documentation called for by the Contract Documents to substantiate all costs incurred by the Contractor for labor, materials and equipment through the Effective Date of the Notice of Termination. Any documentation substantiating costs incurred by the Contractor solely as a result of the City's exercise of its right to terminate this Contract pursuant to this clause, which costs the Contractor is authorized under the Contract Documents to incur, shall: (i) be submitted to and received by the City no later than thirty (30) Days after the Effective Date of the Notice of Termination; (ii) describe the costs incurred with particularity; and (iii) be conspicuously identified as "Termination Costs Occasioned by the City's Termination for Convenience."



- 7) These provisions are in addition to and not in limitation of any other rights or remedies available to the City.
- c. Notwithstanding any other provision of this Article, when immediate action is necessary to protect life and safety or to reduce significant exposure or liability, the City may immediately order Contractor to cease Work on the Project until such safety or liability issues are addressed to the satisfaction of the City or the Contract is terminated.

GC54. WARRANTY AND GUARANTEE

- a. Contractor warrants that all materials and equipment furnished under this Contract shall be new unless otherwise specified in the Contract Documents; and that all Work conforms to the Contract Document requirements and is free of any defect whether performed by the Contractor or any subcontractor or supplier.
- b. Unless otherwise stated, all warranty periods shall begin upon the filing of the Notice of Completion. Unless otherwise stated, the warranty period shall be for one year.
- c. The Contractor shall remedy at its expense any damage to City-owned or controlled real or personal property.
- d. Contractor shall furnish the City with all warranty and guarantee documents prior to final Acceptance of the Project by the City.
- e. The City shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage. The Contractor shall within ten (10) Days after being notified commence and perform with due diligence all necessary Work. If the Contractor fails to promptly remedy any defect, or damage; the county shall have the right to replace, repair, or otherwise remedy the defect, or damage at the Contractor's expense.
- f. In the event of any emergency constituting an immediate hazard to health, safety, property, or licensees, when caused by Work of the Contractor not in accordance with the Contract requirements, the City may undertake at Contractor's expense, and without prior notice, all Work necessary to correct such condition.
- g. With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for Work performed and Materials furnished under this Contract, the Contractor shall:
 - 1) Obtain for City all warranties that would be given in normal commercial practice;

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- 2) Require all warranties to be executed, in writing, for the benefit of the City; and
- 3) Enforce all warranties for the benefit of the City, unless otherwise directed in writing by the City.

This Article shall not limit the City's rights under this Contract or with respect to latent defects, gross mistakes, or fraud. The City specifically reserves all rights related to defective work, including but not limited to the defect claims pursuant to California Code of Civil Procedure Section 337.15.

GC55. DOCUMENT RETENTION & EXAMINATION

- a. In accordance with Government Code Section 8546.7, records of both the City and the Contractor shall be subject to examination and audit by the State Auditor General for a period of three (3) years after final payment.
- b. Contractor shall make available to the City any of the Contractor's other documents related to the Project immediately upon request of the City.
- c. In addition to the State Auditor rights above, the City shall have the right to examine and audit all books, estimates, records, contracts, documents, bid documents, subcontracts, and other data of the Contractor (including computations and projections) related to negotiating, pricing, or performing the modification in order to evaluate the accuracy and completeness of the cost or pricing data at no additional cost to the City, for a period of four (4) years after final payment.

GC56. SOILS INVESTIGATIONS

When a soils investigation report for the Project site is available, such report shall not be a part of the Contract Documents. Any information obtained from such report as to subsurface soil condition, or to elevations of existing grades or elevations of underlying rock, is approximate only and is not guaranteed. The Contractor acknowledges that any soils investigation report (including any borings) was prepared for purposes of design only and the Contractor is required to examine the site before submitting its bid and must make whatever tests it deems appropriate to determine the underground condition of the soil.

GC57. SEPARATE CONTRACTS

- a. The City reserves the right to let other contracts in connection with this Work or on the Project site. Contractor shall permit other contractors reasonable access and storage of their materials and execution of their work and shall properly connect and coordinate its Work with theirs.

GENERAL CONDITIONS



- b. To ensure proper execution of its subsequent Work, Contractor shall immediately inspect work already in place and shall at once report to the Engineer any problems with the work in place or discrepancies with the Contract Documents.
- c. Contractor shall ascertain to its own satisfaction the scope of the Project and nature of any other contracts that have been or may be awarded by the City in prosecution of the Project to the end that Contractor may perform this Contract in the light of such other contracts, if any. Nothing herein contained shall be interpreted as granting to Contractor exclusive occupancy at site of the Project. Contractor shall not cause any unnecessary hindrance or delay to any other contractor working on the Project. If simultaneous execution of any contract for the Project is likely to cause interference with performance of some other contract or contracts, the Engineer shall decide which Contractor shall cease Work temporarily and which contractor shall continue or whether work can be coordinated so that contractors may proceed simultaneously. The City shall not be responsible for any damages suffered or for extra costs incurred by Contractor resulting directly or indirectly from award, performance, or attempted performance of any other contract or contracts on the Project site.

GC58. NOTICE AND SERVICE THEREOF

All notices shall be in writing and either served by personal delivery or mailed to the other party as designated in the Bid Forms. Written notice to the Contractor shall be addressed to the Contractor's principal place of business unless the Contractor designates another address in writing for service of notice. Notice to City shall be addressed to the City as designated in the Notice Inviting Bids unless the City designates another address in writing for service of notice. Notice shall be effective upon receipt or five (5) days after being sent by first-class mail, whichever is earlier. Notice given by facsimile shall not be effective unless acknowledged in writing by the receiving party.

GC59. NOTICE OF THIRD PARTY CLAIMS

Pursuant to Public Contract Code Section 9201, the City shall provide the Contractor with timely notification of the receipt of any third-party claim relating to the Contract.

GC60. STATE LICENSE BOARD NOTICE.

Contractors are required by law to be licensed and regulated by the Contractors' State License Board which has jurisdiction to investigate complaints against contractors if a complaint regarding a patent act or omission is filed within four (4) years of the date of the alleged violation. A complaint regarding a latent act or omission pertaining to structural defects must be filed within ten (10) years of the date of the alleged violation. Any questions concerning a contractor may be referred to the Registrar, Contractors' State License Board, P.O. Box 26000, Sacramento, California 95826.

GENERAL CONDITIONS



GC61. INTEGRATION

- a. Oral Modifications Ineffective. No oral order, objection, direction, claim or notice by any party or person shall affect or modify any of the terms or obligations contained in the Contract Documents.
- b. Contract Documents Represent Entire Contract. The Contract Documents represent the entire agreement of the City and Contractor.

GC62. ASSIGNMENT

Contractor shall not assign, transfer, convey, sublet, or otherwise dispose of this Contract or any part thereof including any claims, without prior written consent of the City. Any assignment without the written consent of the City shall be void. Any assignment of money due or to become due under this Contract shall be subject to a prior lien for services rendered or Material supplied for performance of Work called for under the Contract Documents in favor of all persons, firms, or corporations rendering such services or supplying such Materials to the extent that claims are filed pursuant to the Civil Code, the Code of Civil Procedure or the Government Code.

GC63. CHANGE IN NAME AND NATURE OF CONTRACTOR'S LEGAL ENTITY

Should a change be contemplated in the name or nature of the Contractor's legal entity, the Contractor shall first notify the City in order that proper steps may be taken to have the change reflected on the Contract.

GC64. ASSIGNMENT OF ANTITRUST ACTIONS

Pursuant to Section 7103.5 of the Public Contract Code, in entering into a public works contract or subcontract to supply goods, services, or materials pursuant to a public works contract, Contractor or subcontractor offers and agrees to assign to the City 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. Section 15) or under the Cartwright Act (chapter 2 (commencing with Section 16700) of part 2 of division 7 of the Business and Professions Code), arising from the purchase of goods, services, or materials pursuant to this Contract or any subcontract. This assignment shall be made and become effective at the time the City makes final payment to the Contractor, without further acknowledgment by the parties.

GC65. PROHIBITED INTERESTS

No City official or representative who is authorized in such capacity and on behalf of the City to negotiate, supervise, make, accept, or approve, or to take part in negotiating, supervising, making, accepting or approving any engineering, inspection, construction or material supply contract or any subcontract in connection with construction of the project, shall be or become directly or indirectly interested financially in the Contract.

GENERAL CONDITIONS



GC66. LAWS AND REGULATIONS

- a. Contractor shall give all notices and comply with all federal, state and local laws, ordinances, rules and regulations bearing on conduct of work as indicated and specified by their terms. References to specific laws, rules or regulations in this Contract are for reference purposes only, and shall not limit or affect the applicability of provisions not specifically mentioned. If Contractor observes that drawings and specifications are at variance therewith, he shall promptly notify the Engineer in writing and any necessary changes shall be adjusted as provided for in this Contract for changes in work. If Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Engineer, he shall bear all costs arising therefrom.
- b. Contractor shall be responsible for familiarity with the Americans with Disabilities Act ("ADA") (42 U.S.C. § 12101 et seq.). The Work will be performed in compliance with ADA laws, rules and regulations. Contractor shall comply with the Historic Building Code, including, but not limited to, as it relates to the ADA, whenever applicable.
- c. Contractor acknowledges and understands that, pursuant to Public Contract Code Section 20676, sellers of "mined material" must be on an approved list of sellers published pursuant to Public Resources Code Section 2717(b) in order to supply mined material for this Contract.

GC67. PATENT FEES OR ROYALTIES.

The Contractor shall include in its bid amount the patent fees or royalties on any patented article or process furnished or used in the Work. Contractor shall assume all liability and responsibility arising from the use of any patented, or allegedly patented, materials, equipment, devices or processes used in or incorporated with The Work, and shall defend, indemnify and hold harmless the City, its officials, officers, agents, employees and representatives from and against any and all liabilities, demands, claims, damages, losses, costs and expenses, of whatsoever kind or nature, arising from such use.

GC68. OWNERSHIP OF DRAWING

All Contract Documents furnished by the City are City property. They are not to be used by Contractor or any subcontractor on other work nor shall Contractor claim any right to such documents. With exception of one complete set of Contract Documents, all documents shall be returned to the City on request at completion of The Work.



GC69. NOTICE OF TAXABLE POSSESSORY INTEREST

In accordance with Revenue and Taxation Code Section 107.6, the Contract Documents may create a possessory interest subject to personal property taxation for which Contractor will be responsible.

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

TECHNICAL SPECIFICATIONS

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SECTION 01 10 00

SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Project information.
 2. Work covered by Contract Documents.
 3. Construction Documents
 4. Work Sequencing and Scheduling
 5. Access to site.
 6. Site Conditions.
 7. Specification and drawing conventions.

1.2 PROJECT INFORMATION

- A. Project Identification: **City of Beaumont, Sports Park Field Lighting and Expansion Project**
1. Project Location: 39200 Brookside Avenue; City of Beaumont, California
- B. Owner: City of Beaumont
- C. Landscape Architect: Brightview Landscape, Jerico Farfan (949) 514-7906
- D. Civil Engineer: KPFF, Grant Kai (949) 478-8805
- E. Structural Engineer: KPFF, Rachel Goossens (949) 252-1022
- F. Electrical Engineer: Candela, Don Didomizio (949) 201-1333
- G. Geotechnical Engineer: NOVA Services, Inc., Paul Hyun Jim Kim (818) 808-6716
- H. Irrigation Design: Arroyo Irrigation, Garry Collins (562) 773-272
- I. Sports Lighting: Musco, Mike Higgins (714) 614-0863

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. The following list has been furnished for the convenience of the Contractor and shall not be considered as representing all Work required in the Contract Documents. Contractor shall not take advantage of any errors or omissions in this listing and shall

**SPORT PARK FIELD LIGHTING AND EXPANSION PROJECT
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report any discrepancies or questionable items to the Engineer for clarification. The Work of the Project is defined by the Contract Documents and consists of, but not limited to, the following:

1. The mobilization of all equipment, labor, tools, and materials to and from the project site.
2. Demolition of existing site improvements, including concrete walkway and the grass field.
3. Protect-in-place irrigation control valve and box, and certain light poles, catch basins, concrete walkways, curb, curb ramps, signs, electrical boxes, pavement, fence, existing trees, culverts, wall, grass field, and landscaping.
4. Adjustment of site utilities, including water, sewer, and electrical.
5. Abandonment of the existing four-inch sewer lateral to the existing manhole; realignment of a new six-inch sewer lateral to the existing manhole with appropriate sewer cleanouts.
6. Installation of new sports lighting at designated locations.
7. Modification to the existing field conditions and/or detention basin for the installation of synthetic turf.
8. Installation of new headwalls and rip rap for drainage.
9. Installation of new irrigation utilizing the existing irrigation water service.
10. Planting new trees, shrubs, and turf-grasses.
11. Installation of new six-foot tubular steel fencing and gates.
12. Installation of new park appurtenances.

List above is intended to provide an overview of the major project components and does not include all work described in Contract Documents.

B. Type of Contract.

1. Project will be constructed under a single prime contract.

1.4 CONSTRUCTION DOCUMENTS

- A.** The Contractor may obtain copies of the construction documents as directed in the Instruction to Bidders, "Notice and Invitation to Bidders." Electronic copies of the existing force drawings are available in the appendices. Note that only limited "record drawings" or "as-constructed drawings" for previous construction projects are available and may not accurately reflect the as-constructed condition.

1.5 WORK SEQUENCE AND SCHEDULING

- A. Title and headings to sections and paragraphs in these Specifications are introduced merely for convenience and shall not be taken as a correct or complete segregation of the several units of materials and labor. No responsibility, either direct or implied, will be assumed by the City for omissions or duplications by the Contractor or his Subcontractors due to real or alleged error in the arrangement of matters in the Contract Documents.
- B. Contractor shall determine the sequence of work and coordinate the timing of the work to minimize disruption of on-site activities.
- C. It is expected that the project for the Base Bid will consist of a single phase(s). Work on the project's initial phase shall commence simultaneously with the Notice to Proceed and be substantially complete and ready for full use, One Hundred and Forty (140) calendar days after the issue of Notice to Proceed.
- D. Work Hours: Limit work to normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, except City Recognized Holidays, unless otherwise indicated and/or agreed with the Owner all in accordance with General Conditions, except for specifically scheduled night work.

1.6 ACCESS TO SITE

- A. General: The park shall remain closed for the duration of the construction period and the Contractor shall have full access to park. Contractor's use of public right-of-way is limited to perform the proposed work or to retain other contractors for work on proposed facilities.

1.7 SITE CONDITIONS

- A. The Contractor will be held to have carefully examined all of the various contract documents, as well as the existing grounds, including existing structures, and existing utilities, and other systems which may affect or be affected by the Work shown on the Drawings and specified, and to have made suitable allowance in his quotation for the conditions and limitations under which the Work is to be performed. No allowance will be made for additional cost to the Contractor resulting from his failure to fully acquaint himself with existing conditions, to compare same with the Contract Documents, and to notify the City, in writing, before submission of final bid quotation, of any errors, discrepancies, omissions, or conflicts in the Contract Documents.
- B. See drawings for location of construction area. Limit access to site and use of site to these areas. Request exceptions 48 hours in advance and proceed only with permission of the City. Roads and driveways shall not be fully closed for any reason.

1.8 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. General and Special Conditions: Requirements of General and Special conditions provided in Volume I of Contract Documents apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 - 2. Abbreviations: Materials and products are identified by abbreviations and scheduled on Drawings.
 - 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (not used)

PART 3 - EXECUTION (not used)

END OF SECTION 01 10 00

SECTION 01 31 30
SAFETY

PART 1 - GENERAL

1.1 SUMMARY

- A. Contractor's safety program shall conform to the requirements specified in the **General Conditions**.
- B. This specification provides general guidance for site safety and a site safety program.

1.2 DEFINITIONS

- A. For the purposes of this Section, an "active construction area" is any area where construction activities are occurring or construction activities could be considered a potential hazard to people.
- B. A "Designated Safety Officer" or "Safety Representative" for the purposes of this Contract, means anyone who is capable of identifying the existing and predictable hazards in the areas surrounding a construction project or those working conditions at a construction project that are unsanitary or dangerous to employees. A "Designated Safety Officer" has the authority to make prompt corrective measures to eliminate those hazards.
- C. For the purposes of this Section, a "classified area" represents any area within the classified boundary or envelope of an active wastewater treatment process basin, channel, or other facility. A table summarizing the classified areas present within the boundaries and scope of this project is provided in paragraph 1.4 of this Section.

1.3 SUBMITTALS

- A. Demonstrate compliance action with the stipulations of California Occupational Safety and Health Administration (CAL OSHA), Mine Safety and Health Administration (MSHA), and other applicable local, state, and federal safety requirements by submitting to Engineer a copy of all safety plans, programs, and permits. Such plans and programs shall include, but are not limited to:
 - 1. Hazard Analysis Prior to Major Activities (job safety analysis, JSA).
 - 2. Emergency Plan.
 - 3. Rigging and Hoisting Plans.
 - 4. Excavation and Trenching Plans.
 - 5. Respiratory Protection Program.
 - 6. Fire Protection Plan.
 - 7. Confined Space Entry Program.
 - 8. Explosives Handling and Storage.
 - 9. Confined Space Entry Program.
 - 10. Electrical Safety (drop cords, temporary power, GFCI's, etc.)
 - 11. Lock Out/Tag Out.
 - 12. Fall Protection.
 - 13. Heavy Equipment Operations.
 - 14. Burning and Welding Operations.
 - 15. Training Plan.

16. Tunneling/Underground/Jacking/Boring Operations.
 17. Project Site Rules and Regulations (hazard protection plan).
 18. Material Handling (storage-disposal).
 19. Fuel Storage and Refueling.
 20. Hazard Communication/Right to Know.
 21. Subcontractor Requirements.
 22. Ventilation.
 23. Personal Protective Equipment (hearing, eye, face).
 24. Power Transmission/Distribution (temporary and/or permanent).
 25. Crossing other utilities
 26. Traffic Control.
 27. Environmental Controls.
 28. Safety Meetings.
 29. Spill Control Plan.
 30. First Aid Facilities.
- B. Engineer's receipt of safety plans or programs will not relieve Contractor in any way from the full and complete responsibility for safety and training of its personnel, and the onsite personnel of Owner, Engineer, and other visitors to areas of active construction areas. On a daily basis, inform Engineer of changes to the boundaries of the active construction areas.
- C. Be responsible for safety training all personnel who will have access to the active construction areas to meet state, federal, local and Contractor requirements. Maintain reasonable, regularly scheduled training sessions in mutually accessible facilities through entire Contract. Training costs for all personnel and visitors, except those costs associated with training personnel of Contractor, subcontractors, suppliers, and visitors will be considered incidental to other lump-sum portions of the Work and no additional compensation for such training will be provided.
- D. Safety Program Requirements:
1. Safety Representative Requirements:
 - a. Assign a full-time Safety Representative.
 - b. The Safety Representative's duties and responsibilities will be hazard recognition, accidents prevention, new employee orientation (including subcontractors), and the maintaining and supervising of safety precautions and program. This person shall have no other duties. The Safety Representative or a qualified and approved deputy shall be onsite at all times while Work is ongoing.
 - c. Qualifications of the Safety Representative and assigned deputies shall be submitted to Engineer for review. Acceptance of their qualifications by Engineer is required prior to the start of any activity on the Project. The Safety Representative will, as a minimum, meet the requirements of regulations per the CAL OSHA Enforcement Branch Program.
 2. Hazardous Substances:
 - a. Provide Engineer with a list of all hazardous substances anticipated to be brought on-site.
 - b. Maintain on site Material Safety Data Sheets (MSDS) prior to arrival of any hazardous substances on the Project.
 - c. Use storage area(s) as outlined in the spill control plan.
 3. Job Safety Analysis (JSA):

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- a. Outline the sequence of the Work, equipment to be used, identify hazards that may exist or may be created and what procedures and/or safety equipment will be used to eliminate or reduce these hazards. A Scope of Work JSA shall be prepared and provided to the Engineer prior to the start of unusual, hazardous, or have risk potential activities on the Project. The name of the competent person assigned to this activity will be included on the JSA.
 - b. Complete a JSA for any activity, which may be of an unusual nature or involves unique hazards.
4. Reports
- a. Provide to Engineer copies of Contractor's and subcontractor's:
 - 1) First aid, recordable, lost time and near miss, monthly logs.
 - 2) OSHA 200 injury log (annually).
 - 3) Safety meeting reports and topics (weekly).
 - 4) List of competent persons as required by OSHA and the Project Health and Safety Manual for each required task and their qualification as such.
 - 5) Injury and accident reports will be submitted to Engineer within 24 hours of any incident. **Immediate** notification to Engineer of an accident is **required**. Full cooperation with Engineer in accident investigation is required.
 - b. Conduct weekly safety inspections. Corrective actions shall be taken within 24 hours to address all deficiencies identified during inspections. Deficiency reports shall be prepared and submitted to Engineer within 48 hours indicating corrective actions taken. Failure to comply with required corrective measures identified in the safety inspection will result in the delayed signing of the monthly application for progress payment by Engineer.
 - c. Provide Engineer with a report of any periodic audit of Contractor's safety performance and/or records.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 31 30

SECTION 01 33 00

CONTRACTOR SUBMITTALS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals. The Contractor shall coordinate the submittal requirements in this section with those given in the General and Special Conditions of Volume 1, "Bid and Contract Documents." Where discrepancies exist, the requirements of Volume 1 shall govern.
- B. Related Requirements:
 - 1. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
 - 2. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 3. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Landscape Architect or Engineer's responsive action.
- B. Informational Submittals: Written and graphic information and physical samples that do not require Landscape Architect or Engineer's responsive action. Submittals may be rejected for not complying with requirements.

1.3 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Landscape Architect or Engineer and additional time for handling and reviewing submittals required by those corrections.
- B. Construction Schedule: Within fourteen (14) days after the date of Notice to Proceed, the Contractor shall submit a construction schedule providing the starting and completion dates of the various stages of the Work. The Contractor shall be prepared to discuss its construction schedule at the pre-construction conference.

- C. Schedule of Values or lump sum price breakdown: Within fourteen (14) days after the date of Notice to Proceed, the Contractor shall submit a schedule of values or lump sum price breakdown for progress payment purposes.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Landscape Architect and Landscape Architect or Engineer's Digital Data Files: Electronic copies of digital data files of the Contract Drawings will be provided by Landscape Architect for Contractor's use in preparing submittals.
1. Landscape Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.
 - a. Landscape Architect or Engineer makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
 - b. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Landscape Architect or Engineer.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. The Landscape Architect or Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Landscape Architect or Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow ten calendar (10) days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Landscape Architect or Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow ten (10) days for review of each resubmittal.
 4. Submittal Copies: Unless additional copies are required for final submittal, and unless Landscape Architect or Engineer observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

**SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT
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- D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 - a. File name shall use a sequential number, a decimal point, and two zeros indicating initial submittal, followed by an identifier or the name of the submittal (e.g., 001.00 – Name of Submittal). Resubmittals shall include a sequential number after the decimal point, followed by the identifier (e.g., 001.01 – Name of Submittal)
 3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Landscape Architect or Engineer.
 4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
 - a. Project name.
 - b. Date.
 - c. Name and address of Landscape Architect or Engineer.
 - d. Name of Construction Manager.
 - e. Name of Contractor.
 - f. Name of firm or entity that prepared submittal.
 - g. Names of subcontractor, manufacturer, and supplier.
 - h. Category and type of submittal.
 - i. Submittal purpose and description.
 - j. Specification Section number and title.
 - k. Specification paragraph number or drawing designation and generic name for each of multiple items.
 - l. Drawing number and detail references, as appropriate.
 - m. Location(s) where product is to be installed, as appropriate.
 - n. Related physical samples submitted directly.
 - o. Indication of full or partial submittal.
 - p. Transmittal number.
 - q. Submittal and transmittal distribution record.
 - r. Other necessary identification.
 - s. Remarks.
 5. Metadata: Include the following information as keywords in the electronic submittal file metadata:
 - a. Project name.
 - b. Number and title of appropriate Specification Section.
 - c. Manufacturer name.
 - d. Product name.
- E. Options: Identify options requiring selection by Landscape Architect or Engineer.
- F. Deviations: Identify deviations from the Contract Documents on submittals.

- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked with approval notation from Landscape Architect or Engineer's action stamp.
- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Landscape Architect or Engineer's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements:
1. Action Submittals: Submit one (1) electronic copy of each submittal unless otherwise indicated.
 2. Informational Submittals: Submit one (1) electronic copy unless otherwise indicated.
 3. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
 - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.

- e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 - 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 - 5. Submit Product Data before or concurrent with Samples.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
- 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional Landscape Architect or Engineer if specified.
 - 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
- 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 - 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 - 3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.

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4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit two (2) full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Landscape Architect or Engineer will return submittal with options selected.
6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit two (2) sets of Samples. Landscape Architect or Engineer will retain one (1) Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record sample.
 - 1) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 1. Submit product schedule in the following format:
 - a. Four (4) paper copies of product schedule or list unless otherwise indicated. Landscape Architect or Engineer will return three (3) copies.
- F. Coordination Drawings Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."
- G. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."

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- H. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."
- I. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- J. Maintenance Data: Comply with requirements specified in Section 017823 "Operation and Maintenance Data."
- K. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Landscape Architect or Engineers and owners, and other information specified.
- L. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- M. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- N. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- O. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- P. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- Q. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- R. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- S. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
- T. Schedule of Tests and Inspections: Comply with requirements specified in Section 014000 "Quality Requirements."
- U. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

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- V. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- W. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- X. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Landscape Architect or Engineer.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit three electronic copies of the certificate(s), signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Landscape Architect or Engineer.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal

has been reviewed, checked, and approved for compliance with the Contract Documents. In the case of shop drawings, each sheet shall be so dated, signed and certified.

3.2 LANDSCAPE ARCHITECT OR ENGINEER'S ACTION

- A. General: Landscape Architect or Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Landscape Architect or Engineer will review each submittal, make marks to indicate corrections or revisions required, and return it. Landscape Architect or Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:
 - 1. "NO EXCEPTIONS TAKEN" or "EXCEPTIONS AS NOTED" will require no formal revision and resubmission.
 - 2. "REVISE AND RESUBMIT" or "REJECTED" will require the Contractor to revise said submittal and shall resubmit the required number of copies of said revised submittal to the Landscape Architect or Engineer.
- C. Informational Submittals: Landscape Architect or Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Landscape Architect or Engineer will forward each submittal to appropriate party.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.
- F. Fabrication of an item shall commence only after the Landscape Architect or Engineer has reviewed the submittal and returned copies to the Contractor marked either "NO EXCEPTIONS TAKEN" or "EXCEPTIONS AS NOTED". Corrections indicated on submittals shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as the basis of claims for extra work.

END OF SECTION 01 33 00

SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 2. Requirements for Contractor to provide quality-assurance and -control services required by Landscape Architect, Engineer, Owner, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.
 - 3. Specific test and inspection requirements are not specified in this Section.

1.2 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Landscape Architect, Engineer, or Construction Manager.
- C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

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- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five (5) previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.3 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Landscape Architect or Engineer for a decision before proceeding.
- B. In instances where a conflict arises between standards and/or between the Technical Specifications and the Design Drawings, the more stringent standard or requirement shall govern at the discretion of Owner and Landscape Architect or Engineer.
- C. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Landscape Architect or Engineer for a decision before proceeding.

1.4 INFORMATIONAL SUBMITTALS

- A. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

1.5 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.

4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and re-inspecting.
- B. Manufacturer's Field Reports: Prepare written information documenting tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 5. Other required items indicated in individual Specification Sections.
- C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing

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engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
 - 1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
 - d. When testing is complete, remove test specimens, assemblies, and mockups, and laboratory mockups; do not reuse products on Project.
 - 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Landscape Architect or Engineer, through Construction Manager, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.7 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services. It is the Contractor's responsibility to schedule the testing provided by such agencies.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 - 2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.
- B. Owner will engage a qualified testing agency to perform following services:
 - 1. Soil Density Testing
 - 2. Cast -in -Place concrete testing
 - 3. Special Inspections
- C. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
 - 1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 - 2. Notify testing agencies at least twenty-four (24) hours in advance of time when Work that requires testing or inspecting will be performed.
 - 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 - 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 - 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- D. Manufacturer's Field Services: Where indicated, engage a manufacturer's representative to observe and inspect the Work. Manufacturer's representative's services include examination of substrates and conditions, verification of materials, inspection of completed portions of the Work, and submittal of written reports.
- E. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Testing Agency Responsibilities: Cooperate with Engineer, Construction Manager, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

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1. Notify Landscape Architect, Engineer, Construction Manager, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.8 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Conducted by a qualified special inspector as required by authorities having jurisdiction, as indicated in individual Specification Sections and in Statement of Special Inspections included in the Contract Documents (Drawings), and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
 2. Notifying Landscape Architect, Engineer, Construction Manager, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Engineer, through Construction Manager, with copy to Contractor and to authorities having jurisdiction.

4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and re-inspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Landscape Architect or Engineer.
 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Engineer's and Construction Manager's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 014120

PERMITS

PART 1 - GENERAL

1.1 ADMINISTRATIVE REQUIREMENTS

- A. Obtain permits required for the execution of Work in accordance with the Contract Documents. Provide copies of these permits to Owner.
- B. The intent of this Section is to furnish the known list of required permits for the Work under the Contract Documents. Contractor is responsible for determining and verifying the extent of all permits required and for obtaining such permits.
- C. In the Bid Price, include costs for obtaining all necessary permits, including application fees and other costs, and the costs of complying with the conditions of all permits. Any fees listed in this section are estimates and are for information only. Verify and pay all actual fees.
- D. Within 30 Days of the Limited Notice to Proceed, submit a list of all permits and licenses to be obtained, indicating the agency required to grant the permit, the expected date of submittal for the permit, and required date for receipt of the permit.

1.2 SUMMARY OF PERMITS TO BE OBTAINED BY CONTRACTOR

- A. Obtain the following permits. Submit copies of these permits to Engineer and maintain copies on-site. Comply with all conditions of the permits.

Types of permits that may be required include:

- 1. Stormwater Pollution Prevention Plan (SWPPP) (Base Bid)
- 2. Building Permit – Plumbing/Sewer Lateral (Base Bid)
- 3. Building Permit – Structural/Footings (Base Bid)
- 4. Building Permit – Electrical Improvements (Base Bid)
- 5. Grading Permit – Onsite Improvements (Base Bid)

1.3 SUMMARY OF PERMITS OBTAINED BY OWNER

- A. None.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 41 20

SECTION 01 61 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. General Conditions

1.2 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number, manufacturer name, or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.3 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

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1. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Engineer will notify Contractor of approval or rejection of proposed comparable product request within fifteen (15) days of receipt of request, or seven (7) days of receipt of additional information or documentation, whichever is later.
 - a. Form of Approval: As specified in Section 013300 "Contractor Submittals."
 - b. Use product specified if Engineer does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Contractor Submittals." Show compliance with requirements.

1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
- B. To the greatest extent possible for each unit of work, the Contractor shall provide products, materials or equipment from a single source.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. **Storage:**
 1. Store products to allow for inspection and measurement of quantity or counting of units.
 2. Store materials in a manner that will not endanger Project structure.
 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.

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4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
 5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 6. Protect stored products from damage and liquids from freezing.
- D. Fabricated structural components shall be stored on supports above ground and in a manner to prevent accumulation of water and warping. Products subject to deterioration from atmospheric conditions shall be covered in a manner that will provide adequate ventilation to avoid condensation.
- E. Products, materials and equipment not stored in a manner that will insure the maintaining of a new condition will be rejected by the Engineer. Such rejected products, materials and equipment shall be immediately removed from the Work site.

1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
 3. Refer to other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

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2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

B. Product Selection Procedures:

1. Where Specifications or Plans name a product or manufacturer provide product(s) as listed or by the manufacturer listed. Where Specifications include a list of available products or manufacturers, followed by the phrase "or equal," provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer subject to requirements of General Conditions.

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT (Not Used)

END OF SECTION 01 61 00

SECTION 01 71 23

CONSTRUCTION STAKING AND SURVEY

PART 1 - GENERAL

1.01 SUMMARY

- A. This section specifies the work for construction staking which consists of providing all labor, tools, equipment, materials and incidentals necessary to locate by staking all improvements, to the line and grade shown on the Plans.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 GENERAL

- A. Contractor shall furnish all land surveys, establish all base lines and bench marks and make sufficient detailed surveys needed for working points, lines and elevations. The Contractor shall develop all slope stakes and batter boards. Contractor shall also develop all additional working points, lines and elevations as they may desire to facilitate his or her methods and sequence of construction.
- B. All work shall be staked in order to meet the lines and grades shown on the Plans. Copies of all survey cut sheets shall be provided to the City Engineer two (2) working days before the planned work begins.
- C. Finished grade elevations, pipe flowlines, and walls shall be within minus five hundredths (-0.05) foot of elevation and plan location.
- D. Prior to concrete pouring, formwork and survey staking shall be reviewed and approved by the City Engineer.

END OF SECTION 01 71 23

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
 - 5. Repair of the Work.
- B. Related Requirements:
 - 1. Section 01 78 23 "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 2. Section 01 78 39 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.2 ACTION SUBMITTALS

- A. Contractor's List of Incomplete Items: Initial submittal by the Contractor at Substantial Completion.
- B. Certified List of Incomplete Items: Final submittal by the Contractor at Final Completion.

1.3 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.

1.4 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 - 1. Organize list of spaces in sequential order.
 - 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

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3. Include comments from the Construction Manager, Owner and Engineer.
 4. Submit list of incomplete items in the following format:
 - a. MS Excel electronic file. Engineer will return annotated copy.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 14 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Engineer. Label with manufacturer's name and model number where applicable.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Engineer's signature for receipt of submittals.
 5. Submit test/adjust/balance records.
 6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 14 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Make final changeover of permanent locks and deliver keys to Owner.
 2. Complete startup and testing of systems and equipment.
 3. Perform preventive maintenance on equipment used prior to Substantial Completion.
 4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
 5. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 6. Complete final cleaning requirements, including touchup painting.
 7. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

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- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 14 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.
1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for final completion.

1.5 FINAL COMPLETION PROCEDURES

- A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
1. Certified List of Incomplete Items: Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 2. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. Inspection: Submit a written request for final inspection to determine acceptance. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.6 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Engineer for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

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3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.
- D. Operating manuals, technical manuals and instructions. The Contractor's attention is directed to the condition that one percent (1%) of the contract price will be deducted from any monies due the Contractor as progress payments if at the seventy-five percent (75%) construction completion point the approved technical manuals have not been submitted in accordance with Section 013300 entitled, "Contractor Submittals". The aforementioned amount will be retained by the Owner as the agreed estimated value of the approved technical manuals. Any such retention of money for failure to submit the approved technical manuals on or before the seventy-five percent (75%) construction completion point shall be in addition to the retention of any payments due to the Contractor as specified in Article 4 of the Contract.
- E. Releases from all parties who are entitled to claims against the subject project, property or improvement pursuant to the provisions of law.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

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1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site in areas disturbed by construction activities, including removal and disposal of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces.
 - f. Remove labels that are not permanent.

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 01 77 00

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
1. Operation and maintenance documentation directory.
 2. Emergency manuals.
 3. Operation manuals for systems, subsystems, and equipment.
 4. Product maintenance manuals.
 5. Systems and equipment maintenance manuals.

1.2 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
1. Engineer will comment on whether content of operations and maintenance submittals are acceptable.
 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Engineer.
 - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
 - b. Enable inserted reviewer comments on draft submittals.
 2. Four (4) paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. One set will be provided to the Engineer and three sets to the Owner.
- C. Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Engineer will return copy with comments.
1. Correct or revise each manual to comply with Engineer's comments. Submit copies of each corrected manual within 15 days of receipt of Engineer's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information.
- B. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- C. Title Page: Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name and contact information for Contractor.
 - 6. Name and contact information for Construction Manager.
 - 7. Name and contact information for Landscape Architect.
 - 8. Name and contact information for Engineer.
 - 9. Names and contact information for major consultants to the Landscape Architect that designed the systems contained in the manuals.
 - 10. Cross-reference to related systems in other operation and maintenance manuals.
- D. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- E. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- F. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 - 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 - 2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks

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reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

- G. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, subject matter of contents. Indicate volume number for multiple-volume sets.
 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
 4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor is delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.

2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
 2. Equipment or system break-in procedures.
 3. Routine and normal operating instructions.
 4. Regulation and control procedures.
 5. Instructions on stopping.
 6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed and identify color-coding where required for identification.

2.3 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Product Information: Include the following, as applicable:
1. Product name and model number.
 2. Manufacturer's name.
 3. Color, pattern, and texture.
 4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
 2. Types of cleaning agents to be used and methods of cleaning.
 3. List of cleaning agents and methods of cleaning detrimental to product.

4. Schedule for routine cleaning and maintenance.
 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

2.4 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins.
 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.
 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original project record documents as part of operation and maintenance manuals.
- F. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 78 23

SECTION 017839

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
- B. Related Requirements:
 - 1. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.2 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: The Contractor shall submit one (1) set of marked-up record prints to the Engineer.
- B. Record Specifications: The Contractor shall submit one paper copy of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one paper copy of each submittal to the Engineer.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised Drawings as modifications are issued.
 - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

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- a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Record data as soon as possible after obtaining it.
 - c. Record and check the markup before enclosing concealed installations.
 2. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Engineer and Construction Manager. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
 2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
 3. Refer instances of uncertainty to Engineer through Construction Manager for resolution.
 4. Engineer will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.
- C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Engineer and Construction Manager.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as paper copy.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as paper copy.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as paper copy.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Engineer's and Construction Manager's reference during normal working hours.

END OF SECTION 01 78 39

DOCUMENT 02 40 00

DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

- A. Removing above-grade site improvements within limits indicated.
- B. Disconnecting, capping or sealing, and abandoning site utilities in place.
- C. Disconnecting, capping or sealing, and removing site utilities.
- D. Disposing of objectionable material.

1.02 RELATED SECTIONS

- A. Section 01 74 19 - Construction Waste Management and Disposal.
- B. Section 31 11 00 – Clearing and Grubbing.
- C. Section 31 23 00 – Excavation and Fill.

1.03 DEFINITIONS

- A. ANSI: American National Standards Institute.
- B. CAL-OSHA: California Occupational Safety and Health Administration.

1.04 SUBMITTALS

- A. Follow Submittal procedure outlined in Submittal Procedures.

1.05 PROJECT CONDITIONS

- A. Except for materials indicated to be stockpiled or to remain the Owner's property, cleared materials are the Contractor's property. Remove cleared materials from site and dispose of in lawful manner.
- B. Salvable Improvements: Carefully remove items indicated to be salvaged and store where indicated on plans or where designated by the Owner. Avoid damaging materials designated for salvage.
- C. Unidentified Materials: If unidentified materials are discovered, including hazardous materials that will require additional removal other than is required by the Contract Documents, immediately report the discovery to the Owner. If necessary, the Owner will arrange for any testing or analysis of the discovered materials and will provide instructions regarding the removal and disposal of the unidentified materials.

PART 2 PRODUCTS

2.01 SOIL MATERIALS

- A. Backfill excavations resulting from demolition operations with on-site or import materials conforming to structural backfill defined in Section 31 23 00 Excavation and Fill.

PART 3 EXECUTION

3.01 PREPARATION

- A. Protect and maintain benchmarks and survey control points during construction.
- B. Protect existing site improvements to remain during construction.
- C. Restore damaged improvements to their original condition, as acceptable to the Owner.

3.02 UTILITIES

- A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed or abandoned.
- B. Arrange to shut off indicated utilities with utility companies or verify that utilities have been shut off.
- C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless authorized in writing by the Owner, and then only after arranging to provide temporary utility services according to requirements indicated.
- D. Coordinate utility interruptions with utility company affected.
- E. Do not proceed with utility interruptions without the permission of the Owner and utility company affected. Notify Owner and utility company affected two working days prior to utility interruptions.
- F. Excavate and remove underground utilities that are indicated to be removed.
- G. Securely close ends of abandoned piping with tight fitting plug or wall of concrete minimum 6-inches thick.

3.03 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, and gutters, as indicated. Where concrete slabs, curb, gutter and asphalt pavements are designated to be removed, remove bases and subbase to surface of underlying, undisturbed soil.

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- C. Unless the existing full-depth joints coincide with line of pavement demolition, neatly saw-cut to full depth the length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.
- D. Remove driveways, curbs, gutters and sidewalks by saw cutting to full depth. If saw cut falls within 30-inches of a construction joint, expansions joint, score mark or edge, remove material to joint, mark or edge.

3.04 BACKFILL

- A. Place and compact material in excavations and depressions remaining after site clearing in conformance with Section 31 23 00 Excavation

3.05 DISPOSAL

- A. Remove surplus obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off the Owner's property.

3.06 CONSTRUCTION WASTE MANAGEMENT

- A. Construction Waste shall be managed in accordance with provisions of Section 01 74 19 Construction Waste Management and Disposal. Documentation shall be submitted to satisfy the requirements of that section.

END OF SECTION 02 40 00

SECTION 26 08 10

TESTING OF ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

- A. This section includes labor, materials & equipment necessary to complete the testing of electrical equipment required. Test procedures and tests specified in this Section are in addition to that specified in other Sections of Division 26. The testing of the electrical system shall be provided by different parties as stated below:
1. Testing Company: The following testing shall be performed by an independent testing company:
 - a. Grounding systems Tests
 - b. Ground Fault Protection Systems Test & Calibration
 - c. Transformers, Dry Type
 - d. Motor Controllers
 - e. Circuit Breakers
 - f. Switchboards
 - g. Panelboards
 - h. Metering Test and Calibration
 - i. Instruments and Instrument Transformers
 - j. Protective Relays
 - k. Thermo-graphic survey
 2. The Testing Company and vendors furnishing the listed equipment shall perform the field testing of the following equipment. Refer to individual Specification Sections for the extent of services provided by each entity:
 - a. Engine Generator
- B. Related Sections:
1. Related Sections: Consult all other Sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete installation.
- C. Description of Work: Test all cable, equipment, protection devices, controls, and etc. for all systems listed above to assure proper installation, setting, connections, and functioning in accordance with the Drawings, Specifications, and the manufacturers' recommendations. It is the intent that field testing be extensive, and complete as specified, to provide positive assurance of totally correct installation and operation of equipment.

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1. Test and provide written certification that the entire electrical installation complies with the contract documents, code and proper system operation.
2. Perform acceptance tests in accordance with manufacturer's recommendations, NFPA 70b and International Electrical Testing Association (NETA) testing specifications NETA ATS-2017.
3. Furnish all necessary test equipment to satisfactorily perform all tests specified herein.
4. Conduct all tests in the presence of the Engineer except when advised that it is not required.
5. Include all tests and inspections recommended by the equipment manufacturer whether required by these Specifications or not, unless specifically waived by the Engineer.
6. Maintain a written record of all tests showing date, personnel making test, equipment or material tested, tests performed, manufacturer and serial number of testing equipment and results.

1.2 REFERENCES

- A. Comply with the latest edition of the following applicable specifications and standards except as otherwise shown or specified:
 1. IEEE Standard 81 - Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System (Parts 1 & 2)
 2. IEEE Standard 141- Recommended Practice for Electrical Power Distribution for Industrial Plants
 3. IEEE Standard 142 - Recommended Practice for Grounding of Industrial and Commercial Power Systems.
 4. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems
 5. NFPA 70 - California Electrical Code (CEC)
 6. NFPA 70B - Electrical Equipment Maintenance
 7. NFPA 70E - Electrical Safety Requirements for Employee Workplaces
 8. OSHA - NFPA 70E - Electrical Safety Requirements for Employee Workplaces

1.3 SUBMITTALS

- A. Submit in accordance with the requirements of Division 01 and Section 26 05 02, Common Work Results for Electrical, the following items:
 1. The results of the tests shall be summarized in a final report. Three (3) bound copies of the final report shall be submitted. Test Reports shall be typewritten and submitted to the Engineer within 7 calendar days of the test.
 2. The Contractor shall prepare test reports including description of project, description of equipment tested, description of test, test results, conclusions and recommendations, re-testing results and list of test equipment used and calibration date.

3. Notify the Engineer in writing 10 working days prior to performance of any test.
 4. Insert a copy of each test report in the operation and maintenance manuals.
 5. All test reports shall be signed by a licensed electrical engineer.
- B. Preliminary testing submittal: prior to commencement of testing, the testing firm shall submit the following:
1. List of equipment to be tested and testing schedule, including staffing and equipment
 2. Test procedures to be used in a complete summarized format. Tests shall include:
 - a. Tests specified in this section and all individual Division 26 sections
 - b. Manufacturer's recommendations for maintenance and acceptance testing, including inspections and measurements
 - c. Copies of maintenance manual sections describing manufacturer's recommended procedures
 3. Proposed test data sheets.
 4. Proposed test equipment list.
- C. Test reports
1. Progress Reports Provide (3) copies of test data sheets as major equipment tests are performed, or whenever defective equipment is discovered.
 2. Final Report: Submit a final typed report at the completion of the project testing/startup scope. The report shall include:
 - a. Summary of the project
 - b. Description of equipment tested
 - c. Data sheets
 - d. Description of test procedures
 - e. Conclusions and deficiencies
- D. Perform all testing after installation. All systems shall pass tests prior to substantial completion or occupancy.

1.3 QUALITY ASSURANCE

- A. Qualifications of testing agency
1. The testing firm shall be an independent testing organization that can function as an unbiased testing authority, professionally independent of the manufacturers, suppliers, and installers of equipment or systems evaluated by the testing firm.

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2. The testing firm shall meet the criteria for Full Membership or be a Full Member company of the International Electrical Testing Association (NETA).
3. A minimum of (10) years' experience in testing electrical equipment is required for the individual in charge of the project.
4. The firm performing the study should demonstrate capability and experience to provide assistance during start up as required.
5. Personnel
 - a. The testing firm shall only utilize full-time engineers who are regularly employed by the firm for testing services.
 - b. All on-site personnel shall have a minimum of 5 years of experience in electrical equipment startup and testing.
 - c. The firm shall provide a competent project engineer to oversee and coordinate all site work, and shall be on site whenever 3 or more of the firm's engineers are on site.

B. Test instrument

1. Utilize a calibration program that assures that all applicable test instruments are maintained within rated accuracy.
2. Accuracy directly traceable to the National Institute of Standards and Technology
3. Calibrate instruments in accordance with the following frequency schedule:
 - a. Field Instruments: Analog - 6 months maximum; Digital - 12 months maximum
 - b. Laboratory Instruments: 12 months
 - c. Leased Specialty Equipment: 12 months (Where accuracy is guaranteed by leaser)
4. Maintain dated calibration labels visible on all test equipment.
5. Keep records that show date and results of instruments calibrated or tested up-to-date.
6. Maintain up-to-date instrument calibration instructions and procedures.

1.3 DIVISION OF RESPONSIBILITY

- A. Routine work performed by the Contractor prior to and in addition to tests performed by the testing firm:
 1. Cleaning of equipment and apparatus.
 2. Insulation-resistance and continuity test.
 3. Rotation test.
 4. Equipment bolt torqueing.
 5. Inspect for physical damage.
 6. Proper equipment connection and operation.
 7. Coordinate exact motor overload requirements.
- B. The Contractor has the option to assign all or any portion of above listed routine work to the testing firm at his own expense.

- C. The Contractor shall provide suitable and stable source of electrical power to each test site as required by the testing firm.
- D. The Contractor shall notify the Engineer and the testing firm when equipment becomes available for acceptance tests. Work shall be coordinated to expedite project scheduling.
- E. The testing firm shall notify the Engineer prior to commencement of any testing, minimum 14 days in advance. However, no testing shall be delayed if Engineer is not present and has not notified contractor 7 days prior to a scheduled test.
- F. Report any system, material, or workmanship which is found defective on the basis of acceptance tests to the Engineer in writing.
- G. The testing firm shall maintain a written record of all tests and, upon completion of project, assembles and certifies final test report.
- H. Safety and Precautions:
 - 1. Safety practices include, but are not limited to, the following requirements:
 - a. Occupation Safety and Health Act.
 - b. Accident Prevention Manual for Industrial Operations, National Safety Council.
 - c. Applicable state and local safety operating procedures.
 - d. The Engineer's safety practices.
 - e. National Fire Protection Association - NFPA 70E.
 - f. American National Standards for Personnel Protection
 - 2. Testing performed with apparatus de-energized. Exceptions must be thoroughly reviewed to identify safety hazards and devise adequate safeguards.
 - 3. The testing firm shall provide a designated safety representative on the project to supervise the testing operations with respect to safety.
 - 4. The electrical contractor shall provide an arc flash study to determine the recommended Personnel Protective Gear suitable for this project and prior to testing.

1.4 TESTS TO BE PERFORMED BY TESTING COMPANY

- A. Grounding Systems Tests:
 - 1. Service grounding test:
 - a. Perform fall-of-potential tests on main grounding electrode system provided by this contract per IEEE Standard No. 81. Maximum resistance to ground shall be less than 5 ohms. If this resistance cannot be obtained with the ground system shown, notify the Engineer immediately for further instructions.

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- b. Confirm that the neutral is grounded only at the service equipment by removing the service neutral grounding conductor and meggering the neutral bus.
 - c. Refer to Grounding section 26 05 27 - Grounding & Bonding for Electrical Systems for additional testing requirements.
 - 2. Miscellaneous Grounding Tests: Tests include measurement of ground resistance at the following equipment and structures:
 - a. All primary and secondary switchgear.
 - b. All power transformer frames and neutral grounds.
 - c. All secondary switchboards located within buildings.
 - d. Other miscellaneous grounds selected at random in a manner to be representative of the entire installation.
 - e. Ground system ground rods, including those in manholes.
 - f. Isolated instrumentation system.
 - 3. General Requirements:
 - a. Use "3 probe - fall of potential" method ground tests made on system ground rods. All other ground tests may be measured to system ground by use of ground reference method.
 - b. Verify that ground system installation is completed before performing testing work.
 - c. Ground circuits showing more than 5 ohms resistance will be considered defective and repaired by the Contractor at his own expense.
 - 4. Refer to Grounding section for additional testing and requirements.
- B. Ground fault protection systems tests:
 - 1. Scope: Test all ground fault protection systems provided by this contract.
 - 2. Prior to Test:
 - a. Inspect neutral main bonding connection to assure:
 - (1) Zero sequence system is grounded upstream of sensor
 - (2) Ground connection is made ahead of neutral disconnect link
 - (3) Ground strap systems are grounded through sensing device
 - (4) Verify ground electrode conductor(s) for proper size and connection
 - b. Inspect control power transformer to insure adequate capacity for system
 - c. Monitor panels (if present) shall be manually operated for:
 - (1) Trip test
 - (2) No trip test
 - (3) Non-automatic reset

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- d. Proper operation and test sequence shall be recorded.
- e. Zero sequence systems shall be inspected for symmetrical alignment of core balance transformers about all current carrying conductors.
- f. Ground fault system integral to the circuit breaker will have its current sensors and neutral sensor inspected for proper polarity.
- g. Ground fault device circuit nameplate identification shall be verified by device operation.
- h. Pickup and time delay settings shall be set in accordance with engineer's instructions or as shown.

3. Electrical Test:

- a. System neutral insulation resistance shall be measured to insure no shunt ground paths exist, neutral-ground disconnect link shall be removed, neutral insulation resistance measured and link replaced.
- b. The relay pickup current shall be determined by current injection at the sensor and the circuit interrupting device operated.
- c. The relay timing shall be tested by injecting 150% and 300% of pickup current into sensor. Total trip time shall be electrically monitored.
- d. System operation shall be tested at 57% rated voltage.
- e. Zone interlock system shall be tested by simultaneous sensor current injection and monitoring zone blocking function.

4. Test Parameters:

- a. System neutral insulation resistance shall be two (2) mega-ohm or greater.
- b. Relay pickup current shall be within 10% of device dial of fixed setting.
- c. Relay timing shall be in accordance with manufacturer's published time-current characteristic curves.

C. Transformers, dry type:

- 1. Scope: Test all dry type transformers provided by this contract. Refer to section 26 22 00 - Low Voltage Distribution Transformers for additional testing requirements.
- 2. Visual and Mechanical Inspection: Test dry type transformers per the following procedures:
 - a. Inspect for physical damage, proper installation, anchorage and grounding.
 - b. Verify transformer is supplied and connected in accordance with contract documents.
- 3. Electrical Tests: Perform insulation resistance tests winding-to-winding and winding-to-ground.

D. Motor controllers:

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1. Scope: Test all motor controllers relocated under this contract.
2. Visual and Mechanical Inspection
 - a. Inspect for physical damage and code violation.
 - b. Inspect for support and grounding.
 - c. Compare equipment nameplate data with design plans or starter schedule.
 - d. Check tightness of bolted connections.
 - e. Compare overload heaters with motor full load current.
 - f. Compare starter size with motor horsepower.
 - g. Verify that correct heaters are installed in overload relays.
 - h. Inspect power factor correction capacitors for complete connections and operation.
3. Electrical Tests
 - a. Measure overload time delay by primary current injection at three (3) times motor full load current.
 - b. Perform operational tests on each starter.

E. Circuit breakers:

1. Scope: Test all new circuit breakers 100 amps and over within all switchboards, panelboards, enclosures, generators, generator control switchgear, UPS and etc. Refer to section 26 28 23 - Circuit Breakers for additional testing requirements.
2. Inspect each breaker, operate manually, and electrically. Test shunt trips and alarm devices manually and electrically.
3. Adjust breaker trips to settings furnished by the coordination study and verify settings of the manufacturer's rating by passing controlled current through the trip devices. Record values and report deficiencies.
4. Circuit Breaker Electrical Tests
 - a. Contact resistance shall be measured.
 - b. Time-current characteristic tests shall be performed by passing 300% rated current through each pole separately. Trip time shall be determined.
 - c. Instantaneous pickup current shall be determined by run-up or pulse method. Clearing times should be within four (4) cycles or less.
 - d. Insulation resistance shall be determined pole-to-pole, across pole and pole-to-ground, and across open contacts. Test voltage shall be 1000 volts dc. for breakers rated greater than 250 volts. Test voltage shall be 500 volts dc for breakers rated 250 volts or less.
 - e. Check trip unit reset operation.

F. Panelboards:

1. Scope: Test all panelboards and breakers.
2. Inspect panelboards and report installation or shipping damage, loose material, shipping blocks, contamination or unfavorable environmental

conditions that must be corrected. Check equipment for operation of doors, security of mounting. Report any deficiencies.

G. Metering test & calibration for meters

1. Scope: Test all new meters provided by this contract.
2. Instrument Transformers
 - a. Test transformer polarity electrically.
 - b. Verify connection at secondary CT leads by driving a low current through the leads and checking for this amount at applicable devices.
 - c. Confirm transformer ratio by primary current injection.
 - d. Measure insulation resistance primary-to-ground, secondary-to-ground and primary-to-secondary.
 - e. Overpotential test primary insulation.
 - f. Measure potential transformer ratio
3. Metering and Instrumentation
 - a. Calibrate all meters at mid-scale.
 - b. Calibrate watt hour meter to one-half percent.
 - c. Verify all instrument multipliers.

H. Remaining Items for Third Party Testing

1. Scope: Test all equipment, devices and etc. listed above per requirements stated in individual specification sections.
 - a. For items that testing procedure are not stated in this section or any individual sections refer to NETA standards and manufacturers' testing recommendations.

1.5 TESTS TO BE PERFORMED BY THE VENDORS

- A. Automatic Transfer Switches: The manufacturer's representative furnishing the equipment shall be responsible for the functional and operational testing of all the equipment to ensure the entire operation is in compliance with applicable codes, contract documents, and sequence of operation as stated in contract documents. Refer to individual specification section for additional requirements.
- B. Network Lighting Controls: The manufacturer's representative furnishing the equipment shall be responsible for the functional and operational testing of the equipment and all associated components to ensure the entire system is in compliance with applicable codes and contract documents. Refer to individual specification section for additional requirements.

PART 2 PRODUCTS

2.1 TESTING COMPANY

- A. Retain the services of an independent testing company that is qualified to test electrical equipment, and is an approved testing company by the State of California. The testing company shall not be associated with the manufacturer of equipment or systems under test. The testing company shall be as follows:
 - 1. Applied Engineering Concepts (AEC)
 - 2. Electro-Test Inc. (ETI),
 - 3. Emerson
 - 4. Or equal.

2.2 TEST EQUIPMENT

- A. The contractor shall provide all apparatus and material required for testing. The contractor shall use installation tools and test equipment that are designed for the specific task and shall use this equipment per the manufacturer's instructions.
- B. All test equipment shall have current calibration certification by a third-party calibration laboratory, and shall have a signed and dated calibration sticker affixed to the device. Calibration shall be traceable to the national bureau of standards and shall not be less than 6 months since last calibration. Defective test equipment and installation tools shall not be used. Installation tools such as torque wrenches shall be calibration certified.
- C. Care and Precautions:
 - 1. Contractor is responsible for any damage to equipment or material due to improper test procedures or test apparatus handling. Replace or restore to original condition any damaged equipment or material.
 - 2. Provide and use safety devices such as rubber gloves and blankets, protective screen, barriers and danger signs to adequately protect and warn all personnel in the vicinity of the tests.

PART 3 EXECUTION

3.1 GENERAL

- A. Provide all materials, supplies, tools, equipment, labor, and services required to perform all tests as specified in this Section.
- B. Correct all deficiencies revealed by tests. Replace at contractors cost, all materials and equipment found faulty.
- C. The testing intent is to assure that all electrical equipment, both contractor and Engineer supplied, is operational within industry and manufacturers tolerances and is installed in accordance with design specifications.
- D. The test and inspections determine the suitability for energization.

- E. Use the International Electrical Testing Association (NETA) guidelines for all testing procedure and acceptance test values of results.
- F. Complete all test prior to final acceptance.
- G. Testing company shall prepare typewritten reports on all the systems they test.

3.2 PROJECT DOCUMENTS

- A. Deliver the following project documents to testing company two weeks prior to testing:
 - 1. Division 26 Specifications
 - 2. Electrical Floor Plans showing equipment to be tested
 - 3. Electrical One-Line Diagrams
 - 4. Submittals of Manufacturer's Data and Shop Drawings including engineers review letter of all systems to be tested.
 - 5. Over current protective device and Coordination Study
 - 6. Arc Flash Hazard Analysis Study

3.3 RE-TESTING

- A. Any fault in material or in any part of the installation revealed by these tests shall be investigated, replaced or repaired by the contractor and the same test repeated at the Contractor's expense until no fault appears.

3.4 LABELS

- A. Upon completion of testing agency tests a NETA label shall be attached to all serviced devices. These labels shall indicate date serviced and the testing company.

3.5 REPLACEMENT OF DEFECTIVE MATERIAL OR EQUIPMENT

- A. Repair or replace any material or equipment found defective or cannot pass the tests specified in this Section at no additional cost.
- B. Complete correction of defective material or equipment and retesting within the Contract period.
- C. If the equipment or material cannot pass the second test, remove the defective equipment and replace it with equivalent equipment that meets the requirements of the Specifications. Such replacement at no additional cost.
- D. Remove defective equipment or material from the site no later than 15 days from the date of notification by the Engineer.

3.6 FIELD ADJUSTMENTS

- A. Testing firm responsible for final setting and adjustments on protective devices in accordance with values from the coordination study specified in Section 26 05 73 - Overcurrent Protective Device Coordination Study and reviewed by the Engineer.

3.7 COMMISSIONING

- A. Refer to contract documents related to the commissioning for any activities required to Commission the electrical system.
 - 1. The vendors furnishing the listed equipment shall perform the field testing of these equipment, in addition to any testing required by Testing Company:
 - a. Network Lighting Controls
 - 2. Contractor Testing: The following testing shall be performed by the contractor:
 - a. Fire Alarm Systems
 - b. Receptacle and Device Tests
 - c. 600-volt wiring
 - d. Power System Tests
 - e. Variable Frequency Drives (Relocated VFD at P1 and P2 level)
 - f. Fan Shutdown Systems
 - g. Smoke Damper Control

3.8 TESTS TO BE PERFORMED BY TESTING COMPANY AND VENDORS

- A. Engine Generator: The manufacturer's representative furnishing the equipment shall be responsible for the functional and operational testing of all the equipment to ensure the entire operation is in compliance with applicable codes, contract documents, and sequence of operation as stated in contract documents. Refer to individual specification section for additional requirements.

3.9 TEST TO BE PERFORMED BY THE CONTRACTOR

- A. Receptacle and device tests
 - 1. Receptacle Polarity Test: Test every receptacle installed or reconnected under this contract with a receptacle circuit tester. Tester shall test for open ground, reverse polarity, open hot, open neutral, hot and ground reversed, hot or neutral and hot open. Rewire receptacles with faults and re-test. Submit test report signed by the electrician that performed the test.
 - 2. Ground-Fault Receptacle Circuit Interrupter Tests: Test each receptacle or branch circuit breaker having ground-fault circuit protection to assure that the ground-fault circuit interrupter will not operate when subjected to a

ground-fault current of less than 4 milliamperes and will operate when subjected to a ground-fault current exceeding 6 milliamperes. Perform testing using an instrument specifically designed and manufactured for testing ground-fault circuit interrupters. Apply the test to the receptacle. A TEST@ button operation will not be acceptable as a substitute for this test. Replace receptacles that do not shut-off power with 5/1000 of an ampere with 1/40th of a second and re-test.

3. Operational Tests: Demonstrate the operation of each switch, circuit breaker and other item of electrical control with the systems fully energized and operating. Each shall be demonstrated three (3) times.

B. 600-volt wiring

1. Scope: Test all electrical feeders and conductors for motors over 15 hp whose operating voltage is 600 volts or less that are installed or re-connected under this contract.
2. Test for continuity of each circuit.
3. Test for grounds in each circuit which shall consist of the physical examination of the installation to ensure that all required ground jumpers, devices, and appurtenances do exist and are mechanically firm.
4. Perform insulation-resistance test on each conductor with respect to ground and adjacent conductors. Applied potential shall be 500 volts dc for 300 volt rated cable and 1000 volts dc for 600 volt rated cable. Test duration shall be one (1) minute. If conductor fails test replace wiring or correct defect and re-test.
5. Perform torque test for each conductor tested and terminated in an overcurrent device or bolted type connection; torque all connections per manufacturer's recommendations and tabulate the results on a tabular form.
6. All feeders shall be Megger tested prior to energizing any equipment.

C. Power system tests

1. Scope: Inspect and test entire electrical systems provided by this contract to verify equipment and controls are correctly operating.
2. Load Balance Tests: Check all panelboards for proper load balance between phase conductors and make adjustments as necessary to bring unbalanced phases to within 15% of average load.
3. Motor Tests: Prior to energizing any motors check all motors for proper rotation, phase balance and measure actual load current. Report immediately to the Engineer if phase balance exceeds 1% from mean value. Submit tabulation of motor currents for all motors 1 HP or more after the HVAC system has been balanced.
4. Phase Relationship Tests: Check connections to all new and existing equipment for proper phase relationship. During such check, disconnect all devices that could be damaged by the application of voltage or reversed phase sequence.
5. Transformer Taps: Connect all transformers at A Normal tap. After facility is fully occupied for a period of not less than two weeks, measure secondary voltages at all new and existing transformers and adjust transformer taps to provide optimum voltage conditions at secondary

terminals. Optimum is defined as not exceeding nameplate voltage plus 10% and not being lower than nameplate voltage minus 5%. Submit recording and tap settings as test results.

D. Variable frequency drives

1. Physical and Mechanical Inspection:

- a. Drive and motor environment clean.
- b. Adequate drive and motor access for ventilation and maintenance
- c. No unusual noise or vibration.
- d. No disconnects installed between VFD and motor w/o shutdown interlock to VFD.
- e. Shut-down interlocks between VFD and motor verified to be operational.
- f. Separate conduit for incoming power and outgoing motor leads.
- g. No power factor correction capacitors connected to motor.
- h. Shaft rotation correct, normal operation
- i. If equipped with bypass, note bypass starter overload size for correct operation.
- j. Shaft rotation correct for bypass operation.
- k. Verify bypass switch starts and operates equipment.
- l. Compare motor nameplate with VFD for compatibility.
- m. Inspect structure frames, supports, barriers, doors, etc. for alignment and proper fit.
- n. Inspect control wiring terminations, fuses, shielding, pull apart connectors, and board engagement.

2. Electrical Checks

- a. Verify wiring conforms to factory schematics.
- b. Verify instrument transformer ratios match meter scales.

3. Electrical Checks (Manufacturer's Representatives)

- a. Insure proper operation of:
 - (1) Pilot devices (switches, pushbuttons, lights)
 - (2) Contactors and line voltage starters.
 - (3) Control and timing relays.
 - (4) Protective devices.
 - (5) Auxiliary electrical contacts.
 - (6) Circuit breakers and disconnect switches.
- b. Perform other tests and startup procedures as recommended by manufacturer.

END OF SECTION 26 08 10

SECTION 26 09 23

LIGHTING CONTROL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Low-voltage lighting control system.
- B. Related Requirements:
 - 1. Division 01 - General Requirements.
 - 2. Section 26 0500: Common Work Results for Electrical.
 - 3. Section 26 0513: Basic Electrical Materials and Methods.
 - 4. Section 26 0519: Low-Voltage Wires (600 Volt AC).
 - 5. Section 26 0533: Raceways, Boxes, Fittings, and Supports.
 - 6. Section 26 2416: Panelboards and Signal Terminal Cabinets.
 - 7. Section 26 5000: Lighting.

1.2 SUBMITTALS

- A. Provide in accordance with Division 01.
- B. Submit a complete one-line diagram of the proposed system configuration for Architect/Engineer's review. The riser diagram shall identify but not be limited to wiring, equipment, components, interconnection with other systems, and location and type of raceways.
- C. Manufacturer's Data: Submit catalog cuts and description of each system component.
- D. Provide wiring diagrams and installation details for lighting control equipment.
- E. Shop Drawings: Submit a complete set of detailed Shop Drawings for the entire lighting control system; the shop drawings shall include but not be limited to relay panels with designations and dimensions, day light sensors locations based on manufacturer's recommendations, and system components with manufacturer's part numbers.
- F. Installation Instructions: Submit manufacturer's written installation instructions, wiring diagrams. Instructions shall include recommendations for handling of equipment and parts, and protection and storage requirements.

1.3 QUALITY ASSURANCE

- A. Components shall be listed and labeled by Underwriter's Laboratories (UL), or another Nationally Recognized Testing Laboratory (NRTL).

- B. Lighting Control Systems shall comply with the state of California Building and Electrical Codes, and Title 24 energy requirements in effect at time of submittal for building permit.
- C. Conduct a coordination meeting with the lighting control contractor, electrical contractor, EOR, Manufacturer Representative, and the OAR to validate the location of lighting control system components, including daylight sensors. Sensors shall be located based on manufacturer's recommendations.

1.4 WARRANTY

- A. Manufacturer shall provide a three year material warranty.
- B. Installer shall provide a two year installation warranty.

1.5 SYSTEM REQUIREMENTS

- A. Systems shall be furnished with networkable relay panels complete with relays, transformers, and control electronics. The system shall be furnished with hardware and resident software, occupancy sensors, constant light controllers, exterior light sensors, occupancy sensors, local wall switches and dimmer switches, conduit and wiring for a complete and functional installation.
- B. The lighting control system must be able to communicate with fully digital centralized relay panels, remote relay panels, digital switches, photocells, analog switches, various interfaces, and shall include operational software. The lighting control system shall be integrated into a single system, except for areas controlled by a motion sensor; such as rooms with one luminaire and emergency fixtures designed to operate 24 hours a day, seven days a week. Distributed lighting control shall be provided using a networkable remote relay panel. A Centralized relay panel shall control corridors and site lighting. Lighting control system shall include hardware and software; software shall be resident within the lighting control system. System shall provide local access to programming functions at the master Lighting Control Panel (LCP) and remote access to programming functions via dial-up modem and through any standard computer workstation running an industry standard internet browser. Lighting control system shall have a server built into the master LCP that "serves" HTML pages to any authorized workstation. WEB front end shall be accessible over a Torrance Airport provided Ethernet 10/100 Mbps to the local area network. Protocol shall be TCP/IP and allow either http (hypertext transfer protocol) or https (hypertext transfer protocol secured) connections. Desktop computers are not part of this section and will be provided by others. Non-networked, non-digital, non-server capable systems are not acceptable.
- C. System software shall provide real time status of each relay, each zone and each group.
- D. Lighting control system shall be able to be monitored and take commands from a remote Personal Computer (PC); should the remote PC go off-line system programming uploaded to the lighting control system shall continue to operate as

intended. Systems requiring an online PC or server for normal operation are not acceptable

- E. Devices shall be able to be pre-addressed at the factory. Systems requiring field addressing only are not acceptable.
- F. Programs, schedules, time of day, etcetera, shall be held in non-volatile memory at power failure. At restoration of power, lighting control system shall implement programs required by current time and date.
- G. System shall be capable of flashing lighting OFF/ON for any relay or lighting zone prior to the lights beings turned OFF. The warning interval time between the flash and the final lights off signal shall be definable for each zone. Occupant shall be able to override any scheduled OFF sweep using local lighting zone override switches within the zone or occupied space. Occupant override time shall be pre-programmed not to exceed two hours, or current California Title 24 requirements.
- H. The system shall be capable of implementing ON, OFF, Raise (dimming), and Lower (dimming) commands for any relay, group or zone by means of digital specification grade line voltage type wall switches, analog low voltage switches, photocells, web based software, or other devices connected to programmable inputs in the lighting control system.
- I. The lighting control system shall provide the ability to control each relay and each relay group. Programming and scheduling shall be able to be done locally at the master LCP and remotely via dial up modem and via the Internet. Remote connection to the lighting control system shall provide real time control and real time feedback.
- J. System may consist of centralized relay panels, remote relay panels, digital switches, analog switches, photocells, motion sensors, lumen control devices, dimmer switches, and various digital interfaces. Remote relay panels, smart breaker panels, centralized relay panels and digital switches shall communicate as one network. Remote Relay Panels (RRP) shall control lighting fixtures in that area or space, provide power to occupancy sensors and take input from daylight and occupancy sensors. RRP's shall be capable of taking inputs from Torrance Airport specification line voltage type switches, and if classroom dimming is indicated on the plans, they shall be capable of outputting an independent 0v to 10v dimming signal for each remote relay provided. Remote relay panels, switches, photocells and occupancy sensors shall be wired per lighting control manufacturers instructions.

1.6 LIGHTING CONTROL OVERVIEW-BY AREA CONTROLLED

- A. Corridors and Open Areas:
 - 1. Corridors and other common areas are to be controlled by a combination of programmable low voltage keyed switches and time schedules supplied by the networked lighting control system.
 - a. Low voltage keyed switches are operable 24 hours a day and are to manually switch lights ON and OFF.
 - b. The central timer is to automatically sweep lights OFF after hours and provide scheduling capability.

- c. Interior corridors require occupancy sensors.
- B. Custodial and Equipment Rooms:
 - 1. Custodial, Equipment rooms and unsupervised rooms shall be provided with occupancy sensors with automatic on-off capability in addition to manual switches. These sensors shall turn off the lights in the room via a pre-set but programmable interval after the room has been vacated.
- C. Exterior Security Lights:
 - 1. Exterior wall packs and security lights are to be controlled via exterior light sensors.
 - a. When natural light level is insufficient, the lights are ON.
 - b. When natural light level is sufficient, the lights are OFF.
- D. Exterior, Non-Security Lights:
 - 1. Exterior parking lot lights, pathway lights and decorative lights are controlled by an exterior light sensor in conjunction with time schedules provided by the networked lighting control system.
 - a. When natural light level is insufficient or the timer is ON, the lights are ON.
 - b. When natural light level is sufficient or the timer is OFF, the lights are OFF.
- E. Restrooms:
 - 1. Restrooms Lights and Exhaust Fans (Fans interlocked with lights):
 - a. Restrooms lights and fan shall be controlled from the lighting control panel via assigned relays. Provide ceiling mounted occupancy sensors, and bypass toggle switches for system override adjacent to the door. The sensor shall turn off the lights in the room via a pre-set but programmable interval after the room has been vacated.
- F. Emergency Lighting:
 - 1. Emergency lighting controls shall be equipped with bypass circuitry that will bypass all manually operated switches, lighting control systems, dimmers and occupancy sensors during power failure situations. Design shall comply with applicable codes and regulations. Each area of luminaires or groups of luminaires shall be equipped with and controlled by a UL924 listed emergency lighting control unit to allow the detection of localized power failure.

PART 2 - PRODUCTS

2.1 RELAYS

- A. Relays shall be warranted for a minimum of three years.
- B. Relays shall be individually added or replaced. Lighting control systems incapable of replacing individual relays are not acceptable.
- C. Each lighting control relay shall be capable of controlling incandescent, fluorescent, electronic ballast and HID lighting loads. Relays not rated for all types of lighting loads are not acceptable.

- D. Relays shall be:
 - 1. Single Pole: Douglass WR-6161, LC&D SL-277-NC, or equal.
 - 2. Double Pole: Douglass WR-6172, LC&D SL-480-NC, or equal.

2.2 INTERIOR DAYLIGHT SENSORS

- A. In rooms requiring day lighting control provide an interior daylight sensor. Refer to lighting plans to determine which switch legs are controlled by the daylight controller. Use LC&D iPC Series, Douglas WPH-3711, or equal.
- B. Interior daylight sensors shall cause light fixtures within the room to brighten or dim to maintain pre-determined and uniform light levels between 30 and 50 foot candles; in areas not provided with dimming ballasts the sensors shall permit any relay to switch at a unique light level and shall attempt to maintain a constant light level by switching individual relays ON or OFF as the ambient light level changes. Controllers offering single set point controls are not acceptable.
- C. Each interior daylight sensor shall continuously monitor the true light level and shall broadcast this level to lighting control network. Controllers requiring readings at the sensor head itself are not acceptable.
- D. Each interior daylight sensor shall be fully adjustable via the lighting control software. Controllers requiring adjustments at the sensor head are not acceptable.

2.3 EXTERIOR LIGHT SENSORS

- A. Provide one exterior rated light sensor for control of exterior lights. Use Douglass WPH-3751, LC&D PCO or equal.
- B. One exterior light sensor shall permit different relays to switch at different light levels. Sensors offering less than 14 remotely settable trip points are not acceptable.
- C. Exterior light sensor shall continuously monitor the true light level and shall broadcast this level over the lighting control network. Sensors requiring adjustments at the sensor head are not acceptable.
- D. Exterior light sensor shall be fully adjustable via the networked lighting control system. Controllers requiring adjustments at the sensor head are not acceptable.

2.4 OCCUPANCY SENSORS

- A. Occupancy Sensors:
 - 1. Ceiling-Mounted Dual Technology Sensors:
 - a. Sensors shall be dual technology infrared-ultrasonic capable of detecting presence in floor area to be controlled, by detecting Doppler shifts in transmitted ultrasound and infrared technology.
 - b. Detection shall be maintained when a person moves only within a maximum distance of 12 inches, in either a horizontal or vertical manner, at

- approximate speed of 12 inches per second. Lights shall not go off when a person is reading or writing while seated at a desk.
- c. Each sensor shall be furnished with a convenient shunt provision, which will enable a person to by-pass sensor in event of failure.
 - d. Sensitivity shall not change more than ten percent in temperature range of 0 degrees F. to 120 degrees F., and in humidity range of ten percent to 80 percent. Sensitivity adjustment shall be provided for each technology.
 - e. Time delay range shall be adjustable from 15 seconds to 15 minutes.
 - f. Sensors shall operate on DC power (12 volts to 24 volts). Power supply shall be provided by power pack, consisting of a transformer and contact closure relay in one package. Power output of transformer shall be capable of operating a minimum of two sensors.
 - g. Manufacturers: Watt Stopper No. DT-200, similar as manufactured by Leviton, Sensor Switch, Unenco, or equal.
2. Passive Infrared Wall Switch Sensors with Daylight Controls:
- a. Sensors shall be capable of detecting presence in floor area to be controlled, by detecting changes in infrared energy. Small movements shall be detected such as when a person is writing while seated at a desk.
 - b. Passive infrared sensor shall utilize a dual-element sensor and a multi-element fresnel lens.
 - c. Sensor shall be furnished with a daylight filter which ensures that sensor is insensitive to short-wavelength infrared waves, such as those emitted by the sun.
 - d. Sensors shall be furnished with convenient bypass provisions, which enable lighting to be turned on in case of failure.
 - e. Time delay range shall be adjustable from 15 seconds to 15 minutes.
 - f. Sensitivity adjustment shall range from 0 (off) to ten (maximum).
 - g. Adjustments and mounting hardware shall be concealed under a removable cover to prevent tampering with adjustments and hardware.
 - h. Each sensor shall cover up to 800 square feet, with a field-of-view of 150 degrees.
 - i. Sensor shall be two-wire, completely self-contained control system that replaces standard toggle switch. Power supply shall be an internal transformer and switching mechanism shall be a latching dry contact relay.
 - j. Sensor shall be capable of switching from 50 to 1000 watt, incandescent or fluorescent.
 - k. Sensor shall be furnished with a daylight feature, adjustable from ten to 400 foot-candles, that maintains lighting off when a desired foot-candle level is present.
 - l. Sensors shall be dual voltage, 120 volt and 277 volts.
 - m. Manufacturers: Watt Stopper No. WI 200, I 300, similar as manufactured by Leviton Sensor Switch, Unenco, or equal.

PART 3 – EXECUTION

3.1 GENERAL

- A. Lighting control system shall not be used for any other purpose other than its intended use and application.

- B. Provide required interconnections with other systems such as emergency power sources, fire alarm systems, as required or indicated on drawings.
- C. Installation shall meet or exceed standard practice of workmanship and quality.
- D. Drawings generally indicate work to be provided, but do not indicate bends, transitions, or special fittings required to clear beams, girders or other work already in place. Investigate conditions where conduits are to be installed and furnished and install required fittings.

3.2 INSTALLATION AND SET-UP

- A. Verify that conduit for line voltage wires enters panel in line voltage areas and conduit for low-voltage control wires enters panel on low-voltage areas. Refer to manufacturer's drawings for location of line and low-voltage areas.
- B. Provide Digital type switches, and wire according to lighting control manufactures requirements.
- C. Digital switches and wire shall be according to lighting control manufactures requirements.
- D. Panels shall be located so that they are readily accessible and not exposed to physical damage.
- E. Panel locations shall be furnished with sufficient working space around panels to comply with the California Electrical Code.
- F. Panels shall be securely fastened to the mounting surface by at least four points.
- G. Unused openings in the cabinet shall be effectively closed.
- H. Cabinets shall be grounded in accordance with Article 250 of the California Electrical Code, and manufacturer's recommendations.
- I. Lugs shall be suitable and listed for installation with the conductor being connected.
- J. Conductor lengths shall be maintained to a minimum within the wiring gutter space. Conductors shall be long enough to reach the terminal location in a manner that avoids strain on the connecting lugs.
- K. Maintain the required bending radius of conductors inside cabinets.
- L. Clean cabinets of foreign material such as cement, plaster and paint.
- M. Distribute and arrange conductors neatly in the wiring gutters.
- N. Follow the manufacturer's torque values to tighten lugs.
- O. Before energizing the panelboard, the following steps shall be taken:

1. Retighten connections to the manufacturer's torque specifications. Verify that required connections have been furnished.
 2. Remove shipping blocks from component devices and the panel interior.
 3. Remove debris from panelboard interior.
- P. Follow manufacturers' instructions for installation.

3.3 OPERATING/SERVICE MANUALS

- A. Service and Operation Manuals:
1. Submit operation and service manuals. Complete manuals shall be bound in flexible binders and data shall be typewritten or drafted.
 2. Provide a printed copy of the systems configuration as programmed, including system labeling codes, and passwords.
 3. Provide an electronic copy on compact disk of the system configuration program.
 4. Manuals shall include instructions necessary for proper operation and servicing of system and shall include complete wiring circuit diagrams of system, wiring destination schedules for circuits and replacement part numbers. Manuals shall include as-built cable Project site plot plans and floor plans indicating cables, both underground and in each building with conduit, and as-built coding used on cables. Programming forms of systems shall be submitted with complete information.
 5. Record Drawings: Provide a copy on vellum of Project site and building drawings, indicating location of equipment, conduit and cable runs, and other pertinent information.

3.4 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

3.5 TESTING

- A. Set-up, commissioning and testing of the lighting control system, and Owner instruction shall include:
1. Confirmation of operation of individual relays, switches, occupancy sensors and daylight sensors.
 2. Operation of system's features under normal and emergency operations.
 3. Before energizing check and demonstrate in the presence of the Project Inspector that cables and wire connections are free from short circuits, ground faults, and that there is continuity, and necessary insulation.
 4. Confirm system operations and functionality.
 5. Check system interface response to other systems such as fire alarm power system conditions.
 6. Provide training to cover installation, maintenance, troubleshooting, programming, and repair and operation of the lighting control system.

3.6 INSTRUCTION PERIODS

- A. Before Substantial Completion, arrange and provide an eight hours Owner instruction period for designated personnel.

3.7 SPARE PARTS

- A. Provide a minimum of five percent spare parts of each type of relay, sensors, switches, and peripheral devices.

3.8 CLEANUP

- A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION 26 09 23

SECTION 26 24 13

SWITCHBOARDS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Main switchboard, including metering facilities required by the utility company.
- B. Related Requirements:
 - 1. Division 01 - General Requirements.
 - 2. Section 03 30 00: Cast-In-Place Concrete.
 - 3. Section 26 05 00: Common Work Results for Electrical.
 - 4. Section 26 05 13: Basic Electrical Materials and Methods.
 - 5. Section 26 05 26: Grounding and Bonding.
 - 6. Section 26 05 19: Low-Voltage Wires (600 Volt AC).
- C. Related Industry Standards: The most current version of the following industry standards.
 - 1. ANSI/NEMA 250 – Enclosures for Electrical Equipment (1000 Volts Maximum).
 - 2. California Electrical Code (CEC).
 - 3. IEEE C57.12.28 – Standard for Pad-Mounted equipment Enclosure Integrity.
 - 4. IEEE 551 - Recommended Practice for Calculating AC Short-Circuit Currents in Industrial and Commercial Power Systems.
 - 5. IEEE 1584 – Performing Arc-Flash Hazard Calculations.
 - 6. UL/ANSI 891 – Standard for Safety Switchboards.

1.02 SUBMITTALS

- A. Provide in accordance with Division 01.
- B. Shop Drawings:
 - 1. Include a front elevation indicating dimensions and locations of equipment on switchboard, make, kind and size or capacity of equipment and bussing, location of each service conduit entering switchboard, barriers, nameplate inscriptions, finish, total weight and size of switchboard and locations and sizes of anchor bolts.

- C. Fault Current, Coordination and Arc-Flash Reports: the following reports shall be prepared using SKM Systems Analysis, ETAP Powering Success, EasyPower, or equal.
 - 1. Provide a short-circuit and coordination report signed and stamp by a registered electrical engineer. Studies shall be in accordance with applicable IEEE guidelines. Submit two copies of each study for review prior to ordering and installing equipment.
 - 2. Provide a system coordination study for main and branch circuit protective devices including transformers secondary protective devices. Study shall be recorded on log paper. The circuit protective devices shall be set based on the coordination study. A final written record of protective device settings shall be submitted to Architect and Engineer.
 - 3. Provide a complete arch-flash report based on installed equipment, and feeders' sizes and lengths. Prepare the report in accordance with code requirements and IEEE 1584 standard. The report shall indicate trip times for protective device(s) settings, arcing fault current values, and incident energy and flash boundaries. The arc-flash report shall indicate clothing requirements for each piece of equipment.
 - 4. Provide installation detail and seismic anchorage notes for switchboards.
- D. Provide a connection schematic diagram.

1.03 SUBSTITUTIONS

- A. Switchboards that deviate from these requirements shall not be accepted without written approval from OWNER'S Design Standards and Maintenance and Operations Technical Units. When deviating or proposing substitutions the following information shall be submitted:
 - 1. Substitution request form substantiating reasons for the deviation and benefits to the OWNER.
 - 2. Proposed substitutions requests shall provide proof of compliance with transformers characteristics indicated in this specifications section.
- B. Documentation must comply with contract general provisions.

1.04 QUALITY ASSURANCE

- A. Installation shall be performed by State approved/ certified electricians.
- B. Switchboards shall be listed and approved for the intended application by Underwriter's Laboratories (UL), or other Nationally Recognized Testing Laboratory (NRTL), and in compliance with applicable industry standards and codes, including those mentioned under REFERENCES.
- C. Provide labor, engineering, design, testing, supervision, material and equipment required.

- D. Equipment shall be new and high quality. Manufacturer shall have been continuously manufacturing distribution transformers for at least 10 years.

1.05 WARRANTY

- A. Provide a one-year labor warranty.
- B. Switchboards shall be warranted to be free from defects in materials and fabrication for a period of three years from the date of substantial completion.
- C. Warranty period begins at project acceptance for beneficial occupancy.
- D. Warranty exclusions for third party components is not acceptable.

PART 2 - PRODUCTS

2.01 SWITCHBOARDS

- A. General Description: Switchboards shall be product of W.A. Benjamin Electric, Cutler, Hammer, General Electric, or equal, and shall conform to the following requirements:
 - 1. Complete assembly, including steel framing and covers, bus system, and breaker mounting, shall satisfy applicable provisions of UL 891 and NEMA PB-2 and the California Electrical Code for low-voltage distribution switchboards. Switchboards shall be furnished with UL labels.
 - 2. Switchboards shall be floor standing, dead front, dead rear, line bussed, front operated and connected, circuit-breaker type, unless otherwise indicated and shall contain equipment indicated and specified. Switchboard shall be complete with pull, service, and distribution sections as required.
 - 3. Required equipment shall be enclosed in fully interchangeable die formed steel sectional cabinets with top and bottom plates and required braces and gussets so that cabinets will be absolutely rigid, plumb and uniform in size. Each cabinet shall be a separate and independent unit with assembly holes die-stamped or jig drilled; openings for interconnections shall be so placed that cabinet can be located in any position in assembly without drilling or cutting holes on job. Deliver switchboard to Project site in completely assembled sections and provide required assembly bolts and blanking plates. Front plates and doors shall be of not less than 12 gage furniture steel, completely removable, secured to cabinet with machine screws, with cup washers uniformly and symmetrically spaced. Provide hinged wire gutter covers for distribution sections. Equipment shall meet NEMA and UL standards.
 - 4. Main circuit breaker or main fusible switch shall be as follows:
 - a. Main circuit breakers shall be automatic, one-piece molded-case, trip-free, common trip, quick-make, quick-break, thermal-magnetic with solid state trips, bolted to bus with frame size and trip ratings as indicated on drawings. Voltage, amperage ratings and number

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of poles shall be as indicated on breakers. Main breaker shall provide a minimum short-circuit interrupting capacity as determined by utility company. Provide shunt-trip and integral ground fault devices, as indicated on drawings. Breakers shall be furnished with lockout provisions.

- b. Main fusible switch 800 amps or larger ampacity shall be high pressure contact, stored energy, quick-make/quick-break operation, with current limiting fuses, as indicated on Drawings. Provide shunt-trip, and integral ground fault devices, as indicated on Drawings. Where required, switches shall be motor operated and be furnished with an electrical trip mechanism piloted by output of ground fault sensing circuitry. Switch shall be furnished with lockout provisions.
5. Feeder circuit breakers shall be automatic, one-piece molded-case, trip-free, common trip, quick-make, quick-break, thermal-magnetic or solid-state type bolted to bus, with handles clearly indicating tripped position. Breakers shall be furnished with a single handle with no tie-bar. Voltage, amperage, and number of poles shall be as indicated on Drawings. Breaker ratings shall be on handle or label. Breakers shall be furnished with lockout provisions approved by the State of California for padlocking and shall provide a minimum symmetrical short-circuit interrupting rating, as indicated on Drawings. Series rated circuit breaker combinations are not acceptable.
6. Fusible feeder switches shall be quick-make, quick-break, voltage rating and number of poles as indicated on Drawings, with visible blades and dual horsepower ratings. Switch handles shall physically indicate on and off positions. Switches shall be lockable only in off position and accept three industrial type heavy-duty padlocks master lock pro series 6121. Switch covers and handles shall be interlocked to prevent opening in on position. Provide means to permit authorized personnel to release interlock for inspection purposes. Switches shall be equipped with Class R current limiting fuses or dual element fuse of size and capacity indicated on Drawings.
7. Utility metering provisions shall meet requirements of serving utility and shall be furnished with necessary fittings.
8. Provide switchboard silver-plated copper bus bars of same capacity as main breaker, or as indicated on Drawings, between current transformer and main section and distribution sections; also, full height of breaker space in distribution portions. Copper bus shall have current density of 1000A per square inch of cross section. Bus structure shall be free-fitted and shall have sufficient strength to withstand short-circuit as indicated on drawings. Connections shall be securely bolted together with corrosion-resistant plated carbon steel, minimum grade five machine screws secured with constant pressure-type locking devices. Bus bar bracing shall be designed to withstand maximum available short-circuit current. Connections for cables to circuit breakers, switches and motor control devices shall be heavy-duty mechanical pressure type terminal lugs.

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Provide service cable lugs as required by utility company. Cables and internal wiring shall be supported with suitable cleats.

9. Switchboard distribution sections shall be furnished with full height bussing. Unused spaces shall be provided with blank covers. Switchboards, as complete units, shall be given single short-circuit current ratings by manufacturer. Such ratings shall be established by actual tests by manufacturer, in accordance with UL specifications, on equipment constructed similarly to the furnished switchboard.
10. Provide a large nameplate identifying switchboard, indicating service voltage, originating power source, function and current rating. Nameplate shall be furnished with 3/16-inch engraved black letters on white background. Name plate shall be mechanically fastened to switchboard.
11. Provide labels for circuit breakers, disconnect switches, and or other disconnecting means in switchboards. Labels shall be a P-Touch type or equal, with a minimum width of 3/8 inch with black letters on white background. Label shall indicate name of load served, name or room number and if in different building, name of building. If equipment is installed in same room as source, label should indicate source name and "in this room".
12. Paint cabinets, framework and plates inside and out with one coat of rust-resistant metal primer and one coat of gray enamel, baked on, or lacquer sprayed on.
13. Manufacture boards according to reviewed Shop Drawings. Switchboard shall meet requirements of legally constituted authorities having jurisdiction, and respective serving utility.
14. Switchboards installed outdoors shall be weatherproof NEMA Type 3R enclosure. Enclosure construction shall be formed of code gage galvanized steel with ANSI No. 61 gray enamel finish. Heavy-duty, three-point latching, vault type door handles with padlocking provisions shall be furnished on doors. Padlocks shall be furnished keyed to master lock pro series 6121. Switchboards installed outdoors shall be specifically required to maintain service during extreme outdoor ambient temperatures of a minimum of 150 degrees Fahrenheit in NEMA Type 3R enclosures.
15. For grounded wye electrical service switchboards rated more than 150 volts, to ground and 1,000 amperes or more, provide ground fault protection for main protective device. Ground fault protection shall be UL listed, with ground sensor encircling phase conductors and neutral conductors integral with the main protective device. Provide testing of ground fault protection system by an independent recognized testing laboratory. Testing lab shall provide necessary testing equipment at the Project site and perform a certified test on ground protection system in presence of the Project Inspector. The ground fault setting shall be selected to coordinate with downstream circuit protective devices. Verify that the system neutral is grounded at the service entrance switchboard only, except neutrals of step-down distribution transformers. For branch

circuit protective devices, rated 800 amps or more, provide ground fault protection where shown on the drawings, or as described above, for main protective device. Coordinate settings with main protective device ground fault protection.

16. In main and distribution switchboards provide a multifunctional digital meter with true RMS measured Amperes (each phase and neutral) Volts (line-to-line and line-to-neutral), Power Factor, Frequency, VA, VAR, Watts, KWH, KVARH, KVAH, voltage/current unbalance, and demand metering: W, VAR, Amperes, VA. Meter to have a front mounted RS232 port to allow programming and meter values via laptop computer and supplied software. The meter shall be GE Multiline PQMII with BACnet translator capabilities; equal or better meters will be acceptable with District's approval only. Contractor shall supply the metering software and electronic key to owner.
17. Connections to bussing shall be securely bolted together with corrosion-resistant plated carbon steel, minimum grade five machine screws secured with constant pressure-type locking devices.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Switchboards shall be located so that they are readily accessible and not exposed to physical damage.
- E. Switchboard locations shall provide sufficient working space around the switchboard to comply with the California Electrical Code.
- F. Switchboards shall be securely fastened to the mounting surface.
- G. Switchboard cabinets shall be grounded as specified in Article 250 of the California Electrical Code.
- H. Conduits shall be installed so as to prevent moisture or water from entering and accumulating within the enclosure.
- I. Lugs shall be suitable and as required for installation with the conductor being connected.
- J. Conductor lengths shall be maintained to a minimum within the wiring gutter space. Conductors shall be long enough to reach the terminal location in a manner that avoids strain on the connecting lugs.
- K. Maintain the required bending radius of conductors inside the cabinet.
- L. Distribute and arrange conductors neatly in the wiring gutters.
- M. Tightening the wire lugs or conductor connections shall be performed in the presence of the Project Inspector. Torque values shall be those recommended by manufacturer.
- N. Remove shipping blocks from component devices.

- O. Manually exercise circuit breakers to verify they operate freely.
- P. Remove debris from switchboard interior.
- Q. Follow manufacturer's instructions for installation.
- R. Furnish one spare fuse for each fusible switch installed. Spare fuses shall be of the same type and rated as those installed.
- S. Do not install in highly corrosive environments such as pool equipment, boiler, chemical and corrosive materials storage rooms, and similar areas. When equipment is installed in such areas, it shall be labeled and listed for the application.
- T. Switchboard equipment and system components shall be free from short circuits and grounds, other than required grounds. The contractor shall be responsible for the testing of bolted electrical connections, and perform insulation resistance tests on each bus section, phase-to-phase and phase-to-ground for one minute in accordance with requirements stated in NETA-ATS 2007 table 100.1. Test shall be performed in the following manner:
 - 1. Utilize the services of an approved independent testing laboratory to perform megger time-resistance insulation testing of bussing, circuit breakers and/or fused switches. The fused switches shall be equipped with fuses or temporary jumpers in place of fuses. Breaker and fused switches shall be tested in the closed position. No wiring shall be connected to the line or load side of the switchgear during testing.
 - a. Provide calibration program records to assure the testing instruments to be within rated accuracy. The test equipment accuracy shall be in accord with the requirements stated by the National Institute of Standards and Technology (NIST).
 - b. Test equipment shall be provided with a label stating the date of last calibration. As a minimum the equipment shall have been calibrated within the past 12 months.
 - c. Test reports shall include the following:
 - 1) Identification of the testing organization.
 - 2) Equipment identification.
 - 3) Ambient conditions.
 - 4) Identification of the testing technician.
 - 5) Summary of project.
 - 6) Description of equipment being tested.
 - 7) Description of tests.
 - 8) Test results.

- 9) Analysis, interpretation and recommendations.
 1. Perform tests in the presence of the Project Inspector.
 2. During testing, provisions shall be made to prevent damage to solid state components, or electronic equipment such as TVSS equipment that may be tied onto switchboard bussing.
 3. Test results shall meet manufacturer's recommendations or NETA ATS-2007 recommendations, whichever is more stringent.

3.02 PADS AND ANCHORING

- A. Where free-standing equipment is installed at exterior locations or in locations below grade, concrete pads shall be provided as specified in Section 03 3000: Cast-In-Place Concrete.
- B. Where a utility meter is installed in a switchboard, concrete pad shall extend three feet from face of switchboard door or board, whichever is greater. Concrete pad installation shall comply with electric utility company requirements.
- C. Anchor bolts for freestanding equipment shall meet CBC Seismic Zone 4 design requirements, and manufacturer's installation recommendations. The more stringent requirements will be enforced.
- D. Project Record Documents: Provide project record drawings of switchboards as installed, indicating main and branch circuit ratings, circuit numbers and part numbers.
- E. For ground fault relays and sensors, the following information shall be provided:
 1. Certified Calibration and Acceptance Test.
 2. Installation Instructions.
 3. Operating Instructions.
 4. Maintenance Instructions.
 5. Replacement Parts List.
 6. Final Test Report.
- F. Test information shall be submitted to the Architect. Nameplates may be fabricated of engraved laminated plastic or etched metal and shall be permanently attached with escutcheon pins or screws.

3.03 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

3.04 CLEANUP

- A. Remove rubbish, debris, and waste materials and legally dispose of off Project site.

END OF SECTION 26 24 13

SECTION 26 27 26

WIRING DEVICES

PART 1 GENERAL

1.1 SUMMARY

- A. This section includes labor, materials and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:
1. Wall Switches
 2. Wall Dimmers
 3. Receptacles
 4. Cover plates

1.2 REFERENCES

- A. Comply with the latest edition of the following applicable specifications and standards except as otherwise shown or specified.
1. NEMA WD 1- General Purpose Wiring Devices
 2. NEMA WD 5- Specific-Purpose Wiring Devices
 3. NEMA WD 6- Wiring Device Configurations
 4. WS-896-E - Federal Specification
 5. WC-596-F - Federal Specification
 6. UL 498 - Attachment Plugs and Receptacles
 7. UL 514A - Metallic Outlet Boxes
 8. UL 943 - Ground-Fault Circuit-Interrupters, Safety Standard
 9. UL 1449 - Transient Voltage Surge Suppressors

1.3 SUBMITTALS

- A. Submit in accordance with the requirements of Division 01 and Section 26 05 02, Common Work Results for Electrical, the following items:
1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.
 - a. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.
 - b. Reference catalog cuts to the applicable specification article.
 2. Provide list of available color finishes/samples for Engineer to select from.
 3. Submit manufacturer's installation instructions.
 4. Submit one sample of each type of device and cover plate.

5. Where engraved device cover plates are noted on the drawings or in the specifications, conform to the requirements of Section 26 05 54.

B. Field Quality Control Test Reports.

1.4 QUALITY ASSURANCE

- A. All materials, equipment and parts comprising the units specified herein shall be new.

PART 2 PRODUCTS

2.1 GENERAL

- A. All devices shall conform to National Electrical Manufacturer's Association (NEMA) standards and shall be Underwriters Laboratories, Inc., (UL) listed and labeled and shall be "Specification Grade" Industrial/heavy-duty type, meeting the requirements of Federal Specification WC-596-F for receptacle, and meeting the requirements of Federal Specification WS-896-E, for switches.
- B. All devices shall be of the same manufacturer, where applicable.
- C. Color:
 1. Devices on normal power shall be white unless otherwise noted.
 2. Devices on emergency power shall be red.

2.2 WALL SWITCHES

- A. Standards: Provide general-purpose 120/277 VAC switches that conform to NEMA WD-1 specifications.
- B. Toggle Switches
 1. Provide 20A, 120-277V AC, extra heavy-duty industrial grade toggle type switches with ground screw.
 2. The switch shall be quiet type with silver alloy contacts, abuse resistant handle, back and side wired with totally enclosed case.
 3. Single Pole Switches: Hubbell #HBL-1221 series or equal.
 4. Three-way Switches: Hubbell #HBL-1223 series or equal.
 5. Illuminated (lighted handle w/load off): Hubbell #HBL-1221-IL series or equal.
- C. Rocker Switches
 1. Provide 20A, 120-277V AC, specification grade rocker type decorator style switches with ground screw.

2. The switch shall be quiet type with silver alloy contacts, back and side wired with totally enclosed case.
3. Single Pole Switches: Hubbell #DS120 series or equal.
4. Three-way Switches: Hubbell #DS320 series or equal.
5. Illuminated (lighted handle w/load off): Hubbell #DS120IL series or equal.

2.3 RECEPTACLES

A. Standards

1. Provide general purpose 20 ampere, 125 VAC receptacles that conform to NEMA WD-1 specifications. Specialty receptacles shall conform to NEMA WD-5 specifications as applicable.
2. Provide NEMA 5-20R, specification grade as noted herein, 20 Amp, 125 VAC, 2 pole, 3 wire grounding type receptacles.

B. General Purpose Duplex Receptacles

1. Provide 20A, 125V AC, extra heavy-duty specification grade 2-pole, 3-wire grounding type receptacles.
2. Receptacles shall be self-grounding, back wired grounding with binding head staked terminal screws.
3. Receptacles shall have a deep treaded brass center rivet to hold cover plates without rotating or stripping.
4. The grounding contact shall be one-piece brass and internally connected to the frame with ground terminal for external ground.
5. Duplex Receptacles: Hubbell #HBL 5362 series or equal.
6. Duplex Receptacles: Hubbell #HBL 5361 series or equal.

C. Ground Fault Circuit Interrupting (GFCI) Receptacles

1. Provide 20A, 125V AC, heavy-duty commercial grade 2-pole, 3-wire grounding GFCI receptacles.
2. The GFCI receptacles shall be in conformance with UL 943 and equipped with integral solid-state sensing and signaling circuitry capable of detecting and interrupting a maximum 5 milli-amp line-to-ground fault current in approximately 0.025 second.
3. The GFCI receptacles shall be in conformance with UL 943 self-test monitoring requirements that apply to all permanently installed GFCI products
 - a. A power denial feature shall be included to disconnect power to the receptacle if critical components are damaged and GFCI protection is lost.
 - b. The GFCI receptacles shall include a solid green LED to indicate power to the face, a solid red LED for a tripped condition and a flashing red LED to indicate end of life when the unit should be replaced.

4. Device shall provide ground fault indicator, no power to face if reverse wired. Shall be equipped with trip indication, manual reset and test mechanisms.
 5. GFCI Receptacles: Hubbell #GFRST20 series or equal.
- D. Decorator Type Duplex Receptacles
1. Provide 20A, 125V AC, extra heavy-duty 2-pole, 3-wire grounding type receptacles.
 2. Receptacles shall be self-grounding, back wired grounding with binding head staked terminal screws.
 3. Duplex Receptacles: The receptacle shall be Hubbell "Style Line Decorator" type, Hubbell #HBL 2162 series or equal.
- E. Controlled (Switched) Receptacles
1. Provide 20A, 125V AC, specification grade 2-pole, 3-wire grounding receptacles permanently marked "Controlled".
 2. The Controlled receptacles shall be in compliance with NEC (marked with required symbol) as required and listed for use with automatic control systems.
 3. The entire receptacle shall be controlled. Half controlled receptacles are not acceptable.
 4. The Receptacles shall be Hubbell "Style Line Decorator" type Cat #DR20C2 series or equal.
- F. USB Charging Receptacles
1. Provide 20A, 125V AC, specification grade 2-pole, 3-wire grounding receptacles with USB charger combination type A & C ports.
 2. The USB charger outlet shall consist of (1) type A and (1) type C port configurations with high power 5 Amps, 5 Volt USB output.
 3. The USB ports shall be heavy-duty stainless/steel, rated for 10,000 cycles - cord insertions and removals.
 4. The USB ports shall be compliant with USB BC1.2 battery charging and 3.0 power delivery. Compatible with USB 2.0, 3.0, and 3.1.
 5. USB Charging Receptacles: Hubbell # HBL-USB20AC5 series or equal.
- G. Special purpose receptacles: Provide specification grade devices with the NEMA configuration, voltage, and current rating, number of poles and ground provisions as noted on the Drawings.
- H. Receptacle Colors
1. Non- Controlled (non-switched) receptacles on normal power shall be white, unless otherwise noted.
 2. Controlled (switched) receptacles on normal power shall be white and factory marked "Controlled" unless specifically noted on drawings to provide different color.
 3. Receptacles on emergency circuits shall be red.

2.4 COVERPLATES

A. General

1. Provide all cover plates with rounded edges and corners, smooth and free of grooves, embossing or other embellishment.
2. Provide mounting screws to match the plate finish.
3. Provide gang type cover plates where two or more devices are installed at one location. Individual gangable cover plates are not acceptable.
4. Provide plates of one design, throughout the project unless otherwise specified.
5. Use screwless wall plates that have no visible hardware; the front plate securely snaps into the alignment adapter plate for all wall dimmers, switches (with or without sensors) in all offices, conference rooms, suites and similar type of areas. The wall plates shall be Lutron Claro series, white finish unless otherwise noted.

B. Metal Cover Plates

1. Provide smooth, stainless steel plates, American Iron and Steel Institute (AISI) Type 302, 0.040" thick with satin smooth finish
2. A removable plastic film shall protect cover plates during installation. Remove film at time of final acceptance.
3. Provide gang type cover plates where two or more devices are installed at one location.
4. Stainless steel plates: Hubbell #S series.

C. Nylon Cover Plates

1. Provide standard size, smooth, high-impact, non-conductive nylon plates with curved corners and captive screws.
2. Provide gang type cover plates where two or more devices are installed at one location.
3. Nylon plates: Hubbell #NP series.

D. Weatherproof Cover Plates

1. Standard
 - a. Provide weatherproof covers for each GFCI receptacle. Covers shall be gasketed, spring loaded, self-closing and suitable for use in damp and wet locations as described in UL 514 and CEC 406.
 - b. The base plates, covers, hinge pins, spring and screws shall be all corrosion resistant die cast aluminum.
 - c. Vertical position covers: Hubbell #WP26 series.
 - d. Horizontal position covers: Hubbell #CWP26H series. (use in public areas)
2. While in use covers:

- a. Provide weatherproof while-in-use covers for each GFCI receptacle. Covers shall be gasketed, spring loaded, vertically self-closing, suitable for use in damp and wet locations while a plug is inserted into the receptacle as described in CEC 406.8.
- b. While-in-use covers: Pass & Seymour #WIUC10 series.

E. Material / Finish

- 1. Provide stainless steel cover plates in all areas unless otherwise noted on drawings.
- 2. Provide high-impact nylon (non-breakable) cover plates in areas specified on drawings or as directed by Engineer. The default color shall be white, except for certain areas identified by Engineer that the color should match the wall paint/finish (I.e. at wood wall covering, and etc.).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Thoroughly examine site conditions for acceptance of wiring device installation to verify conformance with manufacturer and specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.2 PREPARATION

- A. Coordinate device heights in suites, press level, vending, kitchen and utility areas with benches and counters.
- B. Coordinate switch mounting location with Engineer details. Unless otherwise noted, locate switches on latch side of door.
- C. Refer to Section 26 05 54 - Identification for Electrical Systems, for labeling of plates.

3.3 INSTALLATION

- A. Install wiring devices in accordance with manufacturer's written instructions, as shown on the drawings and as specified herein.
- B. Install devices with the vertical centerline plumb and with all edges of the device flush against the adjacent wall surfaces.
- C. The grounding slot for all receptacles vertically mounted shall be on top. The grounding slot for all receptacles horizontally mounted shall be to the left.
- D. Mounting Heights:
 - 1. Mount switches at 42" above finished floor unless otherwise noted.

2. Mount above counter receptacles at 42" above finished floor unless otherwise noted or indicated on Engineer drawings (sections and elevations). Also refer to Engineer drawings for the mounting orientation of devices (Vertical or Horizontal).
 3. Mount receptacles vertically with the centerline 18" above finished floor, except where indicated otherwise on drawings or specifications.
 4. Mount GFCI receptacles above counters in bathrooms and at counters within 6'-0" of sinks, whether indicated as GFCI type or not.
- E. Ganged switches on 277-volt circuits shall have a barrier between each switch.
- F. In areas where different type or size of devices are installed next to a switch or receptacle outlet, the mounting elevations shall be adjusted in order to have a uniform height to the top of cover plate for these devices and adjacent switch or receptacle.
- G. Wall Plates:
1. Cover plates shall have the circuit numbers and source feed point labeled on front of the cover plate by using P-touch Labels. See Section 26 05 54 - Identification for Electrical Systems for labeling.
 2. Provide labeling for all lock switches, pilot switches, switches from which equipment or circuit controlled cannot be readily seen, three or more switches under a common plate and for switches as indicated.
 3. Provide labeling for all switches, where circuits controlled cannot be readily seen, three or more switches under a common plate.
 4. Provide wall plates for all outlet boxes, switches, receptacles, etc.
 5. Provide cover plates that completely cover wall opening and seat against wall.
 6. Install blank cover plates on all outlet boxes in which no device is required or installed.
- H. Refer to Section 26 05 54 - Identification for Electrical Systems for all device and plate color requirements.
- I. California Electrical Code (CEC) sized (#12 minimum) bonding jumper shall connect grounded outlet box to receptacle grounding terminal on all flush mounted units.
- J. Refer to Section 26 05 54 - Identification for Electrical Systems for the labels and labeling (i.e. panel and circuit number, etc.) requirements.

3.4 FIELD QUALITY CONTROL

- A. Electrical testing:
1. Test proper polarity of all receptacles.
 2. Test ground continuity of all wiring devices.
 3. Test ground fault interrupting device operation.

- B. Visual and mechanical inspection:
 - 1. Check proper operation of all switches.
 - 2. Visually inspect and replace damaged or defective devices.

3.5 CLEANING

- A. Clean interior of all boxes from dirt and paint prior to installation of devices.
- B. Clean wiring devices and cover plates from dirt and paint over spray.

END OF SECTION 26 27 26

SECTION 26 28 23

CIRCUIT BREAKERS

PART 1 GENERAL

1.1 SUMMARY

- A. This section includes labor, materials and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:
1. Circuit Breakers used in Unit Substations, Switchboards, and panelboards
 2. Individually enclosed Circuit Breakers

1.2 REFERENCES

- A. Comply with the latest edition of the following applicable specifications and standards except as otherwise shown or specified.
1. ANSI - Low Voltage Power circuit breakers
 2. ANSI-C37.16 - Preferred Ratings
 3. ANSI-C37.17 - Trip Devices
 4. ANSI-C37.50 - Test Procedures
 5. NEMA AB 1 - Molded Case Circuit Breakers
 6. NEMA AB 3 - Molded Case Circuit Breakers Applications
 7. NEMA SG-3 - Low Voltage Power Circuit Breakers
 8. NFPA 70 - California Electrical Code (CEC)
 9. NECA - National Electrical Contractors Association's Standard of Installation
 10. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
 11. UL 489 - Molded Case Circuit Breakers
 12. UL 891 - Breakers for Switchboard Applications
 13. UL 1066 - Low Voltage Power Circuit Breakers

1.3 SUBMITTALS

- A. Submit in accordance with the requirements of Division 01 and Section 26 05 02, Common Work Results for Electrical, the following items:
1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards
 - a. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application

- b. Provide circuit breaker trip units, time current curves, dimensions
- 2. Submit manufacturer's installation instructions
- 3. Complete bill of material listing all components
- 4. Operation and Maintenance manuals
- 5. Factory and field-test reports
- 6. Warranty

1.4 QUALITY ASSURANCE

- A. All materials, equipment and parts comprising the units specified herein shall be new.
- B. Contractor shall pay for the services of a qualified testing agency to perform the specified tests. The Contractor shall notify the City of Beaumont at least five (5) working days in advance of performance of work requiring testing.
 - 1. The testing agency shall be a member of International Electrical Testing Association and specializing in testing products specified in this section with minimum five years of documented experience.
 - 2. The Contractor shall provide all material required for testing.
- C. Perform work in accordance with NECA Standard of Installation.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum ten years documented experience.

1.6 WARRANTY

- A. Equipment and components offered under this Section shall be covered by 2-year parts and labor warranty for malfunctions resulting from defects in materials and workmanship.
- B. Warranty shall begin upon acceptance by the City of Beaumont. Refer to Division 01 for the definition of Acceptance.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, provide products from one of the following:
 - 1. Eaton
 - 2. Square D

3. General Electric
4. Or equal

2.2 GENERAL

- A. All overcurrent protective devices shall be insulated-case or molded-case thermal-magnetic circuit breakers as required.
- B. All breakers shall be equipped with adjustable magnetic trip setting for circuit-breaker frame sizes 250A and larger.
- C. Provide Ground Fault protection function for all circuit breakers over 1000A connected to 277/480V, 3-phase, 4-wire systems as required.
- D. All circuit breakers with 600A frame and larger shall be 100% rated and equipped with microprocessor-based RMS sensing trip units field-replaceable rating plug and the field-adjustable (Instantaneous trip, L & S time pickup, L & S time adjustments, GF pickup level, time delay and I²t response) settings, except the following:
 1. All circuit breakers on Emergency circuit and with 200A and smaller trip size shall be furnished with 225A frame, 80% rated, and microprocessor-based RMS sensing trip units.
 2. All circuit breakers on Emergency circuit and with 350A and smaller trip size shall be furnished with 400A frame, 80% rated, and microprocessor-based RMS sensing trip units.
- E. The frame size for all circuit breakers shall be at least 10% larger than the breaker trip rating indicated on drawings, unless otherwise indicated on drawings.
- F. The breaker terminals shall be rated for 75°C minimum.

2.3 MOLDED CASE CIRCUIT BREAKERS - 1200A and below

- A. Protective devices shall be molded case circuit breakers with inverse time and instantaneous tripping characteristics and shall be manufactured by Eaton or approved equal.
- B. Circuit breakers shall be operated by a toggle-type handle and shall have a quick-make, quick-break over-center switching mechanism that is mechanically trip-free. Automatic tripping of the breaker shall be clearly indicated by the handle position. Contacts shall be non-welding silver alloy and arc extinction shall be accomplished by means of DE-ION arc chutes. A push-to-trip button on the front of the circuit breaker shall provide a local manual means to exercise the trip mechanism.
- C. Circuit breakers shall have a minimum symmetrical interrupting capacity as indicated on the drawings or elsewhere in specifications. All breakers shall be fully rated and series rating is not acceptable.

- D. Circuit Breaker: NEMA AB1, bolt-on type circuit breaker with trip sensor in each pole.
- E. Circuit breakers 400A frame and below shall have thermal-magnetic trip units and inverse time-current characteristics.
- F. Circuit breakers 600A through 1200A frame shall have microprocessor-based rms sensing trip units.
- G. Ground fault protection shall be provided where indicated.
- H. All 1200A and frame breakers regardless of trip setting, shall be equipped with Arc Reduction Maintenance mode switch (ARMs) to reduce the Arc Flash energy downstream from breaker. The ARMs shall be integral to the breaker trip unit with indicating light to remind maintenance personnel that breaker is in the maintenance mode. The ARMs shall have multiple high-speed instantaneous settings to avoid inrush nuisance tripping with settings defined per Short-circuit, Coordination and Arc Flash studies.

2.4 TRIP UNITS

- A. All insulated case circuit breakers shall be equipped with G.E. RMS 1150+ unit with advanced protection, metering, LED display and remote communications.
 - 1. Provide all G.E. 1150+ trip units with ARMs Technology arc flash reduction accessory. The ARMs shall allow the operator to enable a maintenance mode with a preset accelerated instantaneous override trip to reduce arc flash energy.
- B. All Molded cases circuit breakers with electronic trip units shall be furnished with G.E. RMS 310+Field-Adjustable Trip Circuit Breaker: Provide circuit breakers with frame sizes 800 amperes and larger with mechanism for adjusting long time continuous current setting for automatic operation.
- C. Field-Changeable Ampere Rating Circuit Breaker: Provide circuit breakers with frame size 400 amperes and larger with changeable trip units.
- D. Insulated case circuit breakers shall have metering capability with a display for voltage, current, power and energy readings. Metering capability to interface and report as part of electronic monitoring system.

2.5 OPTIONS AND FEATURES

- A. Provide accessories as indicated, to NEMA AB1.
- B. Shunt Trip Device: 120 volts.
- C. Handle Lock: Include provisions for padlocking.
- D. Provide mechanical trip device.

- E. Provide Products suitable for use as service entrance equipment where so applied.

2.6 ENCLOSURE

- A. Enclosure: NEMA AB1, Type or as suitable for use where indicated.
- B. Fabricate enclosure from steel.
- C. Finish using manufacturers standard enamel finish, gray color.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install enclosed circuit breakers where indicated, in accordance with manufacturer's instructions.
- B. Provide engraved plastic nameplates under the provisions of Section 26 05 54 - Electrical Identification.

3.2 FIELD QUALITY CONTROL

- A. Field inspection and testing shall be performed under provisions of Section 26 08 10 - Testing of Electrical Systems and requirements stated in other related sections where breakers are used.
- B. Inspect and test each circuit breaker to appropriate NEMA and NETA standards and guidelines
- C. Inspect each circuit breaker visually.
- D. Perform several mechanical ON-OFF operations on each circuit breaker.

3.3 FIELD ADJUSTMENTS

- A. The Contractors shall perform field adjustments of the protective devices as required to place the equipment in final operating condition. The settings shall be in accordance with the approved Overcurrent Protective Device Coordination Study per specification Section 26 05 73.
- B. Necessary field settings of devices, adjustments and minor modifications to equipment to accomplish conformance with the approved Overcurrent Protective Device Coordination Study per specification Section 26 05 73, shall be carried out by the Contractor at no additional.

3.4 TRAINING

- A. Any training related to the operation and maintenance of Circuit Breakers and related accessories shall be included and conducted as part of the training for all equipment described in each individual specification sections with Circuit Breakers.

3.5 COMMISSIONING

- A. Refer to contract documents related to the commissioning for any activities required to Commission the electrical system.

END OF SECTION 26 28 23

SECTION 26 50 10

SOLID STATE (LED) LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: LED Luminaires, LED modules, drivers, wiring, and lighting controls.
- B. Related Requirements:
 - 1. Division 01 - General Requirements.
 - 2. Section 26 0500: Common Work Results for Electrical.
 - 3. Section 26 0513: Basic Electrical Materials and Methods.
 - 4. Section 26 0526: Grounding and Bonding.
 - 5. Section 26 0519: Low-Voltage Wires (<600 Volt AC).
 - 6. Section 26 0923: Lighting Controls Systems.
 - 7. Section 26 5200: - Emergency Power Systems.
 - 8. Section 32 1313 - Site Concrete Work.

1.2 REFERENCES

- A. American National Standards Institute/American National Standard Lighting Group ANSI/ANSLG – C78.377-2008 Specifications for the Chromaticity of Solid-State Lighting Products.
- B. American National Standards Institute/American National Standard Lighting Group ANSI/ANSLG – C82.77-2002 Harmonics Emission Limits.
- C. Federal Communication Commission (FCC) 47 CFR Part 15 – Radio Frequency Devices.
- D. Illuminating Engineering Society of North America (IESNA) LM-79-, LM-80-15, and TM-21.
- E. National Electrical Manufacturers Association (NEMA) SSL-1-2010 Electronic Drivers for LED Devices, Arrays, or Systems.
- F. SSL-3-2010 Solid State Lighting High Power LED Binning for General Illumination.
- G. SSL-4-2012 Solid State Lighting Retrofit Lamps.
- H. National Fire Protection Association (NFPA) NEC-70-2011
- I. Underwriters Laboratories (UL) 8750-Light Emitting Diode (LED) Equipment for Use in Lighting Products.

- J. Underwriters Laboratories (UL) 1598C- Light Emitting Diode (LED) Retrofit Luminaire Conversion Kits.

1.3 SUBMITTALS

- A. List of Materials: Submit a complete list of proposed materials.
- B. Shop Drawings: Provide detailed and dimensioned Shop Drawings indicating kind, weight and thickness of materials, method of fitting and fastening parts together, location and number of sockets, size of lamps, and complete details of method of fitting suspension and fastening luminaires in place. Provide wiring diagrams for lighting control equipment. Drawings shall contain sufficient information to assemble and install equipment at the Project site without further instructions.
- C. Prior to start of construction; provide photometric calculations with graphic of lighting foot-candle levels at work plane, ceiling and walls. Calculations shall comply with IESNA recommendations.
- D. Installation Instructions: Submit manufacturer's written installation instructions for luminaires and accessories.

1.4 SUBSTITUTIONS

- A. Luminaires that deviate from these requirements shall not be accepted without written approval from OWNER'S Design Standards Section and Maintenance and Operations Technical Unit. When deviating or substituting luminaires, the following information shall be submitted:
 - 1. Substitution request form substantiating reasons and benefits to OWNER.
 - 2. OWNER'S approval shall be obtained for any equipment or materials substitutions. Proposed substitutions requests shall provide proof of compliance with OWNER'S LED Luminaires Evaluation Requirements found at the following electronic address:
- B. Substitutions: Submittals must comply with contract general provisions.

1.5 QUALITY ASSURANCE

- A. Design of lighting luminaires, accessories, supports, and method of luminaire installation shall comply with requirements for earthquake-resistant construction of the State of California.
- B. Provide suspension points at no more than two feet from luminaire ends. Spacing between supports shall not exceed eight feet.
- C. Components and luminaires shall be listed and approved for the intended application by Underwriter's Laboratories (UL), or other Nationally Recognized Testing Laboratory (NRTL), and in compliance with applicable industry standards and codes, including those mentioned under article 1.02 – References.

1.6 WARRANTEE

- A. Provide a one-year labor warranty.
- B. Provide material warranty as specified:
 - 1. LED modules: five years minimum.
 - 2. Drivers: five years minimum.
 - 3. Lighting Pole (Standards): five year minimum.
- C. Warranty period begins at substantial completion or project acceptance for beneficial occupancy.
- D. CONTRACTOR shall warranty Luminaires, including drivers, LED modules and ancillary components via a single warranty source. Multiple warranty sources are not acceptable.

PART 2 - PRODUCTS

2.1 MATERIAL AND FABRICATION

- A. Lighting luminaires shall be the type indicated on Drawings and as specified. Luminaires of same type shall be of one manufacturer.
- B. Specific manufacturer and model number references are indicated as a standard of performance and quality; other manufacturers' models may be submitted for review, provided the product meets or exceeds the specifications and substantially complies with OWNER'S LED Luminaires Evaluation Requirements Form.
- C. Conductors that pass over edges or through metal opening(s) shall be secured from contacting the edges or be protected from cutting and abrasion. This requirement shall be met through one of the following:
 - 1. Rolling the edge of the metal not less than 120 degrees.
 - 2. A bushing or grommet of a material other than rubber at least 1.2 mm (0.047") thick.
 - 3. Glass sleeving at least 0.025 mm (0.010") thick.
- D. Lighting luminaires shall meet the following requirements:
 - 1. Industry standards as indicated under REFERENCES Article.
 - 2. Luminaire shall be from a manufacturer who has been in the business of manufacturing LED lighting luminaires for interior and exterior applications for a minimum of 5 years.
 - 3. Luminaires shall comply with the California Health and Safety Code requirements for products containing substances identified in the California Lighting Efficiency and Toxics Reduction Act, or be in compliance with the European Restriction of Hazardous Substances (RoHS), whichever is more stringent.
 - 4. Luminaires shall be baked-on enamel or powder-coated, unless otherwise specified in this section.
 - 5. The luminaire(s) lens, including end caps shall be 0.187 nominal thickness.
 - 6. Drivers shall be easily accessible without the use of special tools.

7. Wiring cavity shall be field accessible for service or repairs.
8. Luminaires shall be capable of being operated by standard motion/ vacancy sensors, daylight sensors, and dimmers.
9. Luminaires shall be provided with a manufacturer's stencil or permanent legible sticker that states manufacturer business information and date of delivery.
10. Temperature rating; -20 degrees Celsius minimum starting temperature. Luminaire accessories including LEDs and drivers shall be able to withstand temperatures in excess of 110 Fahrenheit degrees.
11. Color Rendering Index (CRI):
 - a. Interior Applications: +82 CRI.
 - b. Exterior Applications: +70 CRI
12. Power factor: Greater than 0.9 at 120V and 277V.
13. Total Harmonic Distortion: Less than 20% at 120V and 277V.
14. Color Correlated Temperature: 4000K minimum $\pm$ 275K degrees.
15. LEDs and driver's life expectancy: 50,000 minimum projected hours at 6,000 hours testing for both LEDs and drivers.
16. Luminaires in contact with insulation materials shall be IC rated.

2.2 DRIVERS AND LED MODULES

A. Drivers:

1. Approved Drivers Manufacturers:
 - a. Osram – Optotronic.
 - b. Philips – Advance and Xitanium.
 - c. Universal Lighting Technologies – Everline.
 - d. General Electric – Ligttech.
 - e. Thomas Research Products
 - f. Kenall – Low Profile LED Driver
 - g. EldoLED
 - h. Others only if approved by Torrance Airport M&O Technical Services and Design Standards units.
2. Driver Type and Characteristics:
 - a. Comply with the state of California Health and Safety Code requirements for products containing substances identified in the California Lighting Efficiency and Toxics Reduction Act, or be RoHS compliant, whichever is more stringent.
 - b. Dimming for 0-10 volt DC control circuits. Drivers shall be specifically compatible with the lighting control system being provided.
 - c. Comply with applicable state, federal, and industry standards listed under References article.
 - d. Wattage as stated in Luminaire's LM-79 test report.
 - e. Driver performance requirements:

DRIVERS PERFORMANCE CHARACTERISTICS		
No.	Characteristic	Minimum Requirements
1	Input Voltage range	120V, 277V

**SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT
CITY OF BEAUMONT**

2	Input Overvoltage	320 VAC for 48 hours, 350 VAC for 2 hours.
3	Frequency	50/60 Hz Nominal
4	Power factor	0.95 Minimum
5	Inrush Current	Less than 30 amps @ 120V, Less than 70A @ 277V
6	Input Current Range	54A @ 120V, 23A @ 277V
7	Output Current	1670 mA Maximum
8	Maximum Power	65 Watts
9	Total Harmonic Distortion	Less than 20%
10	Leakage Current	Less than 500 mA
11	Output Protection	Short and Open Circuit Protection
12	Maximum Case Temperature	90 ⁰ C
13	Minimum Starting	-20 ⁰ C
14	Storage Temperature	No less than 70 ⁰ C
15	Humidity	Rated for dry and damp locations
16	Cooling	Convection
17	Sound Rating	Class A
18	Life Expectancy	>50,000 hours at +50 ⁰ C
19	Dimming, Motion Sensors and Daylight Sensors	0-10V

B. LEDs:

1. Approved Manufacturers:
 - a. General Electric.
 - b. Philips.
 - c. NICHIA
 - d. Samsung LED Co.
 - e. CREE
2. LEDs Characteristics:
 - a. Color Correlated Temperature (CCT):
 - 1) Chromaticity target Duv and tolerance 0.001 plus/minus 0.006.
 - 2) Nominal CCT for 4000K, target CCT 3985K $\pm$ 275K.
 - 3) CCT measurements in compliance with ANSI C78.377-2008.
 - b. Lumen Maintenance: Greater than 90% at 500 C degrees.
 - c. LEDs must be from same manufacturer and batch.
 - d. TM-21 and LM-80 reported hours of no less than 50,000.

- e. LM-79 reported CCT and CRI in compliance with articles 2.09.D.9 and 12.

2.3 LUMINAIRES (For exact make and model refer to lighting fixture schedule on electrical plans)

A. Lighting Luminaire Types:

1. Ceiling Surface-mounted or Recessed Troffer Luminaires:
 - a. 22 gage extruded aluminum doorframes, white baked enamel finish. Spring loaded and half recessed with flush latches and T-handle hinge, accessible from bottom to drivers and wiring. Clear prismatic 100 percent pure virgin acrylic Pattern 12.
 - b. Recessed Troffer Housing minimum depth shall be 4 ½-inch to eliminate lamp images in lens.
 - c. Minimum lens thickness 0.187 inch.
 - d. Furnish mounting frames on recessed luminaires in plaster and tile surfaces.
 - e. Manufacturers and catalog numbers: Modify catalog numbers for mounting in gypsum drywall ceilings, as required.
2. Surface-Mounted Industrial Luminaires:
 - a. Approximately 48-inch or 96-inch long by 16-inch wide by 7 ½-inch deep.
 - b. Provide couplings, clips and end caps for continuous row installation.
 - c. Furnish luminaires with screw-on wire guards. Design guards to accommodate luminaire, provided by same manufacturer as luminaire.
 - d. Exposed LED strips are not allowed.
 - e. Housing shall be made of die formed 20 gage cold rolled steel.
3. Surface Mounted Strip Light:
 - a. Luminaire shall be made of 20 gage die formed steel and have the ability for continuous row mounting.
 - b. Furnish luminaires with LED strips as indicated on drawings. Luminaire shall have the option to have narrow or wider housing channels depending on the application.
4. Enclosed and Vandal Resistant Luminaires:
 - a. Luminaire shall be 20 gage extruded aluminum with die cast end caps.
 - b. Luminaire shall have opal polycarbonate lens.
 - c. Furnish luminaires with LED strips as indicated on drawings. Luminaire shall have tamper resistant hardware.
 - d. Luminaire shall have the ability to be in continuous rows with seamless appearance.
 - e. Luminaire shall be listed for wet location.
5. Enclosed, Gasketed Luminaire:
 - a. Luminaire shall be 20 gage steel.
 - b. Lens enclosure shall be heavy duty vapor tight enclosed gasketed with closed-cell foam gasketing permanently attached to luminaire housing.
 - c. Luminaire shall have tamperproof latches.
 - d. Luminaire shall be furnished with minimum one watertight hub kit for top or end conduit entry.
 - e. Luminaire shall have option for cable mount and safety strap
 - f. Wet Location listed.
6. Surface, Wall or Recess Mounted fixtures
 - a. Luminaire shall be 20 gage extruded aluminum with die cast end caps.

- b. Opal polycarbonate lens.
 - c. Furnish luminaires with LED strips as indicated on drawings.
 - d. Luminaire mounting as indicated on drawings.
 - e. Luminaire shall be listed for damp and wet location.
7. Down Lights:
- a. 4 to 6 inch round LED downlight.
 - b. Color trim as specified in construction drawings.
 - c. Trim attachment to frame-in kit via push-in connector on frame.
 - d. Removable cover for access.
 - e. Complete luminaire including all peripheral devices including frame-in kit, light engine, trim kit, etc. shall be provided.
8. High Abuse Surface Luminaires:
- a. Lens shall be extruded polycarbonate, clear prismatic refractor, nominal thickness 0.125 inch, UV stabilized.
 - b. Baseplate shall be 18 gage prime cold-rolled steel with corrosion-resistant, 92 percent reflective, white polymer finish.
 - c. End caps shall be 16 gage prime cold roll steel with corrosion-resistant, white polymer finish and shall be spot welded to the baseplate.
 - d. Lens/housing shall be furnished with a minimum of two large or four small stainless steel fasteners to secure lens/housing to base plate.
 - e. Listed for wet and damp locations.
9. Wall Mounted Vaportite Luminaire:
- a. Luminaire housing shall be die cast aluminum with corrosion resistant polyester powder coated finish.
 - b. Luminaire shall be heat and shock resistant, with prismatic glass optical chamber with neoprene gasketing.
 - c. Luminaire shall be 15 or 20 watt LED; LEDs and drivers as indicated on drawings.
 - d. Luminaire shall be equipped with lens guard.
10. Ceiling-Mounted Luminaires:
- a. Separate ceiling and reflector pans with foil-backed fiberglass between pans and 1/8 inch thick neoprene gasketing between ceiling pan and ceiling.
 - b. White polyester finished 18 gage cold-rolled steel back-plate with clear prismatic injection molded polycarbonate lens, UV stabilized heavy gage aluminum back-plate and four tamper-proof screws.
 - c. Provide luminaire wattage as indicated on drawings.
 - d. Luminaire shall be listed for damp locations.
11. Ceiling / Wall Mounted Luminaires:
- a. Luminaire shall be die-cast aluminum.
 - b. Luminaire shall have reinforced four-point mounting system construction to resist breakage from impact and prying.
 - c. Luminaire finish shall be as indicated on drawings.
 - d. Lens shall be Injection molded UV stabilized, high impact resistant opal polycarbonate.
 - e. Luminaire shall have option trim ring to fit between housing and inside lip of trim ring for a smooth transitional look.
 - f. Provide luminaire with input watts as indicated on drawings.
 - g. Ceiling luminaires shall be supplied without eye lid option, wall mounted luminaires shall be supplied with eye lid option.
12. Outdoor Wall-Mounted Luminaires (Vandal Resistant):

- a. Seamless, one-piece, injection molded polycarbonate lens/housing, 0.187 inch, UV stabilized polycarbonate lens. The wraparound lens design encloses and protects the interior of unit.
 - b. Die cast aluminum mounting plate.
 - c. One-piece, full size, closed cell neoprene rubber gasket.
 - d. One stainless steel tamper-proof screw.
 - e. Luminaire shall be UL listed for wet locations.
 - f. Luminaires shall be provided with input watts as indicated on drawings.
13. Wall Mounted Full Cutoff Exterior Wall.
- a. Luminaire shall be mounted at no less than nine feet above finished grade, or as indicated in drawings.
 - b. Housing shall be made of 20 gage die cast aluminum, and be equipped with hinged doors.
 - c. Luminaire shall have Stainless steel tamperproof hardware.
 - d. Luminaire shall be provided with input watts as indicated on drawings. Luminaire Optics shall be full 90 degree horizontal cutoff on all distributions. Reflector shall be specular aluminum. Luminaire shall have tempered glass lens with optional wire guard.
14. Wall-Mounted Luminaires (Vandal Resistant):
- a. One-piece prismatic refractor held by cast metal door, hinged to die-cast anodized aluminum weatherproof housing with visor to limit light pollution.
 - b. Die-cast aluminum housing of 1/8 inch minimum wall thickness. Luminaire shall be provided with tamper-proof screws.
 - c. High impact resistant, UV stabilized injection molded polycarbonate lense.
 - d. High power LEDs.

2.4 EXIT ILLUMINATION

- A. Lighting Luminaire:
- 1. Ceiling or wall-mounted, vandal-resistant type, LED EXIT, consisting of:
 - a. LED board, green exit lettering and directional arrows as indicated on drawings.
 - b. Face plate and polycarbonate shield.
 - c. Number of faces, voltage, and emergency power source shall conform to design requirements indicated on drawings.
 - d. Area of refuge listing is required when luminaires are used in such locations.
 - e. Utilize a flag mount luminary with additional support from the ceiling or wall for canopy or pendant mounted exit signs. This option shall be exercised only if a wall is not available.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install a lighting luminaire for each lighting outlet indicated and label with day of installation.

- B. Luminaire voltage shall be as indicated on Drawings.
- C. Install recessed and surface-mounted luminaires, with plaster frames compatible with ceiling and wall systems employed; secure luminaires mechanically to frames.
- D. Align rows of suspended and surface-mounted luminaires to form straight lines at uniform elevations.
- E. Recessed luminaires shall fit snugly against ceilings to prevent light leakage.
- F. Luminaire installations shall comply with CBC Seismic requirements
- G. Support suspended recessed luminaires in T-bar ceilings as follows: Luminaires shall be attached to ceiling grid to resist a horizontal force equal to weight of luminaires. For heavy-duty grid systems, luminaires weighing less than 56 pounds must also have two 12 gage slack safety wires from diagonal corners to the structure above; luminaires weighing more than 56 pounds shall be independently supported by not less than four taut 12 gage wires capable of supporting four times the load. For intermediate duty grid systems, luminaires shall be independently supported by not less than four taut 12 gage wires capable of supporting four times the load. Luminaire hanger wire ends shall be twisted three tight turns within a 1 ½ -inch distance. Provide positive point of attachment to T-bar ceiling with four, #8 wafer head tek screws (one at each corner), avoiding conflict with operation of the lens. Luminaire installation shall be coordinated with acoustical ceiling installation.
- H. Emergency light luminaires shall be labeled "Emergency Luminaire" with one inch high letters produced with a P-touch or similar labeling system.
- I. Continuous suspended luminaires:
 - 1. Luminaire suspension device shall allow vertical adjustment of luminaire without the use of tools. Cable shall be minimum seven strand twisted stainless steel capable of supporting minimum four times the luminaire weight. For continuous linear suspended luminaires longer than eight feet, provide not less than three suspension points.
 - 2. Top of luminaire shall be suspended as shown on the Drawings, typically 24 inches below the ceiling and a minimum of 18 inches from the ceiling.
 - 3. Luminaire shall utilize factory furnished or approved hardware and canopy for either hard or T-bar ceilings.
 - 4. White Board Lights shall be suspended 24 inches from the wall unless specifically shown otherwise.
- J. Surface mount luminaires shall be attached to structure. Toggle bolts are NOT permitted. Provide backing where required.
- K. Low level exit signs shall be installed with the bottom of the sign not less than six inches, or more than eight inches above the floor level and shall indicate the path of exit travel. For exit and exit-access doors, the sign shall be on the door or adjacent to the door with the closest edge of the sign within four inches of the door frame.

3.2 TESTING

- A. Check and adjust luminaires for required illumination.
- B. Replace defective LED strips and drivers.
- C. Test and adjust lighting control equipment for proper operation.

3.3 SPARE PARTS

- A. Furnish ten percent spare LED strips with a minimum of one spare strip of each type.
- B. Furnish ten percent spare motion detectors of each type with a minimum of one spare detector of each type.
- C. Furnish ten percent spare drivers of each type with a minimum one spare driver of each type.

3.4 HAZARDOUS WASTE DISPOSAL

- A. Hazardous waste disposals shall be handled and disposed of by an approved, licensed contractor.
- B. Products with PCBs are not acceptable. Hazardous waste shall be placed in appropriate containers provided by hazardous waste contractor labeled clearly with:
 - 1. Project Name
 - 2. Quantity of materials
 - 3. Date materials became waste
- C. Store, remove, transport and dispose of hazardous materials in accordance with state and federal regulations.
- D. Provide Owner with copy of manifest and certificate of destruction.

3.5 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

3.6 CLEANUP

- A. Remove rubbish, debris, and waste materials from all areas of work each day.
- B. Clean luminaire surfaces of dirt, cement, plaster and debris. Furnish cleansers compatible with material surfaces being cleaned.

END OF SECTION 26 50 10

CLEARING AND GRUBBING

PART 1 GENERAL

1.01 SUMMARY

- A. Clearing vegetation, debris, trash and other materials within limits indicated.
- B. Grubbing of vegetation within limits indicated.

1.02 RELATED DOCUMENTS

- A. Caltrans Standard Specifications.
 - (1) Section 16, Clearing and Grubbing.
- B. California Building Code: Chapter 33 – Site Work, Demolition and Construction.
- C. Section 01 74 19 - Construction Waste Management and Disposal

PART 2 PRODUCTS

2.01 NOT USED

PART 3 EXECUTION

3.01 PREPARATION

- A. Locate and clearly flag vegetation to remain or to be relocated.

3.02 RESTORATION

- A. Repair or replace vegetation indicated to remain that is damaged by construction operations, as directed by the Owner.
- B. Employ a qualified arborist, licensed in jurisdiction where the Project is located, to submit details of proposed repairs and to repair damage to shrubs.

3.03 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.
- B. Remove trash, debris, logs, concrete, masonry and other waste materials.
- C. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
- D. Completely remove stumps, roots, obstructions, and debris extending to a depth of 18-inches below subgrade.
- E. Use only hand methods for grubbing within drip line of remaining trees.

**SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT
CITY OF BEAUMONT
END OF SECTION 31 11 00**

DOCUMENT 31 23 00

EXCAVATION AND FILL

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Excavation and/or embankment from existing ground to subgrade, including soil sterilant, for roadways, driveways, parking areas, walks, paths, or trails, and any other site improvements called for on the Plans.

1.02 SECTION EXCLUDES

- A. Earthwork related to underground utility installation, see Section 31 23 33 – Trenching and Backfilling.

1.03 RELATED SECTIONS

- A. Section 01 74 19 - Construction Waste Management and Disposal
- B. Section 02 40 00 – Demolition.
- C. Section 31 11 00 – Clearing and Grubbing.
- D. Section 31 23 33 – Trenching and Backfilling.

1.04 RELATED DOCUMENTS

- A. ASTM:
 - (1) D 1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.
 - (2) D 1586, Method for Penetration Tests and Split-Barrel Sampling of Soils.
 - (3) D 2487, Classification of Soils for Engineering Purposes.
 - (4) D 3740, Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
 - (5) D 4318. Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
 - (6) E 329, Specification for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.
 - (7) E 548, Guide for General Criteria Used for Evaluating Laboratory Competence.
- B. California Code of Regulation Title 24, Part 2, California Building Code:
 - (1) Chapter 11B – Accessibility to Public Buildings.
 - (2) Chapter 33 – Site Work, Demolition and Construction.

EXCAVATION AND FILL

- C. Caltrans Standard Specifications:
 - (1) Section 17, Watering.
 - (2) Section 19, Earthwork.
- D. CAL/OSHA, Title 8.

1.05 DEFINITIONS

- A. Borrow: Approved soil material imported from off-site for use as Structural Fill or Backfill.
- B. Excavation: Removal of material encountered above subgrade elevations.
 - (1) Authorized Over-Excavation: Excavation below subgrade elevations or beyond indicated horizontal dimensions as shown on plans.
 - (2) Unauthorized Over-Excavation: Excavation below subgrade elevations or beyond indicated horizontal dimensions. Unauthorized excavation shall be without additional compensation.
- C. Structural Backfill: Soil materials used to fill excavations resulting from removal of existing below grade facilities, including trees. See Section 31 23 33 – Trenching and Backfilling.
- D. Structural Fill: Soil materials used to raise existing grades.
- E. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material $\frac{3}{4}$ -cubic yards or more in volume that, according to ASTM D 1586, exceeds a standard penetration resistance of 100 blows/2-inches.
- F. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man made stationary features constructed above or below grade.
- G. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, base or topsoil materials.
- H. Unsuitable Material: Any soil material that is not suitable for a specific use on the Project.
- I. Utilities: onsite underground pipes, conduits, ducts and cables.

1.06 SUBMITTALS

- A. Follow submittal procedures outlined in Section 01 33 00 – Submittal Procedures.
- B. Submit material certificates signed by the material producer and the Contractor, certifying that that each material item complies with, or exceeds the specified requirements.

1.07 QUALITY ASSURANCE

- A. Conform all work to the appropriate portion(s) of the California Code of Regulations, Title 24 and Caltrans Standard Specifications, Sections 17 and 19.
- B. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D 1557.
- C. Upon completion of the construction work, certify that all compacted fills and foundations are in place at the correct locations, and have been constructed in accordance with sound construction practice. In addition, certify that the materials used are of the types, quality and quantity required by these Technical Specifications. The Contractor shall be responsible for the stability of all fills and backfills constructed by his forces.
- D. Finish soil grade tolerance at completion of grading:
 - (1) Building and paved areas: +0.05
 - (2) Other areas: ± 0.10 feet.
- E. The project geotechnical engineer shall be notified of the construction schedule at least one week prior to the beginning of major site construction, and notified at least 48 hours (working days) before being required to perform field observation and testing.

1.08 PROJECT CONDITIONS

- A. Promptly notify the Owner of surface or subsurface conditions differing from those disclosed in the construction documents. First notify the Owner verbally to permit verification and extent of condition and then in writing. No claim for conditions differing from those anticipated in the Contract Documents will be allowed unless the Contractor has notified the Owner in writing of differing conditions prior to the Contractor starting work on affected items.
- B. Protect open excavations, trenches, and the like with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.
- C. Prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.
- D. Temporarily stockpile fill material in an orderly and safe manner and in a location approved by the Owner.
- E. Provide dust and noise control in conformance with Division 1 General Requirements for Cleaning and Waste Management.
- F. Environmental Requirements: When unfavorable weather conditions necessitate interrupting earthwork operation, areas shall be prepared by compaction of surface and grading to avoid collection of water. Provide adequate temporary drainage to prevent erosion. After interruption, compaction specified in last layer shall be re-established before resuming work.

PART 2 PRODUCTS

2.01 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from on-site excavations.
- B. On-Site Structural Fill and Structural Backfill: Soil or soil-rock mixture from on site excavations, free from organic matter or other deleterious substances. On-site structural fill and backfill shall not contain rocks or rock fragments over 4 inches in greatest dimension and not more than 15 percent shall be over 2-1/2 inches in greatest dimension and with an organic content less than 3.0 percent by weight.
- C. Imported Structural Fill and Structural Backfill: Conform to the requirements of on-site structural fill. Material shall also be a non-expansive and predominantly granular soil or soil-rock mixture with plasticity index of 15 or less in accordance with ASTM D 4318 and an R-Value of 25 or greater.

2.02 GRAVEL BACKFILL

- A. $\frac{3}{4}$ " crushed rock.

PART 3 EXECUTION

3.01 GENERAL

- A. Conform to Section 19, Earthwork, Caltrans Standard Specifications as modified by the Contract Documents.
- B. Placement and compaction of material by flooding, ponding, or jetting will not be permitted.
- C. The use of explosives will not be permitted.

3.02 CONTROL OF WATER AND DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding the site and surrounding area. Provide dewatering equipment necessary to drain and keep excavations and site free from water.
- B. Dewater during backfilling operation so that groundwater is maintained a least one foot below level of compaction effort.
- C. Obtain the Owner's approval for proposed control of water and dewatering methods.
- D. Protect subgrades from softening, undermining, washout and damage by rain or water accumulation.
- E. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations.
- F. Maintain dewatering system in place until dewatering is no longer required.

3.03 WET WEATHER CONDITIONS

EXCAVATION AND FILL

- A. Do not prepare subgrade, place or compact soil materials if above optimum moisture content.

3.04 BRACING AND SHORING

- A. Conform to California and Federal OSHA requirements.
- B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the facility being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.
- C. Be solely responsible for all bracing and shoring and, if requested by the Owner, submit details and calculations to the Owner. The Owner may forward the submittal to the Consulting Engineer and/or the California Division of Industrial Safety for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations related to the proposed facility shall precede a response to the submittal by the Owner.
- D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the position or operation of the facility being constructed or adjacent utilities and facilities.

3.05 EXCAVATION

- A. Excavate earth and rock to lines and grades shown on drawings and to the neat dimensions indicated on the Plans, required herein or as required to satisfactorily compact backfill.
- B. Remove and dispose of large rocks, pieces of concrete and other obstructions encountered during excavation.
- C. Where forming is required, excavate only as much material as necessary to permit placing and removing forms.
- D. Provide supports, shoring and sheet piles required to support the sides of excavations or for protection of adjacent existing improvements.

3.06 REMOVAL OF EXISTING FILLS AND UNSUITABLE MATERIAL

- A. Over-excavate areas of existing fills and other unsuitable material encountered during mass grading.
- B. Compensation for increased removal widths and depths that are not required will not be considered, except when such increase is necessary for protection of life and property as determined by and approved by the Owner.

3.07 GRADING

- A. Uniformly grade the Project to the elevations shown on plans.

- B. Finish ditches, gutters and swales to the sections, lines and grades indicated and to permit proper surface drainage.
- C. Round tops and bottoms of slopes as indicated or to blend with existing contours.

3.08 SUBGRADE PREPARATION

- A. Install underground utilities and service connections prior to final preparation of subgrade and placement of base materials for final surface facilities. Extend services so that final surface facilities are not disturbed when service connections are made.
- B. Prepare subgrades under paved areas, curbs, gutters, walks, structures, other surface facilities and areas to receive structural fill.
- C. Prepare subgrades for paved areas, curbs and gutters by plowing or scarifying surface at least 6 inches below final subgrade elevations and 5-feet beyond edge of pavement. Uniformly moisture condition to obtain optimum moisture contents. Break clods and condition surface by harrowing or dry rolling. Remove boulders, hard ribs and solid rock. Prepare earth uniform for full depth and width of subgrade.
- D. Protect utilities from damage during compaction of subgrades and until placement of final pavements or other surface facilities.

3.09 PLACEMENT OF STRUCTURAL FILL

- A. Place structural fill on prepared subgrade.
- B. Spread structural fill material in uniform lifts not more than 8-inches in uncompacted thickness and compact.
- C. Place structural fill material to suitable elevations above grade to provide for anticipated settlement and shrinkage.
- D. Overbuild fill slopes to obtain required compaction. Remove excess material to lines and grades indicated.
- E. Do not drop fill on structures. Do not backfill around, against or upon concrete or masonry structures until structure has attained sufficient strength to withstand loads imposed and the horizontal structural system had been installed.
- F. Backfill in uniform lifts not exceeding 8 inches in uncompacted thickness. Each lift should be brought to a uniform moisture content of at least 1 percent above optimum prior to compacting by either spraying the soil with water if it is too dry or aerating the material if it is too wet.

3.10 COMPACTION AND TESTING

- A. Do not compact by ponding, flooding or jetting.
- B. Compact soils at optimum water content. Aerate material if it is too wet. Add water to material if it is too dry. Thoroughly mix lifts before compaction to ensure uniform moisture distribution.

- C. Perform compaction using rollers, pneumatic or vibratory compactors.
- D. Compaction requirements:
 - (1) Compact structural fills less than 5-feet thick to 90 percent compaction.
 - (2) Compact structural fill 5-feet thick or greater to 95 percent compaction.
 - (3) Compact the upper 6 inches of subgrade soils beneath pavements, curbs and gutters to 95 percent compaction. Extend compaction 5-feet beyond pavement.
 - (4) Compact the upper 6-inches of subgrade soils to the following percentage of compaction: 95 percent under walks and pavements; 93 percent for foundations; and 90 percent for areas to receive structural fill."

3.11 DISPOSAL

- A. Lawfully dispose of all unsuitable and excess or surplus material off-site at no cost

END OF SECTION 31 23 00

DOCUMENT 31 23 00

TRENCHING AND BACKFILLING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavation, bedding, and backfill for underground storm drain, sanitary sewer, and water piping and associated structures.

1.02 SECTION EXCLUDES

- A. Drainage fill material and placement around subdrains.
- B. Trenching and backfill for other utilities such as underground HVAC piping, electrical conduit, telephone conduit, gas piping, cable TV conduit, etc.

1.03 RELATED SECTIONS

- A. Section 31 23 00 – Excavation and Fill.
- B. Section 33 40 00 – Storm Drainage Utilities.

1.04 RELATED DOCUMENTS

- A. ASTM:
 - (1) C 33, Specification for Concrete Aggregates.
 - (2) C 150, Specification for Portland Cement.
 - (3) C 260, Specification for Air-Entraining Admixtures for Concrete.
 - (4) C 618, Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
 - (5) D 1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.
 - (6) D 2321, Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.
 - (7) D 2487, Classification of Soils for Engineering Purposes.
 - (8) D 3740, Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
 - (9) E 329, Specification for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.
 - (10) E 548, Guide for General Criteria Used for Evaluating Laboratory Competence.

- B. California Code of Regulation Title 24, Part 2, California Building Code:
 - (1) Chapter 11B – Accessibility to Public Buildings.
 - (2) Chapter 33 – Site Work, Demolition and Construction.
- C. Caltrans Standard Specifications:
 - (1) Section 19, Earthwork.
 - (2) Section 26, Aggregate Bases.
 - (3) Section 68, Subsurface Drains.
 - (4) Section 88, Engineering Fabrics.
- D. CAL/OSHA, Title 8.

1.05 DEFINITIONS

- A. AC: Asphalt Concrete.
- B. ASTM: American Society for Testing and Materials.
- C. Bedding: Material from bottom of trench to bottom of pipe.
- D. CDF: Controlled Density Fill.
- E. DIP: Ductile Iron Pipe.
- F. Initial Backfill: Material from bottom of pipe to 12-inches above top of pipe.
- G. PCC: Portland Cement Concrete.
- H. RCP: Reinforced Concrete Pipe.
- I. Springline of Pipe: Imaginary line on surface of pipe at a vertical distance of $\frac{1}{2}$ the outside diameter measured from the top or bottom of the pipe.
- J. Subsequent Backfill: Material from 12-inches above top of pipe to subgrade of surface material or subgrade of surface facility or to finish grade.
- K. Trench Excavation: Removal of material encountered above subgrade elevations and within horizontal trench dimensions.
 - (1) Authorized Trench Over-Excavation: Excavation below trench subgrade elevations or beyond indicated horizontal trench dimensions as shown on plans.
 - (2) Unauthorized Trench Over-Excavation: Excavation below trench subgrade elevations or beyond indicated horizontal trench dimensions. Unauthorized excavation shall be without additional compensation.
- L. Utility Structures:

- (1) Storm drainage manholes, catch basins, drop inlets, curb inlets, vaults, etc.
- (2) Sanitary sewer manholes, vaults, etc.
- (3) Water vaults, etc.

1.06 SUBMITTALS

- A. Follow submittal procedures outlined in Section 01 33 00 – Submittal Procedures.
- B. Product Data:
 - (1) Grading and quality characteristics showing compliance with requirements for the Work.
 - (2) Certify that material meets requirements of the Project.
- C. Samples:
 - (1) If required, provide 40-pound samples of all imported trench bedding and backfill material sealed in airtight containers, tagged with source locations and suppliers of each proposed material.
 - (2) Provide materials from same source throughout work. Change of source requires approval of the Owner.

1.07 QUALITY ASSURANCE

- A. Conform all work to the appropriate portion(s) of the Caltrans Standard Specifications, Section 19.
- B. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D 1557.
- C. Conform work to the requirements of the California Building Code.
 - (1) Section 1806A.11 – Pipe and Trenches.

1.08 PROJECT CONDITIONS

- A. Promptly notify the Owner of surface or subsurface conditions differing from those disclosed in the construction documents. First notify the Owner verbally to permit verification and extent of condition and then in writing. No claim for conditions differing from those anticipated in the Contract Documents will be allowed unless Contractor has notified the Owner in writing of differing conditions prior to contractor starting work on affected items.
- B. Protect open, trenches, and utility structure excavations with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.

- C. Stockpile on-site and imported backfill material temporarily in an orderly and safe manner.
- D. Provide dust and noise control in conformance with Section 02000, Supplemental General Requirements for Civil Improvements. Also see Division 1 General Requirements for Cleaning and Waste Management.

PART 2 PRODUCTS

2.01 PIPE BEDDING AND INITIAL BACKFILL

- A. ASTM D 2321, Class IA, IB or II.
 - (1) Clean and free of clay, silt or organic matter.
- B. Permeable Material: Conform to Section 68-1.025 of Caltrans Standard Specifications, Class 2 permeable.
- C. Class 2 Aggregate Base: Conform to Section 26 of Caltrans Standard Specifications, $\frac{3}{4}$ -inch maximum. Material shall also be non-expansive and predominantly granular soil or soil-rock mixture "(percent of passing #200: 50 maximum, 5 minimum)" with plasticity index of 15 or less.
- D. Sand: Conform to Section 19-3.025B of Caltrans Standard Specifications.

2.02 SUBSEQUENT BACKFILL

- A. Conform to on-site or imported structural backfill in Section 31 23 00 – Excavation and Fill.

2.03 CONTROLLED DENSITY FILL (CDF) (IN TRENCHES)

- A. Provide non-structural CDF, from bottom of trench to finish subgrade of subbase or base material, that can be excavated by hand and produce unconfined compressive 28-day strengths from 50-psi to a maximum of 150-psi. Provide aggregate no larger than $\frac{3}{8}$ -inch top size. The $\frac{3}{8}$ -inch aggregate shall not comprise more than 30% of the total aggregate content.
- B. Cement: Conform to the standards as set forth in ASTM C-150, Type II Cement.
- C. Fly Ash: Conform to the standards as set forth in ASTM C-618, for Class F pozzolan. Do not inhibit the entrainment of air with the fly ash.
- D. Air Entraining Agent: Conform to the standards as set forth in ASTM C-260.
- E. Aggregates need not meet the standards as set forth in ASTM C-33. Any aggregate, producing performances characteristics described herein will be accepted for consideration. The amount of material passing a #200 sieve shall not exceed 12% and no plastic fines shall be present.
- F. Provide CDF that is a mixture of cement, Class F pozzolan, aggregate, air entraining agent and water. CDF shall be batched by a ready mixed concrete plant and delivered to the job site by means of transit mixing trucks.

- G. The Contractor shall determine the actual mix proportions of the controlled density fill to meet job site conditions, minimum and maximum strengths, and unit weight. Entrained air content shall be a minimum of 4.0%. The actual entrained air content shall be established for each job with the materials and aggregates to be used to meet the placing and unit weight requirements. Entrained air content may be as high as 20% for fluidity requirements.

2.04 CONCRETE STRUCTURE BEDDING AND BACKFILL

- A. Precast Structures: Same materials to the same heights as specified for pipe bedding and backfill.
- B. Poured-in-Place Structures:
- (1) Bedding: In general, bedding is not required, pour bases against undisturbed native earth in cut areas and against engineered fill compacted to 90% relative compaction in embankment areas.
 - (2) Side Backfill: On-site or imported structural fill meeting the requirements given in Section 31 23 00 – Excavation and Fill.

2.05 FILTER FABRIC

- A. Filter Fabric:
- (1) Filter Fabric: Section 88-1.03 of Caltrans Standard Specifications.
 - (2) Mirafi 140N (Mirafi Inc., Charlotte, NC) (Tel. 800-438-1855) or equal.

PART 3 EXECUTION

3.01 TRENCHING AND EXCAVATION

- A. Existing PCC or AC Areas: Cut PCC or AC to full depth at a minimum distance of 12-inches beyond the edge of the trench.
- B. Excavate by hand or machine. For gravity systems begin excavation at the outlet end and proceed upstream. Excavate sides of the trench parallel and equal distant from the centerline of the pipe. Hand trim excavation. Remove loose matter.
- C. Excavation Depth for Bedding: Minimum of 4-inches below bottom, except that bedding is not required for nominal pipe diameters of 2-inches or less.
- D. Excavation Width at Springline of Pipe:
- (1) Up to a nominal pipe diameter of 24-inches: Minimum of twice the outside pipe diameter.
 - (2) Nominal pipe diameter of 30-inches through 36-inches: Minimum of the outside pipe diameter plus 2-feet.
 - (3) Nominal pipe diameter of 42-inches through 60-inches: Minimum of the outside pipe diameter plus 3-feet.

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- E. Over-Excavations: Backfill trenches that have been excavated below bedding design subgrade, with approved bedding material.
- F. Comply with the Owner's limitations on the amount of trench that is opened or partially opened at any one time. Do not leave trenches open overnight without the approval of the Owner.
- G. Where forming is required, excavate only as much material as necessary to permit placing and removal of forms.
- H. Grade bottom of trench to provide uniform thickness of bedding material and to provide uniform bearing and support for pipe along entire length. Remove stones to avoid point bearing.

3.02 CONTROL OF WATER AND DEWATERING

- A. Be solely responsible for dewatering trenches and excavations and subsequent control of ground and surface water. Provide and maintain such pumps or other equipment as may be necessary to control ground water.
- B. Dewater during backfilling operation so that groundwater is maintained a least one foot below level of compaction effort.
- C. Reroute surface water runoff away from open trenches and excavations. Do not allow water to accumulate in trenches and excavations.
- D. Maintain dewatering system in place until dewatering is no longer required.

3.03 BRACING AND SHORING

- A. Conform to California and Federal OSHA requirements.
- B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the pipes and appurtenances being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.
- C. Be solely responsible for all bracing and shoring and, if requested by the Owner, submit details and calculations to the Owner. The Owner may forward the submittal to the Consulting Engineer and/or the California Division of Industrial Safety for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations in trench section or around structures shall precede a response to the submittal by the Owner.
- D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the line, grade, or backfill compaction or operation of the utility being installed or adjacent utilities and facilities.

3.04 PIPE BEDDING

- A. Accurately shape bedding material to the line and grade called for on the Plans. Carefully place and compact bedding material to the elevation of the bottom of the pipe in layers not exceeding 8-inches in loose thickness. Compact bedding material at optimum water content to 95% relative compaction unless specified otherwise on the. Compact by pneumatic tampers or other mechanical means. Jetting or ponding of bedding material will not be permitted.

3.05 BACKFILLING

- A. Bring initial backfill up simultaneously on both sides of the pipe, so as to prevent any displacement of the pipe from its true alignment. Carefully place and compact initial backfill material to an elevation of 12-inches above the top of the pipe in layers not exceeding 8-inches in loose thickness. Compact bedding material at optimum water content to 90% relative compaction unless specified otherwise on the. Compact by pneumatic tampers or other mechanical means. Jetting or ponding of initial backfill material will not be permitted.
- B. Bring subsequent backfill to subgrade or finish grade as indicated. Carefully place and compact subsequent backfill material to the proper elevation in layers not exceeding 8-inches in loose thickness. Compact bedding material at optimum water content to 90% relative compaction, unless specified otherwise on the Plans. Compact by pneumatic tampers or other mechanical means. Jetting or ponding of subsequent backfill material will not be permitted.
- C. Do not use compaction equipment or methods that produce horizontal or vertical earth pressures that may cause excessive pipe displacement or damage the pipe.

3.06 CLEANUP

- A. Upon completion of utility earthwork all lines, manholes catch basins, inlets, water meter boxes and other structures shall be thoroughly cleaned of dirt, rubbish, debris and obstructions of any kind to the satisfaction of the Owner.
- B. See Section 01 74 00 – Refer to Division 1 General Requirements for Cleaning and Waste Management for further cleanup requirements.

END OF SECTION 02 40 00

SECTION 321444

DECOMPOSED GRANITE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Standard and Special Provisions and Technical Specification Sections, apply to this Section.
 - 1. Section 32 13 13: "Concrete for Exterior Improvements" for base courses
 - 2. Section 32 23 00: "Excavation and Fill"

1.2 SUMMARY

- A. This Section includes all services, labor, materials, transportation, and equipment necessary to perform the Work indicated on the Plans and Specifications, as required to properly construct an ADA accessible, decomposed granite paving on a prepared subgrade, and includes the following:
 - 1. Decomposed Granite Pathways

1.3 REFERENCES

- A. ASTM C136 – Sieve Analysis of Fine and Coarse Aggregates.

1.4 QUALITY ASSURANCE

- A. Decomposed granite paving shall meet U.S. Department of Transportation/Federal Highway Administration Standard rating for surface firmness of 0.3 inches or less and surface stability of 0.5 inches or less as measured by a rotational penetrometer.

1.5 SUBMITTALS

- A. One-half cubic foot sample of each material for approval by Landscape Architect. prior to delivery of material to site.
- B. Product date for each type of product indicated
- C. Mock-up. 4'x4'x2-inches deep mock-up with 2x4 wood edging of decomposed granite paving. Mock-up shall be for approval by Landscape Architect prior to pavement of decomposed granite. Approved sample will remain on site for comparison with proposed work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Gold Path Fines ¼-inch to dust granite; free of shale, clay, friable materials and debris; Material must be from a quarry in California. Material must meet the sieve test below.

Sieve Size	Sieve No.	% Passing
9.5 mm	3/8 inch	100.0%
4.76 mm	#4	93.9%
2.368 mm	#8	66.5%
1.190 mm	#16	41.0%
0.595 mm	#30	23.7%
0.297 mm	#50	11.8%
0.149 mm	#100	4.4%
0.074 mm	#200	1.5%

- B. Normal-Weight Aggregates: ASTM C 33, Class 4M coarse aggregate, uniformly graded. Provide aggregates from a single source.
- C. Water: ASTM C 94/C 94M.
- D. Rotational Penetrometer: available from Beneficial Designs, Inc., Minden Nevada, (775)783-8822.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Verify 90 percent relative compacted subgrade is dry and ready to receive work of this Section.
- B. Verify gradients and elevations of base are correct.

3.2 DECOMPOSED GRANITE PLACEMENT

- A. Spread material over prepared base to a total compacted thickness as shown on the Plans.
- B. Scarify surface prior to placement of layers to provide a bond between the layers.
- C. Place decomposed granite in two layers of equal depth and compact by poser rollers to 90 percent optimum moisture content in accordance with ASTM D1557.

- D. Level surfaces to elevation and gradients as indicated.

3.3 TESTING AND PROTECTION

- A. Test installed decomposed granite paving with a rotational penetrometer to meet required USDOT/FWHA standards. Installations failing test shall be replaced and reinstalled until satisfying standard.
- B. Protect installed site furniture, if required, during the construction period to prevent damage and wear.

END OF SECTION 32 14 44

DOCUMENT 32 17 26

TACTILE WARNING SURFACING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section Includes:
 - (1) Cast-in-place detectable warning tiles.
 - (2) Surface-applied detectable warning tiles.
 - (3) Detectable warning mats.
 - (4) Detectable warning unit pavers.
- B. Related Requirements:
 - (1) Section 321313 "Concrete Paving" for concrete walkways serving as substrates for tactile warning surfacing.
 - (2) Section 321400 "Unit Paving" for unit paving installations incorporating detectable warning unit pavers specified in this Section.

1.03 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Sustainable Design Submittals:
- C. Samples for Initial Selection: For each type of exposed finish requiring color selection.
- D. Samples for Verification: For each type of tactile warning surface, in manufacturer's standard sizes unless otherwise indicated, showing edge condition, truncated-dome pattern, texture, color, and cross section; with fasteners and anchors.

1.04 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For tactile warning surfacing, to include in maintenance manuals.

1.05 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - (1) Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.06 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at [Project site] <Insert location>.

1.07 PROJECT CONDITIONS

- A. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.
- B. Weather Limitations for Adhesive Application:
 - (1) Apply adhesive only when ambient temperature is above 50 deg F and when temperature has not been below 35 deg F for 12 hours immediately before application. Do not apply when substrate is wet or contains excess moisture.
- C. Weather Limitations for Mortar and Grout:
 - (1) Cold-Weather Requirements: Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
 - (2) Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602. Provide artificial shade and windbreaks, and use cooled materials as required. Do not apply mortar to substrates with temperatures of 100 deg F and higher.
 - (a) When ambient temperature exceeds 100 deg F, or when wind velocity exceeds 8 mph and ambient temperature exceeds 90 deg F, set unit pavers within 1 minute of spreading setting-bed mortar.

1.08 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of tactile warning surfaces that fail in materials or workmanship within specified warranty period.
 - (1) Failures include, but are not limited to, the following:
 - (a) Deterioration of finishes beyond normal weathering and wear.

(b) Separation or delamination of materials and components.

(2) Warranty Period: Five years minimum

PART 2 PRODUCTS

2.01 TACTILE WARNING SURFACING, GENERAL

- A. Detectable warning surfaces shall comply with CBC Section 11B-705.1.
- B. Detectable warning surfaces at transit boarding platform edges, bus stops, hazardous vehicular areas, reflecting pools, and track crossings shall be yellow and approximate FS 33538 of Federal Standard 595C. Detectable warning surfaces at other locations shall be either the aforementioned yellow or a color providing a 70 percent minimum visual contrast with that of adjacent walking surfaces. The material used to provide visual contrast shall be an integral part of the surface. CBC Section 11B-705.1.1.3
- C. Detectable warning surfaces shall differ from adjoining surfaces in resiliency or sound-on-cane contact. Such constraint shall not be required for detectable warning surfaces at curb ramps, islands, or cut-through medians. CBC Section 11B-705.1.1.4
- D. Accessibility Requirements: Comply with applicable provisions in the 2016 California Building Code for tactile warning surfaces.
 - (1) For tactile warning surfaces composed of multiple units, provide units that when installed provide consistent side-to-side and end-to-end dome spacing that complies with requirements.
- E. Source Limitations: Obtain each type of tactile warning surfacing, joint material, setting material, anchor, and fastener from single source with resources to provide materials and products of consistent quality in appearance and physical properties.

2.02 DETECTABLE WARNING TILES

- A. Cast-in-Place Detectable Warning Tiles: Accessible truncated-dome detectable warning tiles with replaceable surface configured for setting flush in new concrete walkway surfaces, with slip-resistant surface treatment on domes and field of tile.
 - (1) Material: Per product as specified on plans.
 - (2) Color: As specified on plans.
 - (3) Shapes and Sizes:
 - (a) Rectangular panel, 36 by 48 inches 36 by 60 inches
 - (4) Dome Spacing and Configuration: Spacing per California Building Code Section 11B-705.

- (5) Mounting:
 - (a) Permanently embedded detectable warning tile wet-set into freshly poured concrete.
 - (b) Detectable warning tile set into formed recess in concrete and adhered with mortar or adhesive.
 - (c) Replaceable detectable warning tile wet-set into freshly poured concrete and surface-fastened to permanently embedded anchors.

- B. Surface-Applied Detectable Warning Tiles: Accessible truncated-dome detectable warning concrete tiles configured for surface application on existing concrete walkway surfaces, with slip-resistant surface treatment on domes, field of tile, and beveled outside edges.
 - (1) Material: Per product as specified on plans.
 - (2) Color: As specified on plans.
 - (3) Shapes and Sizes:
 - (a) Rectangular panel, 36 by 48 inches
 - (4) Dome Spacing and Configuration: California Building Code Section 11B-705.
 - (5) Mounting: Adhered and fastened to existing concrete walkway.

- C. Cast-in-Place Detectable Warning Metal Tiles: Accessible truncated-dome detectable warning metal tiles with replaceable surface configured for setting flush in new concrete walkway surfaces, with slip-resistant surface treatment on domes and field of tile.
 - (1) Material:
 - (a) Stainless-Steel Plate and Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304 or Type 316L.
 - 1) Finish and Color:
 - a) Manufacturer's standard powder coat, as specified on plans.
 - b) Mill finish.
 - (b) Cast Iron: Gray iron, ASTM A 48/A 48M, CL 35.
 - (2) Shapes and Sizes:
 - (a) Rectangular panel, 36 by 48 inches

- (3) Dome Spacing and Configuration: California Building Code Section 11B-705.
- (4) Mounting:
 - (a) Permanently embedded detectable warning tile wet-set into freshly poured concrete.
 - (b) Permanently embedded detectable warning tile set into formed recess in concrete and adhered with mortar or adhesive.
 - (c) Replaceable embedded detectable warning tile fastened to permanently installed anchors.
- D. Surface-Applied Detectable Warning Metal Tiles: Accessible truncated-dome detectable warning metal tiles or plates configured for fastening to surface of existing concrete walkway surfaces, with slip-resistant surface treatment on domes, field of tile, and beveled outside edges.
 - (1) Material: Stainless-Steel Plate and Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304 or Type 316L.
 - (2) Finish and Color:
 - (a) Manufacturer's standard powder coat, As specified on plans.
 - (b) Mill finish.
 - (3) Shapes and Sizes:
 - (a) Rectangular panel, 36 by 48 inches
 - (4) Dome Spacing and Configuration: California Building Code Section 11B-705.
 - (5) Mounting:
 - (a) Replaceable surface-applied detectable warning tile fastened with permanently installed anchors to existing concrete walkway.
 - (b) Permanently fixed detectable warning tile adhered and fastened to existing concrete walkway.

2.03 DETECTABLE WARNING MATS

- A. Surface-Applied Detectable Warning Mats: Accessible truncated-dome detectable warning resilient mats, UV resistant, manufactured for adhering to existing concrete walkway surfaces, with slip-resistant surface treatment on domes, field of mat, and beveled outside edges.
 - (1) Material: Modified rubber compound, UV resistant.

- (2) Color: Per Plan
- (3) Shapes and Sizes:
 - (a) Rectangular panel, 24 by 48 inches
- (4) Dome Spacing and Configuration: California Building Code Section 11B-705.
- (5) Mounting: Adhered to pavement surface with adhesive and fastened with fasteners.

2.04 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of tactile warning surfaces, noncorrosive and compatible with each material joined, and complying with the following:
 - (1) Furnish Type 304 or Type 316 stainless-steel fasteners for exterior use.
 - (2) Fastener Heads: For nonstructural connections, use flathead or oval countersunk screws and bolts with tamper-resistant heads, colored to match tile.
- B. Adhesive: As recommended by manufacturer for adhering tactile warning surfacing unit to pavement.
- C. Sealant: As recommended by manufacturer for sealing perimeter of tactile warning surfacing unit.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that pavement is in suitable condition to begin installation according to manufacturer's written instructions. Verify that installation of tactile warning surfacing will comply with accessibility requirements upon completion.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION OF TACTILE WARNING SURFACING

- A. General: Prepare substrate and install tactile warning surfacing according to manufacturer's written instructions unless otherwise indicated.
- B. Place tactile warning surfacing units in dimensions and orientation indicated. Comply with location requirements of AASHTO MP 12.

3.03 INSTALLATION OF DETECTABLE WARNING TILES

- A. Cast-in-Place Detectable Warning Tiles:

- (1) Concrete Paving Installation: Comply with installation requirements in Section 321313 "Concrete Paving." Mix, place, and finish concrete to conditions complying with detectable warning tile manufacturer's written requirements for satisfactory embedment of tile.
- (2) Set each detectable warning tile accurately and firmly in place and completely seat tile back and embedments in wet concrete by tamping or vibrating. If necessary, temporarily apply weight to tiles to ensure full contact with concrete.
- (3) Set surface of tile flush with surrounding concrete and adjacent tiles, with variations between tiles and between concrete and tiles not exceeding plus or minus 1/8 inch from flush.
- (4) Protect exposed surfaces of installed tiles from contact with wet concrete. Complete finishing of concrete paving surrounding tiles. Remove concrete from tile surfaces.
- (5) Clean tiles using methods recommended in writing by manufacturer.

B. Removable Cast-in-Place Detectable Warning Tiles:

- (1) Concrete Paving Installation: Comply with installation requirements in Section 321313 "Concrete Paving." Mix, place, and finish concrete to conditions complying with detectable warning tile manufacturer's written requirements for satisfactory embedment of removable tile.
- (2) Set each detectable warning tile accurately and firmly in place with embedding anchors and fasteners attached, and firmly seat tile back in wet concrete by tamping or vibrating. If necessary, temporarily apply weight to tiles to ensure full contact with concrete.
- (3) Set surface of tile flush with surrounding concrete and adjacent tiles, with variations between tiles and between concrete and tiles not exceeding plus or minus 1/8 inch from flush.
- (4) Protect exposed surfaces of installed tiles from contact with wet concrete. Complete finishing of concrete paving surrounding tiles. Remove concrete from tile surfaces.
- (5) Clean tiles using methods recommended in writing by manufacturer.

C. Surface-Applied Detectable Warning Tiles:

- (1) Lay out detectable warning tiles as indicated and mark concrete pavement.
- (2) Prepare existing paving surface by grinding and cleaning as recommended by manufacturer.

- (a) Cut perimeter kerf in existing concrete pavement to receive metal tile flange.
- (3) Apply adhesive to back of tiles in amounts and pattern recommended by manufacturer, and set tiles in place. Firmly seat tiles in adhesive bed, eliminating air pockets and establishing full adhesion to pavement. If necessary, temporarily apply weight to tiles to ensure full contact with concrete.
- (4) Install anchor devices through face of tiles and into pavement using anchors located as recommended by manufacturer. Set heads of anchors flush with top surface of mat.
- (5) Mask perimeter of tiles and adjacent concrete, and apply sealant in continuous bead around perimeter of tile installation.
- (6) Remove masking, adhesive, excess sealant, and soil from exposed surfaces of detectable warning tiles and surrounding concrete pavement using cleaning agents recommended in writing by manufacturer.
- (7) Protect installed tiles from traffic until adhesive has set.

3.04 INSTALLATION OF DETECTABLE WARNING MATS

- A. Lay out detectable warning mats as indicated and mark concrete pavement at edges of mats.
- B. Lay out detectable warning mats as indicated and mark concrete pavement at edges of mats.
- C. Apply adhesive to back of mat in amounts and pattern recommended by manufacturer, and set mat in place. Firmly seat mat in adhesive bed, eliminating air pockets and establishing full adhesion to pavement. If necessary, temporarily apply weight to mat to ensure full contact with adhesive.
- D. Install anchor devices through face of mat and into pavement using anchors located as recommended by manufacturer. Set heads of anchors flush with mat surface.
- E. Mask mat perimeter and adjacent concrete, and apply sealant in continuous bead around perimeter of mat.
- F. Remove masking, adhesive, excess sealant, and soil from exposed surfaces of detectable warning mat and surrounding concrete pavement using cleaning agents recommended in writing by manufacturer.
- G. Protect installed mat from traffic until adhesive has set.

3.05 INSTALLATION OF DETECTABLE WARNING UNIT PAVERS

- A. Unit Paver Installation, General:

- (1) Setting-Bed and Unit Paver Installation: Comply with installation requirements in Section 321400 "Unit Paving."
- (2) Mix unit pavers from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures.
- (3) Cut unit pavers with motor-driven masonry saw equipment to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible.
- (4) Tolerances: Do not exceed 1/4 inch in 10 feet) from level, or indicated slope, for finished surface of paving.

B. Aggregate Setting-Bed Applications:

- (1) Place aggregate base, compact by tamping with plate vibrator, and screed to depth indicated.
- (2) Place leveling course and screed to a thickness of 1 to 1-1/2 inches, taking care that moisture content remains constant and density is loose and uniform until unit pavers are set and compacted.
- (3) Treat leveling course with herbicide to inhibit growth of grass and weeds.
- (4) Set unit pavers with a minimum joint width of 1/16 inch and a maximum of 1/8 inch, being careful not to disturb leveling base. If pavers have spacer bars, place pavers hand tight against spacer bars. Use string lines to keep straight lines.
- (5) Vibrate pavers into leveling course with a low-amplitude plate vibrator capable of a 3500- to 5000-lbf compaction force at 80 to 90 Hz.
- (6) Spread dry sand and fill joints immediately after vibrating pavers into leveling course. Vibrate pavers and add sand until joints are completely filled, then remove excess sand. Leave a slight surplus of sand on the surface for joint filling.

C. Mortar Setting-Bed Applications:

- (1) Saturate concrete subbase with clean water several hours before placing setting bed. Remove surface water about one hour before placing setting bed.
- (2) Apply mortar-bed bond coat over surface of concrete subbase about 15 minutes before placing mortar bed. Limit area of bond coat to avoid its drying out before placing setting bed. Do not exceed 1/16-inch thickness for bond coat.
- (3) Apply mortar bed over bond coat; spread and screed mortar bed to uniform thickness at subgrade elevations required for accurate setting of pavers to finished grades indicated.

- (4) Mix and place only that amount of mortar bed that can be covered with pavers before initial set. Before placing pavers, cut back, bevel edge, and remove and discard setting-bed material that has reached initial set.
- (5) Place pavers before initial set of cement occurs. Immediately before placing pavers on mortar bed, apply uniform 1/16-inch thick bond coat to mortar bed or to back of each paver with a flat trowel.
- (6) Tamp or beat pavers with a wooden block or rubber mallet to obtain full contact with setting bed and to bring finished surfaces within indicated tolerances. Set each paver in a single operation before initial set of mortar; do not return to areas already set or disturb pavers for purposes of realigning finished surfaces or adjusting joints.
- (7) Spaced Joint Widths: Provide 3/8-inch nominal joint width with variations not exceeding plus or minus 1/8 inch.
- (8) Grouted Joints: Grout paver joints complying with ANSI A108.10. Grout joints as soon as possible after initial set of setting bed.
 - (a) Force grout into joints, taking care not to smear grout on adjoining surfaces.
 - (b) Tool exposed joints slightly concave when thumbprint hard.
 - (c) Cure grout by maintaining in a damp condition for seven days unless otherwise recommended by grout or liquid-latex manufacturer.
- (9) Remove excess grout from exposed paver surfaces; wash and scrub clean.
- (10) Protect installation from traffic until grout has set.

3.06 CLEANING AND PROTECTION

- A. Remove and replace tactile warning surfacing that is broken or damaged or does not comply with requirements in this Section. Remove in complete sections from joint to joint unless otherwise approved by Architect. Replace using tactile warning surfacing installation methods acceptable to Architect.
- B. Protect tactile warning surfacing from damage and maintain free of stains, discoloration, dirt, and other foreign material.

END OF SECTION 32 17 26

SECTION 32 31 19

DECORATIVE METAL FENCES AND GATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Guardrails

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For guardrails.

1. Include plans, elevations, sections, post spacing, and mounting attachment details.

C. Samples: For each fence material and for each color specified.

1. Provide Samples 12 inches in length for linear materials.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Include 10-foot length of fence complying with requirements.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 Product Information

A. Guardrail: See plans for product information.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, construction layout, and other conditions affecting performance of the Work.
- B. Do not begin installation before final grading is completed unless otherwise permitted by Landscape Architect.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Stake locations of fence lines, gates, and terminal posts. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 DECORATIVE FENCE INSTALLATION

- A. Install fences according to manufacturer's written instructions.

END OF SECTION 32 31 19

SECTION 32 33 00

SITE FURNISHINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Picnic Tables
2. Benches
3. Timber Benches
4. Swing Benches
5. Trash and Recycling Container
6. Outdoor Shower
7. Basketball Post, Backboard, and Net
8. Pickleball Net Posts and Ground Sockets/Cover Plate
9. Shade Sails

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Submit shop drawings to the City for approval before installing any manufactured items. Plans shall include dimensions, color, finish, structural design (custom items), connection details, and installation instructions.
- C. Submit catalog cuts, samples and manufacturers literature of all manufactured items in this section to the City for approval before installation.
- D. Provide color samples, brushouts, or charts for all items. Final colors to be selected by City and a sample submitted for approval.
- E. Product Schedule: For site furnishings. Use same designations indicated on Drawings.
- F. Material Certificates: For site furnishings, signed by manufacturers.

1.3 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For site furnishings, signed by manufacturers.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For site furnishings to include in maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

PART 2 - PRODUCTS

2.1 MANUFACTURED ITEMS

- A. Picnic Tables: See Plans
- B. Benches: See Plans
- C. Timber Benches: See Plans
- D. Swing Benches: See Plans
- E. Trash and Recycling Container: See Plans
- F. Basketball Post, Backboard, and Net: See Plans
- G. Pickleball Net Posts and Ground Sockets/Cover Plate: See Plans
- H. Shade Sails: See Plans

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.
- B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.
- C. Install site furnishings level, plumb, true, and securely anchored at locations indicated on Drawings.
- D. Post Setting: Set cast-in support posts in concrete footing with smooth top, shaped to shed water. Protect portion of posts above footing from concrete splatter. Verify that

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posts are set plumb or at correct angle and are aligned and at correct height and spacing. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.

END OF SECTION 32 33 00

SECTION 32 84 00
LANDSCAPE IRRIGATION

PART 1 - GENERAL

1.1 SUMMARY

- A. It is the intent of the specifications and drawings that the finished system is complete in every respect and shall be ready for operation satisfactory to the City.
- B. The work shall include all materials, labor, services, transportation, and equipment necessary to perform the work as indicated on the drawings, in these specifications, and as necessary to complete the contract.

1.2 CONSTRUCTION DRAWINGS

- A. All offsets, fittings, sleeves, etc. which may be required are not shown on the drawings. The Contractor shall carefully investigate the structural and finished conditions affecting the work and plan the work accordingly, furnishing such fittings, etc. as may be required to meet such conditions. The work shall be installed in such a manner as to avoid conflicts between irrigation systems, planting, and architectural features.
- B. All work called for on the drawings by notes or details shall be furnished and installed whether or not specifically mentioned in the specifications. When an item is shown on the plans but not shown on the specifications or vice versa, it shall be deemed to be as shown on both. The Landscape Architect shall have final authority for clarification.
- C. The Contractor shall not willfully install the irrigation system as shown on the drawings when it is obvious in the field that obstructions, grade differences or discrepancies in area dimensions exist that might not have been considered in engineering. Such obstructions or differences should be brought to the attention of the Landscape Architect as soon as detected. In the event this notification is not performed, the Irrigation Contractor shall assume full responsibility for any revision necessary.

1.3 QUALITY ASSURANCE

- A. Provide at least one English speaking person who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of materials being installed and the manufacturer's recommended methods of installation and who shall direct all work performed under this section.
- B. Manufacturer's directions and detailed drawings shall be followed in all cases where the manufacturer of articles used in this contract furnish directions covering points not shown in the drawings and specifications.

- C. All local, municipal, and state laws, rules and regulations governing or relating to any portion of this work are hereby incorporated into and made a part of these specifications, and their provisions shall be carried out by the Contractor. Anything contained in these specifications shall not be construed to conflict with any of the above rules and regulations of the same. However, when these specifications and drawings call for or describe materials, workmanship, or construction of a better quality, higher standard, or larger size than is required by the above rules and regulations, the provisions of these specifications and drawings shall take precedence.
- D. All materials supplied for this project shall be new and free from any defects. All defective materials shall be replaced immediately at no additional cost to City.
- E. Secure the required licenses and permits including payments of charges and fees, give required notices to public authorities and verify permits secured or arrangements made by others affecting the work of this section.

1.4 SUBMITTALS

- A. Water Pressure Test
 - 1. After award of contract and before any irrigation system materials are ordered from suppliers or delivered to the job site, submit to the City a written verification of the existing water pressure on the project at each of the points of connection shown.
 - 2. The water pressure test shall be performed to measure the dynamic water pressure at the point of connection at the maximum flow rate of the proposed irrigation system as shown on the point of connection note. Dynamic water pressure is when water is flowing through the point of connection. Static water pressure readings when water is not flowing, are not acceptable.
 - 3. Written dynamic water pressure test confirmation shall be made on the contractor's letterhead and include the flow rate during the test, the recorded water pressure, the date of the test and the time of the test.
- B. Material List:
 - 1. After award of contract and before any irrigation system materials are ordered from suppliers or delivered to the job site, submit to the City a complete list of all irrigation system materials, or processes proposed to be furnished and installed as part of this contract.
 - 2. The submittal materials list shall include the following information:
 - a. A title sheet with the job name, the contractor's name, contractor's address and telephone number, submittal date and submittal number.
 - b. An index sheet showing the item number (e.g. 1,2,3, etc.); an item description (e.g. sprinkler head); the manufacturer's name (e.g. Hunter Industries); the item model number (e.g. I-40-ADV/36V); and the page(s) in the submittal set that contain the catalog cuts.

- c. The catalog cuts shall be one or two pages copied from the most recent manufacturer's catalog that indicate the product submitted. Do not submit parts lists, exploded diagrams, price lists or other extra information.
 - d. The catalog cuts shall clearly indicate the manufacturer's name and the item model number. The item model number, all specified options and specified sizes shall be circled on the catalog cuts.
 - e. Submittals for equipment indicated on the legend without manufacturer names, or "as approved", shall contain the manufacturer, Class or Schedule, ASTM numbers and/or other certifications as indicated in these specifications.
- 3. Submittal materials list format requirements:
 - a. Submittals shall be provided as one complete package for the project in electronic pdf format. Multiple partial submittals will not be reviewed.
 - b. Submittal package shall have all pages numbered in the lower right hand corner. Page numbers shall correspond with submittal index.
 - c. Re-submitted packages must be revised to include only the equipment being re-submitted. Equipment previously reviewed and accepted shall not be re-submitted in the materials list/index sheet or in the catalog cut sheet package.
- C. Substitutions: If the Irrigation Contractor wishes to substitute any equipment or materials for those equipment or materials listed on the irrigation drawings and specifications, he may do so by providing the following information to the Landscape Architect or City's authorized representative for approval.
 - 1. Provide a written statement indicating the reason for making the substitution.
 - 2. Provide catalog cut sheets, technical data, and performance information for each substitute item.
 - 3. Provide in writing the difference in installed price if the item is accepted.
- D. The Landscape Architect or City's authorized representative will allow no substitutions without prior written acceptance
- E. No substitutions of pump manufacturers, distributors or assemblies will be accepted.
- F. Manufacturer's warranties shall not relieve the Contractor of his liability under the guarantee. Such warranties shall only supplement the guarantee.
- G. The Landscape Architect or City's authorized representative will not review the submittal package unless provided in the format described above.

1.5 EXISTING CONDITIONS

- A. Verify and be familiar with the locations, size and detail of points of connection provided as the source of water, electrical supply, and cellular connection to the irrigation system.
- B. Irrigation design is based on the available static water pressure shown on the drawings. Contractor shall verify static water on the project prior to the start of construction. Should a discrepancy exist, notify the Landscape Architect and City's authorized representative prior to beginning construction.

- C. Prior to cutting into the soil, locate all cables, conduits, sewer septic tanks, and other utilities as are commonly encountered underground, and take proper precautions not to damage or disturb such improvements. If a conflict exists between such obstacles and the proposed work, the Contractor shall promptly notify the Landscape Architect and City who will arrange for relocations. The Contractor will proceed in the same manner if a rock layer or any other such conditions are encountered.
- D. Protect all existing utilities and features to remain on and adjacent to the project site during construction. Repair, at its own cost, all damage resulting from his operations or negligence.
- E. The Irrigation Contractor shall coordinate with the General Contractor for installation of required sleeving as shown on the plans prior to paving operations.
- F. Verify and be familiar with the existing irrigation systems in areas adjacent to and within the Project area of work.
- G. Protect all existing irrigation systems, in areas adjacent to and within the project area of work, from damage due to his operations.
- H. Notify City's Representative if any existing system is temporarily shut off, capped or modified. Provide 48-hour notice, prior to turning off or modifying any existing irrigation system.
- I. Repair or replace all existing irrigation systems, in areas adjacent to and within the project area of work, damaged by the construction of this project. Adjacent irrigation systems shall be made completely operational and provide complete coverage of the existing landscaped areas. All repairs shall be complete to the satisfaction of the City's Representative.
- J. Provide bore holes under any existing pavement or paving encountered for the required lateral, mainline and low voltage control wire sleeving. Bore holes under 2 inches in diameter and smaller shall be made with a BulletMole® underground boring tool as manufactured by Dimension Tools, LLC (Contact telephone number (888)-650-5554 or at www.bulletmole.com). Bore holes larger than 2 inches in diameter shall be made with an approved mechanical boring tool. No air jacking or hydraulic boring of any kind shall be allowed.

1.6 INSPECTIONS

- A. The Contractor shall permit the Landscape Architect and City's authorized representative to visit and inspect at all times any part of the work and shall provide safe access for such visits.
- B. Where the specifications require work to be tested by the Contractor, it shall not be covered over until accepted by the Landscape Architect, City's authorized representative, and/or governing agencies. The Contractor shall be solely responsible for notifying the Landscape Architect, City, and governing agencies, a minimum of 48 hours in advance, where and when the work is ready for testing.

Should any work be covered without testing or acceptance, it shall be, if so ordered, uncovered at the Contractor's expense.

- C. Inspections will be required for the following at a minimum:
 - 1. Pre-construction meeting.
 - 2. System layout.
 - 3. Pressure test of irrigation mainline (Four hours at 125 PSI or 120% of static water pressure, whichever is greater.) Mainline pressure loss during test shall not exceed 2 PSI.
 - 4. Coverage test of irrigation system. Test shall be performed prior to any planting.
 - 5. Final inspection prior to start of maintenance period.
 - 6. Final acceptance prior to turnover.
- D. Site observations and testing will not commence without the field record drawings as prepared by the Irrigation Contractor. Record drawings must be complete and up to date for each site visit.
- E. Work that fails testing and is not accepted will be retested. Hourly rates and expenses of the Landscape Architect, City's authorized representative, and governing agencies for re-inspection or retesting will be paid by the Irrigation Contractor at no additional expense to City.

1.7 STORAGE AND HANDLING

- A. Use all means necessary to protect irrigation system materials before, during, and after installation and to protect the installation work and materials of all other trades. In the event of damage, immediately make all repairs and replacements necessary to the acceptance of the Landscape Architect and City and at no additional cost to the City.
- B. Exercise care in handling, loading, unloading, and storing plastic pipe and fittings under cover until ready to install. Transport plastic pipe only on a vehicle with a bed long enough to allow the pipe to lay flat to avoid undue bending and concentrated external load.

1.8 CLEANUP AND DISPOSAL

- A. Dispose of waste, trash, and debris in accordance with applicable laws and ordinances and as prescribed by authorities having jurisdiction. Bury no such waste material and debris on the site. Burning of trash and debris will not be permitted. Remove and dispose of rubbish and debris at frequent intervals or when ordered to do so by the City's authorized representative.
- B. At the time of completion the entire site will be cleared of tools, equipment, rubbish and debris which shall be disposed of off-site in a legal disposal area.

1.9 TURNOVER ITEMS

- A. Record Drawings:

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1. Record accurately on one set of drawings all changes in the work constituting departures from the original contract drawings and the actual final installed locations of all required components as shown below.
 2. The record drawings shall be prepared to the satisfaction of the City. Prior to final inspection of work, submit record drawings to the Landscape Architect or City's authorized representative.
 3. All record drawings shall be prepared using AutoCAD 2023 drafting software and the original irrigation drawings as a base. No manual drafted record drawings shall be acceptable. The Contractor may obtain digital base files from the Landscape Architect or City's authorized representative.
 4. If the Contractor is unable to provide the AutoCAD drafting necessary for the record drawings the irrigation designer does provide record drawing drafting as a separate service.
 5. Prior to final inspection of work, submit record drawings plotted onto vellum sheets for review by the Landscape Architect or City's authorized representative. After acceptance by the Landscape Architect, City Inspector or City's authorized representative re-plot the record drawings onto reproducible Mylar sheets. The Contractor shall also provide record drawing information on a digital AutoCAD Release 2023 drawing file. All digital files shall be provided on a compact disc (CD) clearly marked with the project name, file descriptions and date.
 - a. Record drawing information and dimensions shall be collected on a day-to-day basis during the installation of the pressure mainline to fully indicate all routing locations and pipe depths. Locations for all other irrigation equipment shall be collected prior to the final inspection of the work.
 - b. Two dimensions from two permanent points of reference such as buildings, sidewalks, curbs, streetlights, hydrants, etc. shall be shown for each piece of irrigation equipment shown below. Where multiple components are installed with no reasonable reference point between the components, dimensioning may be made to the irrigation equipment. All irrigation symbols shall be clearly shown matching the irrigation legend for the drawings. All lettering on the record drawings shall be minimum 1/8 inch in size.
 6. Show locations and depths of the following items:
 - a. Point of connection (including water POC, backflow devices, master control valves, flow sensors, etc.)
 - b. Routing of sprinkler pressure main lines (dimensions shown at a maximum of 100 feet along routing)
 - c. Isolation valves
 - d. Automatic remote control valves (indicate station number and size)
 - e. Quick coupling valves
 - f. Drip air relief and flush valves
 - g. Routing of control wires where separate from irrigation mainline
 - h. Irrigation controllers (indicate controller number and station count)
 - i. Related equipment (as may be directed)
- B. Controller Charts:
1. Provide one controller chart for each automatic controller. Chart shall show the area covered by the particular controller. The areas covered by the individual control valves shall be indicated using colored highlighter pens. A minimum of

- six individual colors shall be used for the controller chart unless less than six control valves are indicated.
2. Landscape Architect or City's authorized representative must approve record drawings before controller charts are prepared.
 3. The chart is to be a reduced copy of the actual "record" drawing. In the event the controller sequence is not legible when the drawing is reduced, it shall be enlarged to a readable size.
 4. When completed and approved, the chart shall be hermetically sealed between two pieces of plastic, each piece being a minimum 20 mils in thickness.
- C. Operation and Maintenance Manuals:
1. Two individually bound copies of operation and maintenance manuals shall be delivered to the Landscape Architect or City's authorized representative at least 10 calendar days prior to final inspection. The manuals shall describe the material installed and the proper operation of the system.
 2. Each complete, bound manual shall include the following information:
 3. Index sheet stating Contractor's address and telephone number, duration of guarantee period, list of equipment including names and addresses of local manufacturer representatives.
 - a. Operating and maintenance instructions for all equipment.
 - b. Spare parts lists and related manufacturer information for all equipment.
- D. Equipment:
1. Supply as a part of this contract the following items:
 - a. Two (2) wrenches for disassembly and adjustment of each type of sprinkler head used in the irrigation system.
 - b. Three 30-inch sprinkler keys for manual operation of control valves.
 - c. Two keys for each automatic controller.
 - d. Two quick coupler keys with a 1" bronze hose bib, bent nose type with hand wheel and two coupler lid keys.
 - e. One valve box cover key or wrench.
 - f. Six extra sprinkler heads of each size and type.
 - g. For specified ball valves if required: One (1) 5-foot long valve handle, to fit the specified ball valves.
 2. The above equipment shall be turned over to City's authorized representative at the final inspection.

1.10 COMPLETION

- A. At the time of the pre-maintenance period inspection, the Landscape Architect, City's authorized representative, and governing agencies will inspect the work, and if not accepted, will prepare a list of items to be completed by the Contractor. Punch list to be checked off by contractor and submitted to Landscape Architect or City's authorized representative prior to any follow-up meeting. This checked off list to indicate that all punch list items have been completed. At the time of the post-maintenance period or final inspection the work will be re-inspected and final acceptance will be in writing by the Landscape Architect, City's authorized representative, and governing agencies.

- B. The City's authorized representative shall have final authority on all portions of the work.
- C. After the system has been completed, the Contractor shall instruct City's authorized representative in the operation and maintenance of the irrigation system and shall furnish a complete set of operating and maintenance instructions.
- D. Any settling of trenches which may occur during the one-year period following acceptance shall be repaired to the City's satisfaction by the Contractor without any additional expense to the City. Repairs shall include the complete restoration of all damage to planting, paving or other improvements of any kind as a result of the work.

1.11 GUARANTEE

- A. The entire sprinkler system, including all work done under this contract, shall be unconditionally guaranteed against all defects and fault of material and workmanship, including settling of backfilled areas below grade, for a period of one (1) year following the filing of the Notice of Completion.
- B. Should any problem with the irrigation system be discovered within the guarantee period, it shall be corrected by the Contractor at no additional expense to City within ten (10) calendar days of receipt of written notice from City. When the nature of the repairs as determined by the City constitute an emergency (i.e. broken pressure line) the City may proceed to make repairs at the Contractor's expense. Any and all damages to existing improvement resulting either from faulty materials or workmanship, or from the necessary repairs to correct same, shall be repaired to the satisfaction of the City by the Contractor, all at no additional cost to the City.
- C. Guarantee shall be submitted on Contractors own letterhead as follows:

GUARANTEE FOR SPRINKLER IRRIGATION SYSTEM

We hereby guarantee that the sprinkler irrigation system we have furnished and installed is free from defects in materials and workmanship, and the work has been completed in accordance with the drawings and specifications, ordinary wear and tear and unusual abuse, or neglect excepted. We agree to repair or replace any defective material during the period of one year from date of filing of the Notice of Completion and also to repair or replace any damage resulting from the repairing or replacing of such defects at no additional cost to the City. We shall make such repairs or replacements within 10 calendar days following written notification by the City. In the event of our failure to make such repairs or replacements within the time specified after receipt of written notice from City, we authorize the City to proceed to have said repairs or replacements made at our expense and we will pay the costs and charges therefore upon demand.

PROJECT NAME:
PROJECT LOCATION:

CONTRACTOR NAME:
ADDRESS:

TELEPHONE:

SIGNED:

DATE:

PART 2 - MATERIALS

2.1 SUMMARY

Use only new materials of the manufacturer, size and type shown on the drawings and specifications. Materials or equipment installed or furnished that do not meet Landscape Architect's, City's, or governing agencies standards will be rejected and shall be removed from the site at no expense to the City.

2.2 PIPE

- A. Pressure supply line between the water meter and the backflow prevention device shall be type K copper, one size larger than backflow device.
- B. Backflow prevention assemblies, and all other above grade assemblies, shall be constructed of threaded brass pipe and threaded brass fittings the same size as the backflow device, unless otherwise directed.
- C. Pressure supply lines 1 1/2 inches in diameter and smaller downstream of the backflow prevention unit shall be Schedule 40 solvent weld PVC conforming to ASTM D1785.
- D. Pressure supply lines 2 inches in diameter and up to 3 inches in diameter downstream of backflow prevention unit shall be Class 315 solvent weld PVC. Piping shall conform to ASTM D2241.
- E. Non-pressure lines 3/4 inch in diameter and larger downstream of the remote control valve shall be SCH 40 solvent weld PVC conforming to ASTM D1785.
- F. Recycled water PVC pipe to be color-coded purple in color marked on two sides with recycled water warning statements "Caution-Recycled Water". Recycled water piping must be accepted by the local recycled water governing agencies.

2.3 METAL PIPE AND FITTINGS

- A. Brass pipe shall be 85 percent red brass, ANSI, IPS Standard 125 pounds, Schedule 40 screwed pipe.
- B. Fittings shall be medium brass, screwed 125-pound class.
- C. Copper pipe and fittings shall be Type "K" sweat soldered, or brazed as indicated on the drawings.

2.4 PLASTIC PIPE AND FITTINGS

- A. Pipe shall be marked continuously with manufacturer's name, nominal pipe size, schedule or class, PVC type and grade, National Sanitation Foundation approval, Commercial Standards designation, and date of extrusion.
- B. All plastic pipe shall be extruded of an improved PVC virgin pipe compound in accordance with ASTM D2672, ASTM D2241 or ASTM D1785.
- C. All solvent weld PVC fittings shall be standard weight Schedule 40 (and Schedule 80 where specified on the irrigation detail sheet, all mainline fittings shall be Schedule 80 PVC) and shall be injection molded of an improved virgin PVC fitting compound. Slip PVC fittings shall be the "deep socket" bracketed type. Threaded plastic fittings shall be injection molded. All tees and ells shall be side gated. All fittings shall conform to ASTM D2464 and ASTM D2466.
- D. All threaded nipples shall be standard weight Schedule 80 with molded threads and shall conform to ASTM D1785.
- E. All solvent cementing of plastic pipe and fittings shall be a two-step process, using primer and solvent cement applied per the manufacturer's recommendations. Cement shall be of a fluid consistency, not gel-like or ropy. Solvent cementing shall be in conformance with ASTM D2564 and ASTM D2855.
- F. When connection is plastic to metal, female adapters shall be hand tightened, plus one turn with a strap wrench. Joint compound shall be non-lead base Teflon paste, tape, or equal.
- G. All pressure mainlines installed with solvent weld PVC fittings shall be installed with concrete thrust blocking at all directional changes in the mainline routing. Concrete thrust blocking shall not be required when ductile iron fittings and mechanical restraints are specified.

2.5 BACKFLOW PREVENTION UNITS

- A. The backflow prevention unit shall be of the manufacturer, size, and type indicated on the drawings.
- B. The backflow prevention unit shall be installed in accordance with the requirements set forth by local codes.
- C. The backflow enclosure shall be of the manufacturer, size, and type indicated on the drawings.
- D. The backflow freeze prevention cover shall be of the manufacturer, size, and type indicated on the drawings.

2.6 VALVES

- A. Ball Valves:

1. Ball valves shall be of the manufacturer, size, and type indicated on the drawings.
 2. All ball valves shall have a minimum working pressure of not less than 150 PSI and shall conform to AWWA standards.
- B. Quick Coupler Valves:
1. Quick coupler valves shall be of the manufacturer, size, and type indicated on the drawings.
 2. Quick coupler valves shall be brass with a wall thickness guaranteed to withstand normal working pressure of 150 psi without leakage. Valves shall have 1" female threads opening at base, with two-piece body. Valves to be operated only with a coupler key, designed for that purpose. Coupler key is inserted into valve and a positive, watertight connection shall be made between the coupler key and valve.
 3. Vinyl quick coupler cover to be purple in color with the words "Warning-Recycled Water-Do Not Drink" permanently marked on lid.
- C. Automatic Control Valves:
1. Automatic control valves shall be of the manufacturer, size, and type indicated on the drawings.
 2. Automatic control valves shall be electrically operated.
 3. Provide Christy's valve ID tags for each remote control valve with valve number.

2.7 VALVE BOXES

- A. Valve boxes shall be fabricated from a durable, weather-resistant plastic material resistant to sunlight and chemical action of soils.
- B. The valve box cover shall be secured with a hidden latch mechanism or bolts.
- C. Valve box extensions shall be by the same manufacturer as the valve box.
- D. The plastic irrigation valve box cover shall be an overlapping type.
- E. Automatic control valve, master valve, and flow sensor boxes shall be 17"x11"x12" 'nominal' rectangular size. Valve boxes for drip valve assemblies shall be Jumbo valve boxes size as required to fit assemblies. Valve box covers shall be marked "RCV" with the valve identification number, or "MV", "FS" "heat branded" onto the cover in 1-1/4 inch high letters / numbers.
- F. Quick coupler and ball valve boxes shall be 10" circular size. Valve box covers shall be marked with "QCV" or "BV" "heat branded" onto the cover in 1-1/4 inch high letters.
- G. Valve box cover shall be permanently marked (attached tags are not acceptable) on valve box cover plate with the words "Warning-Recycled Water-Do Not Drink".

2.8 AUTOMATIC CONTROLLER

- A. Automatic controller shall be of the manufacturer, size, and type indicated on the drawings.
- B. Controller enclosure shall be of the manufacturer, size, and type indicated on the drawings.
- C. Controller shall be grounded according to local codes using equipment of the manufacturer, size, and type indicated on the drawings; or as required by local codes and ordinances.

2.9 ELECTRICAL

- A. All electrical equipment shall be NEMA Type 3, waterproofed for exterior installations.
- B. All electrical work shall conform to local codes and ordinances.

2.10 LOW VOLTAGE CONTROL WIRING

- A. Remote control wire shall be direct-burial AWG-UF type, size as indicated on the drawings, and in no case smaller than 14 gauge.
- B. Connections shall be of the manufacturer, size, and type indicated on the drawings.
- C. Common wires shall be white in color. Control wires shall be red (where two or more controllers are used, the control wires shall be a different color for each controller. These colors shall be noted on the "Record Drawings" plans located on controller door).
- D. Ground wires shall be green in color or bare copper and in no case smaller than 6 gauge.

2.11 IRRIGATION HEADS, DRIP EMITTERS, AND INLINE DRIP TUBING

- A. Irrigation heads, drip emitters, and inline drip tubing shall be of the manufacturer, size, type, with radius of throw, operating pressure, and discharge rate indicated on the drawings.
- B. Irrigation heads, drip emitters, and inline drip tubing shall be used as indicated on the drawings.
- C. Irrigation heads shall have purple recycled water warning cover.

2.12 DRIP IRRIGATION EQUIPMENT

Drip tubing equipment such as flush valves, wye strainers, and pressure regulators shall be of the manufacturer, size, and type indicated on the drawings.

2.13 MISCELLANEOUS EQUIPMENT

- A. Landscape Fabric:
 - 1. Landscape fabric for valve box assemblies shall be 5.0- oz. weight woven polypropylene weed barrier. Landscape fabric shall have a burst strength of 225 PSI, a puncture strength of 60 lbs. and capable of water flow of 12 gallons per minute per square foot.
 - 2. Type: DeWitt Pro 5 Weed Barrier or approved equal.
- B. Equipment such as flow sensors, rain sensors, freeze sensors, flush valves, air relief valves, wye strainers, and master valves shall be of the manufacturer, size and type indicated on the drawings.

PART 3 - EXECUTION

3.1 SITE CONDITIONS

- A. Inspections:
 - 1. Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
 - 2. Verify that irrigation system may be installed in strict accordance with all pertinent codes and regulations, the original design, the referenced standards, and the manufacturer's recommendations.
- B. Discrepancies:
 - 1. In the event of discrepancy, immediately notify the Landscape Architect or City's authorized representative.
 - 2. Do not proceed with installation in areas of discrepancy until all discrepancies have been resolved.
- C. Grades:
 - 1. Before starting work, carefully check all grades to determine that work may safely proceed, keeping within the specified material depths with respect to finish grade.
 - 2. Final grades shall be accepted by the Engineer before work on this section will be allowed to begin.
- D. Field Measurements:
 - 1. Make all necessary measurements in the field to ensure precise fit of items in accordance with the original design. Contractor shall coordinate the installation of all irrigation materials with all other work.
 - 2. All scaled dimensions are approximate. The Contractor shall check and verify all size dimensions prior to proceeding with work under this section.
 - 3. Exercise extreme care in excavating and working near existing utilities. Contractor shall be responsible for damages to utilities, which are caused by his operations or neglect.
- E. Diagrammatic Intent:

The drawings are essentially diagrammatic. The size and location of equipment and fixtures are drawn to scale where possible. Provide offsets in piping and changes in equipment locations as necessary to conform with structures and to avoid obstructions or conflicts with other work at no additional expense to City.

- F. Layout:
1. Prior to installation, the Contractor shall stake out all pressure supply lines, routing and location of sprinkler heads, valves, backflow preventer, and automatic controller.
 2. Layout irrigation system and make minor adjustments required due to differences between site and drawings. Where piping is shown on drawings under paved areas, but running parallel and adjacent to planted areas, install the piping in the planted areas.
- G. Water Supply:
- Connections to, or the installation of, the water supply shall be at the locations shown on the drawings. Minor changes caused by actual site conditions shall be made at no additional expense to City.
- H. Electrical Service:
1. Connections to the electrical supply shall be at the locations shown on the drawings. Minor changes caused by actual site conditions shall be made at no additional expense to City.
 2. Contractor shall make electrical connections to the irrigation controller. Electrical power source to controller locations shall be provided by others.
 3. Contractor shall make electrical connections to the irrigation controller. .

3.2 TRENCHING

- A. Excavations shall be straight with vertical sides, even grade, and support pipe continuously on bottom of trench. Trenching excavation shall follow layout indicated on drawings to the depths below finished grade and as noted. Where lines occur under paved area, these dimensions shall be considered below subgrade.
- B. Provide minimum cover of 18 inches on pressure supply lines 2 ½ inches and smaller.
- C. Provide minimum cover of 24 inches on pressure supply lines 3 inches and larger.
- D. Provide minimum cover of 18 inches for control wires within planters.
- E. Provide minimum cover of 24 inches for control wires within sleeves below paving.
- F. Provide minimum cover of 36 inches on pressure supply lines under vehicular travel ways.
- G. Provide minimum cover of 12 inches for non-pressure lines.
- H. Pipes installed in a common trench shall have a 4-inch minimum space between pipes.

3.3 THRUST BLOCKS

- A. Thrust blocks must be constructed of Class "B" concrete.
- B. Thrust blocks shall be poured against undisturbed site soil.
- C. PVC fitting joints shall be kept free of concrete. Do not encase fitting in concrete.
- D. Thrust blocking shall be sized to provide the minimum bearing areas as shown below. Bearing areas indicated have been calculated for Class 200 PVC pipe at a test pressure of 150 PSI in soil with 2,000 PSI bearing capacity. Increase thrust block sizing as necessary for varying soil conditions.
 - 1. Provide a minimum thrust block bearing area of 2.0 square feet on all bends (all degrees) and tees installed on pressure supply lines 4 inches and smaller.

3.4 BACKFILLING

- A. Backfill material on all lines shall be the same as adjacent soil free of debris, litter, and rocks over 1/2 inches in diameter.
- B. Backfill shall be tamped in 4-inch layers under the pipe and uniformly on both sides for the full width of the trench and the full length of the pipe. Backfill materials shall be sufficiently damp to permit thorough compaction, free of voids. Backfill shall be compacted to dry density equal to adjacent undisturbed soil and shall conform to adjacent grades.
- C. Flooding in lieu of tamping is not allowed.
- D. Under no circumstances shall truck wheels be used to compact backfill.
- E. Provide sand backfill over and under all piping under paved areas.

3.5 PIPING

- A. Piping under existing pavement may be installed by jacking, boring, or hydraulic driving. No hydraulic driving is permitted under asphalt pavement.
- B. Cutting or breaking of existing pavement is not permitted.
- C. Carefully inspect all pipe and fittings before installation, removing dirt, scale, burrs, and reaming. Install pipe with all markings up for visual inspection and verification.
- D. Remove all dented and damaged pipe sections.
- E. All lines shall have a minimum clearance of 4 inches from each other and 12 inches from lines of other trades.
- F. Parallel lines shall not be installed directly over each other.

- G. In solvent welding, use only the specified primer and solvent cement and make all joints in strict accordance with the manufacturer's recommended methods including wiping all excess solvent from each weld. Allow solvent welds at least 15 minutes setup time before moving or handling and 24 hours curing time before filling.
- H. PVC pipe shall be installed in a manner, which will provide for expansion and contraction as recommended by the pipe manufacturer.
- I. Center load all plastic pipe prior to pressure testing.
- J. All threaded plastic-to-plastic connections shall be assembled using Teflon tape or Teflon paste.
- K. For plastic-to-metal connections, work the metal connections first. Use a non-hardening pipe dope on all threaded plastic-to-metal connections, except where noted otherwise. All plastic-to-metal connections shall be made with plastic male adapters.

3.6 CONTROLLER

- A. The exact location of the controller shall be approved by the Landscape Architect or City's authorized representative before installation. The electrical service shall be coordinated with this location.
- B. The Irrigation Contractor shall be responsible for the final electrical hook up to the irrigation controller.
- C. The irrigation system shall be programmed to operate during the periods of minimal use of the design area.

3.7 CONTROL WIRING

- A. Low voltage control wiring shall occupy the same trench and shall be installed along the same route as the pressure supply lines whenever possible.
- B. Where more than one wire is placed in a trench, the wiring shall be taped together in a bundle at intervals of 10 feet. Bundle shall be secured to the mainline with tape at intervals of 20 feet.
- C. All connections shall be of an approved type and shall occur in a valve box. Provide an 18-inch service loop at each connection.
- D. An expansion loop of 12 inches shall be provided at each wire connection and/or directional change, and one of 24 inches shall be provided at each remote control valve.
- E. A continuous run of wire shall be used between a controller and each remote control valve. Under no circumstances shall splices be used without prior approval.

3.8 VALVES

- A. Automatic control valves, quick coupler, and ball valves are to be installed in the approximate locations indicated on the drawings.
- B. Valve shall be installed in shrub areas whenever possible.
- C. Install all valves as indicated in the detail drawings.
- D. Valves to be installed in valve boxes shall be installed one valve per box.
- E. Provide valve ID tags for each remote control valve with valve number.

3.9 VALVE BOXES

- A. Valve boxes shall be installed in shrub areas whenever possible.
- B. Each valve box shall be installed on a foundation of 3/4 inch gravel backfill, 3 cubic feet minimum. Valve boxes shall be installed with their tops 1/2 inch above the surface of surrounding finish grade in lawn areas and 2 inches above finish grade in ground cover areas.

3.10 IRRIGATION HEADS, DRIP EMITTERS, AND INLINE DRIP TUBING

- A. Irrigation heads, drip emitters, and inline drip tubing shall be installed as indicated on the drawings.
- B. Spacing of heads and inline drip tubing shall not exceed maximum indicated on the drawings.
- C. Riser nipples shall be of the same size as the riser opening in the sprinkler body.

3.11 BACKFLOW PREVENTION UNITS

- A. Backflow Prevention Units shall be installed as indicated on the drawings. The backflow prevention unit shall be installed in accordance with the requirements set forth by local codes.
- B. The exact location of the backflow device shall be approved by the Landscape Architect or City's authorized representative before installation.
- C. The contractor shall be responsible for the testing and certification of the backflow device for proper operation. Testing and certification shall be performed by a state qualified backflow tester.

3.12 MISCELLANEOUS EQUIPMENT

- A. Install all assemblies specified herein according to the respective detail drawings or specifications, using best standard practices.

- B. Quick coupler valves shall be set approximately 18 inches from walks, curbs, header boards, or paved areas where applicable.
- C. Install devices such as rain sensors, freeze sensors, flush valves, master valves, and flow sensors as indicated on the drawings and as recommended by the manufacturer.

3.13 FLUSHING THE SYSTEM

- A. Prior to installation of irrigation heads, the valves shall be opened and a full head of water used to flush out the lines and risers.
- B. Irrigation heads shall be installed after flushing the system has been completed.

3.14 ADJUSTING THE SYSTEM

- A. Contractor shall adjust valves, align heads, and check the coverage of each system prior to coverage test.
- B. If it is determined by the Landscape Architect or City's authorized representative that additional adjustments or nozzle changes will be required to provide proper coverage, all necessary changes or adjustments shall be made prior to any planting.
- C. The entire system shall be operating properly before any planting operations commence.
- D. Automatic control valves are to be adjusted so that the irrigation heads, drip emitters and inline drip tubing operate at the pressure recommended by the manufacturer.

3.15 TESTING AND OBSERVATION

- A. Do not allow or cause any of the work of this section to be covered up or enclosed until it has been observed, tested and accepted by the Landscape Architect, City, and governing agencies.
- B. The Contractor shall be solely responsible for notifying the Landscape Architect, City, and governing agencies, a minimum of 48 hours in advance, where and when the work is ready for testing.
- C. When the sprinkler system is completed, the Contractor shall perform a coverage test of each system in its entirety to determine if the water coverage for the planted areas is complete and adequate in the presence of the Landscape Architect.
- D. The Contractor shall furnish all materials and perform all work required to correct any inadequacies of coverage due to deviations from the plans, or where the system has been willfully installed as indicated on the drawings when it is obviously inadequate, without bringing this to the attention of the Landscape Architect. This test shall be accepted by the Landscape Architect and accomplished before starting any planting.
- E. Areas to be maintained for the formal maintenance period shall start maintenance at the same time, as directed by the Landscape Architect, City, and governing agencies.

Partial areas will not be released into maintenance prior to completion of items listed in the pre-maintenance review. The maintenance period may not be phased.

- F. If, after the maintenance review, the irrigation systems are not accepted by the Landscape Architect, the contractor shall reimburse the Architect for additional site visits, or additional time required to review work. All additional time will be billed at the Architect's hourly rate and will be paid for by the contractor at no additional cost to the City.
- G. Final inspection will not commence without record drawings as prepared by the Irrigation Contractor.

3.16 MAINTENANCE

During the maintenance period the Contractor shall adjust and maintain the irrigation system in a fully operational condition providing complete irrigation coverage to all intended plantings.

3.17 COMPLETION CLEANING

Clean up shall be made as each portion of the work progresses. Refuse and excess dirt shall be removed from the site, all walks and paving shall be swept, and any damage sustained on the work of others shall be repaired to original conditions.

END OF SECTION 32 84 00

SECTION 32 91 13

SOIL PREPARATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section includes:
 - (1) Planting soils specified by composition of the mixes.
 - (2) Inorganic soil amendments
 - (3) Organic soil amendments/Compost
 - (4) Fertilizers
 - (5) Pesticides
- B. Related Sections:
 - (1) Document 31 00 00 "Earthwork"
 - (2) Document 31 10 00 "Site Clearing"
 - (3) Document 32 84 00 "Irrigation"
 - (4) Document 32 93 00 "Plants"

1.03 ALLOWANCES

- A. Preconstruction and field quality-control testing are part of testing and inspecting allowance.

1.04 DEFINITIONS

- A. AAPFCO: Association of American Plant Food Control Officials.
- B. Backfill: The earth used to replace or the act of replacing earth in an excavation. This can be amended or unamended soil as indicated.
- C. CCQC: California Compost Quality Council, verifies that compost producers are in compliance with state compost regulations and standards. www.crra.com

- D. CEC: Cation exchange capacity.
- E. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.
- F. Duff Layer: A surface layer of soil, typical of forested areas, that is composed of mostly decayed leaves, twigs, and detritus.
- G. Imported Soil: Soil that is transported to Project site for use.
- H. Layered Soil Assembly: A designed series of planting soils, layered on each other, that together produce an environment for plant growth.
- I. Manufactured Soil: Soil produced by blending soils, sand, stabilized organic soil amendments, and other materials to produce planting soil.
- J. NAPT: North American Proficiency Testing Program. An SSSA program to assist soil-, plant-, and water-testing laboratories through interlaboratory sample exchanges and statistical evaluation of analytical data.
- K. Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."
- L. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified as specified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- M. RCRA Metals: Hazardous metals identified by the EPA under the Resource Conservation and Recovery Act.
- N. SSSA: Soil Science Society of America.
- O. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- P. Subsoil: 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.
- Q. 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.
- R. USCC: U.S. Composting Council.

1.05 PREINSTALLATION MEETINGS

- A. Pre-installation Conference: Conduct conference at Project site.

1.06 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - (1) Include recommendations for application and use.
 - (2) Include test data substantiating that products comply with requirements.
 - (3) Material Certificates: For each type of imported soil, soil amendment and fertilizer before delivery to the site, according to the following:
 - (a) Manufacturer's qualified testing agency's certified analysis of standard products.
 - (b) Analysis of fertilizers, by a qualified testing agency, made according to AAPFCO methods for testing and labeling and according to AAPFCO's SUIP #25.
 - (c) Analysis of nonstandard materials, by a qualified testing agency, made according to SSSA methods, where applicable.
- B. Samples: For each bulk-supplied material, 1-quart volume of each in sealed containers labeled with content, source, and date obtained. Each Sample shall be typical of the lot of material to be furnished.
 - (1) Provide an accurate representation of composition, color, and texture.
 - (a) Native site soil
 - (b) Import topsoil
 - (c) Organic soil amendments

1.07 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For each testing agency.
- B. Preconstruction Test Reports: For preconstruction soil analyses specified in "Preconstruction Testing" Article.
- C. Field quality-control reports.

1.08 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent, state-operated, or university-operated laboratory; experienced in soil science, soil testing, and plant nutrition; with the experience and capability to conduct the testing indicated; and that specializes in types of tests to be performed.
 - (1) Laboratories: Subject to compliance with requirements, provide testing by the following:

- (a) Soil testing: Wallace Laboratories, Inc, El Segundo (310) 615-0116
 - (b) For compost testing: Soil Control Lab, Watsonville (831) 761-7273
 - (2) Laboratory soil testing report shall be no older than 6 months from the date of Landscape Architect's review and shall represent the product delivered to the project site.
 - (3) Laboratory compost testing report shall be no older than 3 months from the date of Landscape Architect's review and shall represent the product delivered to the project site.
- B. Standard Specifications:
- (1) Quality of compost shall comply with OMRI, CCQC and STA standards.
 - (2) In the event that standards conflict, the most restrictive standard shall be followed.

1.09 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction soil analyses on imported soil.
- B. Preconstruction Soil Analyses: For each unamended soil type, perform testing on soil samples and furnish soil analysis and a written report containing soil-amendment and fertilizer recommendations by a qualified testing agency performing the testing according to "Soil-Sampling Requirements" and "Testing Requirements" articles.
 - (1) Have testing agency identify and label samples and test reports according to sample collection and labeling requirements.
 - (2) Soil test report to include recommendations for amendments with organic materials. Recommendations for synthetic amendments will not be accepted.

1.10 SOIL-SAMPLING REQUIREMENTS

- A. Sample Collection and Labeling: Have samples taken and labeled by Contractor per the direction of the testing agency.
 - (1) Number and Location of Samples: Three representative soil samples from varied locations as directed by Landscape Architect for each soil to be used or amended for landscaping purposes.
 - (2) Procedures and Depth of Samples: Per soil testing laboratory standards.
 - (3) Labeling: Label each sample with the date, location keyed to a site plan or other location system, visible soil condition, and sampling depth.

1.11 TESTING REQUIREMENTS

- A. General: Perform tests on soil samples according to requirements in this article.
- B. Physical Testing:
 - (1) Soil Texture: Soil-particle, size-distribution analysis by one of the following methods according to SSSA's "Methods of Soil Analysis - Part 1- Physical and Mineralogical Methods":
 - (a) Sieving Method: Report sand-gradation percentages for very coarse, coarse, medium, fine, and very fine sand; and fragment-gradation (gravel) percentages for fine, medium, and coarse fragments; according to USDA sand and fragment sizes.
 - (b) Hydrometer Method: Report percentages of sand, silt, and clay.
 - (2) Total Porosity: Calculate using particle density and bulk density according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
 - (3) Water Retention: According to SSSA's "Methods of Soil Analysis - Part 1- Physical and Mineralogical Methods."
 - (4) Saturated Hydraulic Conductivity: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods"; at 85% compaction according to ASTM D 698 (Standard Proctor).
- C. Chemical Testing:
 - (1) CEC: Analysis by sodium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."
 - (2) Clay Mineralogy: Analysis and estimated percentage of expandable clay minerals using CEC by ammonium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 1- Physical and Mineralogical Methods."
 - (3) Metals Hazardous to Human Health: Test for presence and quantities of RCRA metals including aluminum, arsenic, barium, copper, cadmium, chromium, cobalt, lead, lithium, and vanadium. If RCRA metals are present, include recommendations for corrective action.
 - (4) Phytotoxicity: Test for plant-available concentrations of phytotoxic minerals including aluminum, arsenic, barium, cadmium, chlorides, chromium, cobalt, copper, lead, lithium, mercury, nickel, selenium, silver, sodium, strontium, tin, titanium, vanadium, and zinc.
- D. Fertility Testing: Soil-fertility analysis according to standard laboratory protocol, including the following:

- (1) Percentage of organic matter.
 - (2) CEC, calcium percent of CEC, and magnesium percent of CEC.
 - (3) Soil reaction (acidity/alkalinity pH value).
 - (4) Buffered acidity or alkalinity.
 - (5) Nitrogen ppm.
 - (6) Phosphorous ppm.
 - (7) Potassium ppm.
 - (8) Manganese ppm.
 - (9) Manganese-availability ppm.
 - (10) Zinc ppm.
 - (11) Zinc availability ppm.
 - (12) Copper ppm.
 - (13) Sodium ppm and sodium absorption ratio.
 - (14) Soluble-salts ppm.
 - (15) Presence and quantities of problem materials including salts and metals cited in the Standard protocol. If such problem materials are present, provide additional recommendations for corrective action.
 - (16) Other deleterious materials, including their characteristics and content of each.
- E. Organic-Matter Content: Analysis using loss-by-ignition method according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."
- F. Recommendations: Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated to produce satisfactory planting soil suitable for healthy, viable plants indicated. Include, at a minimum, recommendations for nitrogen, phosphorous, and potassium fertilization, and for micronutrients. Request recommendations for organic amendments and compost only; synthetic amendments and fertilizers will not be accepted.
- (1) Fertilizers and Soil Amendment Rates: State recommendations in weight per 1000 sq. ft. for 6-inch depth of soil.

1.12 DELIVERY, STORAGE, AND HANDLING

- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and compliance with state and Federal laws if applicable.
- B. Bulk Materials:
 - (1) Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 - (2) Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 - (3) Do not move or handle materials when they are wet or frozen.
 - (4) Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Regional Materials: Imported topsoil, soil amendments and fertilizers shall be sourced within 500 miles of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.

2.02 PLANTING SOILS SPECIFIED BY COMPOSITION

- A. General: Soil amendments, fertilizers, and rates of application specified in this article are guidelines that may need revision based on testing laboratory's recommendations after preconstruction soil analyses are performed.
- B. Planting-Soil Type: Existing, on-site surface soil, with the duff layer, if any, retained and stockpiled on-site; modified to produce viable planting soil. Blend existing, on-site surface soil with organic soil amendments recommended by soils testing laboratory.
- C. Planting-Soil Type: Imported, suitable topsoil from off-site sources, tested and amended, per soil testing laboratory recommendations, to produce viable planting soil.
 - (1) Unacceptable Properties: Clean soil of the following:
 - (a) Unacceptable Materials: Concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.

- (b) Unsuitable Materials: Stones, roots, plants, sod, clay lumps, and pockets of coarse sand that exceed a combined maximum of 8 percent by dry weight of the imported soil.
 - (c) Large Materials: Stones, clods, roots, clay lumps, and pockets of coarse sand exceeding 3 inches in any dimension.
- (2) Amended Soil Composition: Blend imported, unamended soil with the soil amendments and fertilizers recommended in Soil Testing Report.

2.03 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
- (1) Class: O, with a minimum of 95 percent passing through a No. 8 sieve and a minimum of 55 percent passing through a No. 60 sieve.
 - (2) Provide lime in form of ground dolomitic limestone.
- B. Sulfur: Granular, biodegradable, and containing a minimum of 90 percent elemental sulfur, with a minimum of 99 percent passing through a No. 6 sieve and a maximum of 10 percent passing through a No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Perlite: Horticultural perlite, soil amendment grade.
- E. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through a No. 50 sieve.
- F. Sand: Clean, washed, natural or manufactured, free of toxic materials, according to ASTM C 33.

2.04 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:

Parameters	Units of measure	General Range
Nitrogen (Total N)	% dry weight	>0.9
Ammonium (N or NH ₄ -N)	ppm or mg/kg dry weight	<450
Nitrate (NO ₃ -N)	ppm or mg/kg dry weight	>10
Phosphorus (P)	% dry weight	<0.6
Calcium (Ca)	% dry weight	<3.5
Boron (Total B)	ppm or mg/kg dry weight	<80

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Sodium (Na)	% dry weight	<0.5
Total Nitrogen Phosphorus and Potassium (NPK)	Sum % dry weight	>2.0
Carbon Nitrogen Ratio	Carbon: Nitrogen	≤25:1
Organic Matter Content	% by dry weight basis	>35
pH	pH units	6.5-8.5
Moisture Content	% wet weight basis	>35
Particle Size or Sieve Size	% under ½" or 25mm by dry weight	>95%
Stability Indicator: Carbon Dioxide (CO ₂) Evolution Rate	Mg CO ₂ -C/g OM per day	<8
Maturity Indicator: Cucumber Bioassay		
Seed Emergence	%, relative to control	>80%
Seed Vigor	%, relative to control	>80%
Select Pathogens		
Fecal Coliform Bacteria	MPN/gram dry weight	<1000
Salmonella	MPN/4gram dry weight	<3
Metals		
Arsenic	mg/kg (ppm)	<16
Cadmium	mg/kg (ppm)	<8
Chromium	mg/kg (ppm)	< 100
Copper	mg/kg (ppm)	<400
Lead	mg/kg (ppm)	<100
Mercury	mg/kg (ppm)	<4
Nickel	mg/kg (ppm)	<80
Selenium	mg/kg (ppm)	<5
Zinc	mg/kg (ppm)	<500
Physical Contaminants		
Glass	% dry weight	<1
Plastic	% dry weight	<1
Metal	% dry weight	<1
Bulk Density	lbs/CY dry weight lbs/CF dry weight	>19 and <41 >500 and <1100

- (1) Contaminants: Compost shall be free of contaminants such as glass, metal, and visible plastic, heavy metals, fecal coliform and salmonella species not exceeding levels per California Integrated Waste Management regulations.
- (2) Color: Dark brown to black
- (3) Acceptable odor: soil-like, musty or moldy.
- (4) Unacceptable odor: sour, ammonia, putrid

- (5) Particle characteristics: identifiable wood pieces are acceptable but the balance of material should be soil-like without recognizable grass or leaves.
- B. Sphagnum Peat: Partially decomposed sphagnum peat moss, finely divided or of granular texture with 100 percent passing through a 1/2-inch sieve, a pH of 3.4 to 4.8, and a soluble-salt content measured by electrical conductivity of maximum 5 dS/m.
- C. Muck Peat: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture with 100 percent passing through a 1/2-inch sieve, a pH of 6 to 7.5, a soluble-salt content measured by electrical conductivity of maximum 5 dS/m, having a water-absorbing capacity of 1100 to 2000 percent, and containing no sand.
- D. Wood Derivatives: Shredded and composted, ground bark, or wood waste; of uniform texture and free of chips, stones, sticks, soil, or toxic materials.
- E. Partially Decomposed Wood Derivatives: In lieu of shredded and composted wood derivatives, mix shredded and partially decomposed wood derivatives with ammonium nitrate at a minimum rate of 0.15 lb/cu. ft. of ground bark, or with ammonium sulfate at a minimum rate of 0.25 lb/cu. ft. of loose sawdust or ground bark.
- F. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, debris, and material harmful to plant growth.
- G. Compost shall not contain mixed solid waste, or substances toxic to plants. Compost shall not resemble the original material from which it was derived, nor have objectionable odors.

2.05 FERTILIZERS

- A. Non-synthetic fertilizers as recommended by the soils report.
 - (1) Synthetic, quick-release fertilizers will not be permitted.
 - (2) Fertilizers prohibited in the Generic Materials List by the Organic materials Review Institute (OMRI) are prohibited in the project.

2.06 PESTICIDES

- A. General: Pesticide registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application.
- B. Do not use any pesticides unless authorized in writing by Landscape Architect and authorities having jurisdiction prior to application.

- C. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- D. Post-Emergent Herbicide (Selective): Effective for controlling weed growth that has already germinated.
- E. Contractor to obtain written approval from Landscape Architect prior to application of pre-emergent and post-emergent herbicides. The following least toxic products may be employed:
 - (1) Fatty acid potassium salts (herbicidal soaps e.g. Safer's Superfast Weed and Grass Killer® Dr. Bronner's Peppermint Anti-Bacterial Soap.)
 - (2) Acetic and citric acids (Nature's Glory Weed and Grass Killer RTU®)
 - (3) Clove, citrus, mint and thyme oil (Matran II®, Xpress®)
 - (4) Corn gluten
 - (5) Low-toxic, low-residual herbicide (Glyphosate (Round-up®), glufosinate-ammonium (Finale®), pelargonic acid (Scythe®))
- F. Do not use the following products:
 - (1) Atrazine (Aatrex)
 - (2) Simazine (Princep)
 - (3) Bromacil (Hyvar, Krovar)
 - (4) Prometon (Pramitol)
 - (5) Bentazon (Basagran)
 - (6) Norflurazon (Solicam, Predict, Zorial)
 - (7) Picloram
 - (8) Clopyralid

PART 3 EXECUTION

3.01 GENERAL

- A. Place planting soil and fertilizers according to requirements in other Specification Sections.
- B. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in planting soil.

- C. Proceed with placement only after unsatisfactory conditions have been corrected.

3.02 PREPARATION OF UNAMENDED, ON-SITE SOIL BEFORE AMENDING

- A. Excavation: Excavate soil from designated area(s) to a depth 6 inches deeper than size of tree root ball, and stockpile until amended. Refer to Document 31 00 00 "Earthwork."
- B. Unacceptable Materials: Clean soil shall not contain any percentage of concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
- C. Unsuitable Materials: Clean soil to contain a maximum of 8 percent by dry weight of stones, roots, plants, sod, clay lumps, and pockets of coarse sand.
- D. Remove stones larger than 2 inches in any dimension and sticks, roots, rubbish and other extraneous materials, and legally dispose of them off District's property.

3.03 PLACING AND MIXING PLANTING SOIL OVER EXPOSED SUBGRADE

- A. General: Apply and mix unamended soil with amendments on-site to produce required planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.
- B. Subgrade Preparation: Till subgrade to a minimum depth of 6 inches where site conditions permit. Remove stones 4 inches and larger in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off District's property.
 - (1) Apply, add soil amendments, and mix approximately half the thickness of unamended soil over prepared, loosened subgrade according to "Mixing" Paragraph below. Mix thoroughly into top 4 inches of subgrade. Spread remainder of planting soil.
- C. Mixing: Spread unamended soil to total depth of 6 inches, but not less than required to meet finish grades after mixing with amendments and natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.
 - (1) Amendments: Apply soil amendments, compost and organic fertilizer, if required, evenly on surface, and thoroughly blend them with unamended soil to produce planting soil.
 - (a) Mix lime and sulfur with dry soil before mixing fertilizer.
 - (b) Mix fertilizer with planting soil no more than seven days before planting.

- (2) Lifts: Apply and mix unamended soil and amendments in lifts not exceeding 12 inches in loose depth for material compacted by compaction equipment, and not more than 6 inches in loose depth for material compacted by hand-operated tampers.
- (3) Compaction: Compact each blended lift of planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D 698 and tested in-place.
- (4) Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.04 PLACING MANUFACTURED PLANTING SOIL OVER EXPOSED SUBGRADE

- A. General: Apply manufactured soil on-site in its final, blended condition. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.
- B. Subgrade Preparation: Till subgrade to a minimum depth of 8 inches where site conditions allow. Remove stones 4 inches or larger in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off District's property.
- C. Apply approximately half the thickness of planting soil over prepared, loosened subgrade. Mix thoroughly into top 4 inches of subgrade. Spread remainder of planting soil.
- D. Spread planting soil to total depth of 12 inches, but not less than required to meet finish grades after natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.
 - (1) Lifts: Apply planting soil in lifts not exceeding 6 inches in loose depth.
- E. Compaction: Compact each lift of planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D 698.
- F. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.05 BLENDING PLANTING SOIL IN PLACE

- A. General: Mix amendments with in-place, unamended soil to produce required planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.
- B. Preparation: Till unamended, existing soil in planting areas to a minimum depth of 6 inches where site conditions permit. Remove stones 4 inches and larger in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off District's property.

- C. Mixing: Apply soil amendments, compost and organic fertilizer, if required, evenly on surface, and thoroughly blend them into full depth of unamended, in-place soil to produce planting soil.
 - (1) Mix lime and sulfur with dry soil before mixing fertilizer.
 - (2) Mix fertilizer with planting soil no more than seven days before planting.
- D. Compaction: Compact blended planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D 698.
- E. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.06 APPLYING COMPOST TO SURFACE OF PLANTING SOIL

- A. Application: Apply 1 inch of compost to surface of in-place planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.
- B. Finish Grading: Grade surface to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.07 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents according to authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.
- B. Pre-Emergent Herbicides (Selective and Nonselective): Apply to tree, shrub, and ground-cover areas according to manufacturer's written recommendations, and only during the appropriate times in plants' life cycle. Do not apply to seeded areas.
- C. Post-Emergent Herbicides (Selective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations and only during the appropriate times in plants' life cycle.

3.08 FIELD QUALITY CONTROL

- A. Drainage test: See Document 32 93 00 "Planting" for drainage test at tree wells.

3.09 PROTECTION

- A. Protect areas of in-place soil from compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:
 - (1) Storage of construction materials, debris, or excavated material.

- (2) Parking vehicles or equipment.
 - (3) Vehicle and foot traffic.
 - (4) Impoundment of water.
 - (5) Excavation or other digging unless otherwise indicated.
- B. If planting soil or subgrade is overcompacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the planting soil and contamination; restore the subgrade as directed by Landscape Architect and replace contaminated planting soil with new planting soil.

3.10 CLEANING

- A. Protect areas adjacent to planting-soil preparation and placement areas from contamination. Keep adjacent paving and construction clean and work area in an orderly condition.
- B. Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off District's property unless otherwise indicated.

END OF DOCUMENT 32 91 13

SECTION 32 91 14
BIORETENTION SOILS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Specifications for furnishing, placing, and compacting bioretention soils as indicated.
- B. Related Sections:
 - 31 20 00 Earthwork
 - 32 40 00 Storm Drainage System

1.02 SUBMITTALS

The contractor shall submit to the Engineer for approval:

- A. A 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.
- D. Quality analysis results for compost performed in accordance with Seal of Testing Assurance (STA) standards, as specified in Section 1.4.
- 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. A description of the equipment and methods used to mix the sand and compost to produce Bioretention Soil.
- G. Provide the following information about the testing laboratory(ies) name of laboratory(ies) including:
 - 1. Contact person(s)
 - a. Address(es)
 - b. Phone contact(s)
 - c. E-mail address(es)
 - d. Qualifications of laboratory(ies), and personnel including date of current certification by STA, ASTM, or approved equal

PART 2 - PRODUCTS

2.01 SAND FOR BIORETENTION SOIL

A. General

1. 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 non-plastic.

B. Sand for Bioretention Soil Texture.

1. Sand for Bioretention Soils shall be analyzed by an accredited lab using #200, #100, #40, #30, #16, #8, #4, and 3/8 inch sieves (ASTM D 422 or as approved by the Engineer), and meet the following gradation:

Sieve Size	Percentage Passing (by weight)	
	<i>Min</i>	<i>Max</i>
3/8 Inch	100	100
No. 4	90	100
No. 8	70	100
No. 16	40	95
No. 30	15	70
No. 40	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.

2.02 TOPSOIL FOR BIORETENTION SOIL

A. General: Topsoil shall be free of wood, waste, or any other deleterious material.

- #### B. Topsoil for Bioretention Soil Texture: The overall topsoil texture shall be loamy sand as analyzed by an accredited laboratory. The overall dry weight percentages shall be 60-90% sand, with less than 20% passing than the #200 sieve and less than 5% clay of the total weight with no gravel.

2.03 COMPOSTED MATERIAL

- #### A. Compost shall be a well decomposed, stable, weed free organic matter source 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).
- #### B. Compost Quality Analysis Before delivery of the soil, the Contractor 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 Evaluation of Composting and Compost (TMECC). The lab report shall verify:

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1. Feedstock Materials shall be specified and include one or more of the following: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues.
 2. Organic Matter Content: 35% - 75% by dry wt.
 3. Carbon and Nitrogen Ratio: C:N < 25:1.
 4. Maturity/Stability: shall have a dark brown color and a soil-like odor. Compost exhibiting a sour or putrid smell, containing recognizable grass or leaves, or is hot (120F) upon delivery or rewetting is not acceptable. In addition, any one of the following is required to indicate stability:
 - a. Oxygen Test < 1.3 O₂ /unit TS /hr
 - b. Specific oxy. Test < 1.5 O₂ / unit BVS
 - c. Respiration test < 8 C / unit VS / day
 - d. Dewar test < 20 Temp. rise (°C)
 - e. Solvita® > 5 Index value
 5. Toxicity: any one of the following measures is sufficient to indicate non-toxicity.
 - a. NH₄- : NO₃-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
 6. Nutrient Content: provide analysis detailing nutrient content including N-P-K, Ca, Na, Mg, S, and B.
 - a. Total Nitrogen content 0.9% or above preferred.
 - b. Boron: Total shall be <80 ppm; Soluble shall be <2.5 ppm
 7. Salinity: Must be reported; < 6.0 mmhos/cm
 8. pH shall be between 6.5 and 8. May vary with plant species.
- C. Particle size: 95% passing a 1/2" screen.
- 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. 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.
- H. Select Pathogens: Salmonella <3 MPN/4grams of TS, or Coliform Bacteria <10000 MPN/gram
- I. Trace Contaminants Metals (Lead, Mercury, Etc.) Product must meet US EPA, 40 CFR 503 regulations
- J. Compost Testing. The Contractor will test all compost products within 120 calendar days prior to application. Samples will be taken using the STA sample collection protocol. (The

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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 Contractor will pay for the test.

PART 3 - EXECUTION

3.01 PLACEMENT AND COMPACTION OF BIORETENTION SOILS

- A. Place the bioretention soil in 8" to 12" lifts. Lifts are not to be compacted but are placed to reduce the possibility of excessive settlement. Allow time for natural compaction and settlement prior to planting. Bioretention soil may be watered to encourage compaction.

END OF SECTION 32 91 14

SECTION 32 92 00

TURF AND GRASSES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Seeding.
 - 2. Hydroseeding.
 - 3. Sodding.

1.2 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 32 91 13 "Soil Preparation and drawing designations for planting soils.
- E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For landscape Installer.
- B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
 - 1. Certification of each seed mixture for turfgrass sod. Include identification of

source and name and telephone number of supplier.

- C. Product Certificates: For fertilizers, from manufacturer.
- D. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required maintenance periods.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf establishment.
 - 1. Professional Membership: Installer shall be a member in good standing of either the National Association of Landscape Professionals or AmericanHort.
 - 2. Experience: Three years' experience in turf installation.
 - 3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 - 4. Personnel Certifications: Installer's personnel assigned to the Work shall have certification in one of the following categories from the National Association of Landscape Professionals:
 - a. Landscape Industry Certified Technician - Exterior.
 - b. Landscape Industry Certified Lawn Care Manager.
 - c. Landscape Industry Certified Lawn Care Technician.
 - 5. Pesticide Applicator: State licensed, commercial.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.
- C. Bulk Materials:
 - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.

2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

1.7 FIELD CONDITIONS

- A. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species: See Plans

2.2 TURFGRASS SOD

- A. Turfgrass Sod: complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture that is strongly rooted and capable of vigorous growth and development when planted.
- B. Turfgrass Species: See Plans

2.3 MULCHES

- A. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 2 to 5 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
 1. Organic Matter Content: 60 percent of dry weight.
 2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

2.4 PESTICIDES

- A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted

pesticides unless authorized in writing by authorities having jurisdiction.

- B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
 - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 - 2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - 3. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.2 PREPARATION

- A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
 - 2. Protect grade stakes set by others until directed to remove them.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

- A. General: Prepare planting area for soil placement and mix planting soil according to Section 329113 "Soil Preparation.

- B. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- C. Before planting, obtain Engineer's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
 - 1. Mix slurry with fiber-mulch manufacturer's recommended tackifier.
 - 2. Spray-apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.
 - 3. Spray-apply slurry uniformly to all areas to be seeded in a two-step process. Apply first slurry coat at a rate so that mulch component is deposited at not less than 500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate. Apply slurry cover coat of fiber mulch (hydromulching) at a rate of 1000 lb/acre.

3.5 SODDING

- A. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.
- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
 - 1. Lay sod across slopes exceeding 1:3.
 - 2. Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.
- C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

3.6 TURF MAINTENANCE

- A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy,

viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.

1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
 3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.
1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.
- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
- D. Turf Postfertilization: Apply slow-release fertilizer after initial mowing and when grass is dry.
1. Use fertilizer that provides actual nitrogen of at least 1 lb/1000 sq. ft. to turf area.

3.7 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Architect:
1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
 2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
 3. Satisfactory Sprigged Turf: At end of maintenance period, the required number of sprigs has been established as well-rooted, viable plants, and areas between sprigs are free of weeds and other undesirable vegetation.
- B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

3.8 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.
- B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.9 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.
- C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- D. Remove nondegradable erosion-control measures after grass establishment period.

3.10 MAINTENANCE SERVICE

- A. Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Turf Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:
 - 1. Hydroseeded Turf: 60 days from date of planting completion.
 - a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.
 - 2. Sodded Turf: 60 days from date of planting completion.

END OF SECTION 32 92 00

SECTION 32 92 10

SYNTHETIC TURF

1.0 GENERAL REQUIREMENTS

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this section.

1.2 Scope of Work

- A. Furnish all labor, materials, tools, and equipment necessary to install, in place, all synthetic turf material as indicated on the plans and as specified herein. The installation of all new materials shall be performed in strict accordance with the Manufacturer's written installation instructions, and in accordance with all approved shop drawings.
- B. Prior to order of materials, the Synthetic Turf Contractor shall submit the following:
 - 1. Product data, including Independent Laboratory Test Results,
 - 2. Installation details,
 - 3. Sample Warranty,
 - 4. Field layout and striping plans,
 - 5. Details on construction, especially any details that may deviate from plans and specifications.
- C. Prior to the beginning of installation, the Synthetic Turf Contractor of the synthetic turf shall verify the base for planarity. Upon written confirmation from the base contractor that compaction/planarity and drainage/permeability specifications have been achieved, the installation of synthetic turf will proceed as arranged.
- D. Prior to Final Acceptance, the Synthetic Turf Contractor shall submit to the Owner three (3) copies of Executed Warranty Documents and Maintenance Manuals, which will include necessary instructions for the proper care and preventative maintenance of the synthetic turf system, including painting and striping.

1.3 Shop Drawings

- A. Shop drawings shall be prepared and contain all pertinent information regarding installation. These drawings shall be submitted to the Owner or Owner's representative for approval prior to the manufacturing and shipment of materials.

- B. Submit drawings for:
1. Installation details, edge detail, goal post detail, other inserts, and covers, etc., as required by contract.
 2. The Synthetic Turf Manufacturer must have been in business under the same ownership for at least five years, and shall have been installing similar sports fields for that entire period.
 3. Striping plan showing any field lines, markings and boundaries, and field logos per project drawings.

1.4 Quality Assurance

- A. Synthetic Turf Manufacturer is defined as:
1. A company specializing in the design and manufacturing of infilled turf systems with not less than ten (10) years documented experience.
 2. The Synthetic Turf Manufacturer must have been in business under the same ownership for at least ten (10) years, and shall have been installing similar sports fields for that entire period.
 3. Manufacturer shall have an experienced technical services and sales professional who is available during the course of the work to meet personally with the Owner, Contractor, and Landscape Architect.
- B. Synthetic Turf Manufacturer's Experience:
1. The Synthetic Turf Manufacturer shall have the experience of at least one hundred (100) acceptable installations of full-size fields (minimum 65,000 sq. ft.) in the United States within the past twelve (12) months of tufted, polyethylene grass-like fabrics with infill. Submit a list of all applicable installations with the bid.
 2. The Synthetic Turf Manufacturer shall have the experience of one hundred (100) acceptable installations (minimum 65,000 sq. ft.) of fields that are at least eight (8) years old. Submit a list of all applicable installations with the bid.
 3. The Synthetic Turf Manufacturer shall have the experience of fifty (50) acceptable installations of the specific fiber system specified. Submit a list of all applicable installations with the bid.
 4. The Synthetic Turf Manufacturer must be a certified member of the Synthetic Turf Council in good standing.
 5. The Synthetic Turf Manufacturer must have and operate its own extensive research and development laboratory. This laboratory must include testing devices for the following tests: Yarn Tensile Strength, Yarn Elongation, Tuft Bind, Grab Tear Strength, Seam Strength, g-max, Force Reduction, Vertical Deformation, Ball Roll, Ball Rebound, Rotational Resistance, Linear Traction, Relative Abrasive Index, UV Resistance, Flammability, and Simulated Aging.

6. Manufacturer must have an ISO 17025 Accredited Laboratory in place at the time of manufacturing to verify product standards and quality.
7. Manufactures without an ISO 17025 Accredited Laboratory will not be accepted. Testing of the synthetic turf system is mandatory and must be provided from a laboratory that is accredited by the NVLAP. Testing from laboratories that are not NVLAP accredited will not be accepted. The National Institute of Standards and Technology (NIST) is part of the U.S. Department of Commerce and administers the National Voluntary Laboratory Accreditation Program (NVLAP). Accreditation requirements are established in accordance with the U.S. Code of Federal Regulations (CFR, Title 15, Part 285), National Voluntary Laboratory Accreditation Program, and encompass the requirements of ISO/IEC 17025.
8. The Synthetic Turf Manufacturer must have manufactured and installed fields at every level of competition, including high school, college and professional.
9. The Synthetic Turf Manufacturer must have at least five (5) NCAA Division 1 fields, (2) NFL installations and two (2) MLB fields currently installed.
10. The Synthetic Turf Manufacturer must not have had more than (5) five fields replaced, under warranty, during the past five (5) years.
11. The Synthetic Turf Manufacturer must be vertically integrated including in-house tufting, polyethylene monofilament extrusion, in-house coating, polyurethane compounding, manufacture own primary backing, in-house yarn texturizing, ability and flexibility to tuft various gauge widths and have the ability to recycle used/old fields.
12. The Synthetic Turf Manufacturer must have a fully integrated quality system, directly based on and compliant with ISO 9000, ISO 14001 and OHSAS 18001 international standards.
13. The Synthetic Turf Vendor shall offer a fully Cradle-to-Cradle certified synthetic turf system inclusive of the turf product, the underlayment and the infill.
14. The Synthetic Turf System Vendor shall have the capability to remove, reclaim and recycle the synthetic turf system at the end of its useful life. The Synthetic Turf System Vendor must provide documentation outlining their product lifetime recycle / reuse program that is currently in place. A minimum of 5 fields must have been used in this process. All material must demonstrate the capability to reuse in a product that employs a cradle to cradle design. Reuse or other diversion plans that do not include production of a new and useful product will not be considered.

C. Synthetic Turf Contractor is defined as:

1. A contractor that has built and installed a minimum of ten (10) infilled synthetic turf fields. Turf contractors and on-site superintendent shall provide a resume to provide proof of experience.
 - a. At any time after award of the contract and before the completion of the project, should any member of the approved crew or subcontractor discontinue their relationship with the synthetic turf

crew or subcontractor, the Owner shall be notified. Failure to provide personnel meeting the minimum qualifications shall be considered default of the contract requirements.

- D. Warranty: The Synthetic Turf Contractor shall submit its Manufacturer's Warranty, which guarantees the usability and playability of the synthetic turf system for its intended uses for an eight (8) year period commencing with the date of Substantial Completion.
1. The warranty submitted must have the following characteristics:
 - a) Must provide full-field coverage for eight (8) years from date of Substantial Completion,
 - b) Must warrant materials and workmanship,
 - c) Must warrant that the materials installed meet or the product specifications within manufacturing tolerances,
 - d) Must have a provision to either repair or replace such portion of the installed materials that are no longer serviceable to maintain a serviceable and playable surface,
 - e) Must be a Manufacturer's warranty from a single source covering workmanship and all self-manufactured or procured materials,
 - f) Must not be limited to the amount of annual usage,
 - g) Must provide, at the time of bid, a copy of its pre-paid 3rd party insurance policy. This policy must have an annual aggregate amount of no less than \$60 million, and a per incident limit of no less than \$7 million per claim. The third party insurer must have an AM Best rating of A++ or better.

1.5 Existing Conditions

- A. If the surface on which the new synthetic turf is to be installed is an existing asphaltic/concrete base, the Synthetic Turf Contractor will be responsible for any damage due to negligence to the concrete during removal/installation of the synthetic turf system provided there are no failures below the surface which contribute to the damage. The football goal posts, if any, are to be removed and reinstalled by the Owner or Prime Contractor to facilitate the installation of the new synthetic turf system.
- E. If the surface on which the new synthetic turf to be installed is a new asphaltic/concrete base or a new base of compacted, porous aggregate, the Synthetic Turf Contractor will be responsible for any damage to the base during removal/installation of the synthetic turf system after the deficiencies (if any) have been corrected by the base contractor with respect to planarity, compaction, and drainage/permeability. New in ground equipment, football goal post (if any) and /or infield mix backfill within the contiguous synthetic turf limits or immediately adjacent thereto are to be installed prior to the installation of the

synthetic turf system. Damage to the synthetic turf system during the installation of such materials is not the responsibility of the Synthetic Turf Contactor.

1.6 Schedule

- A. The Synthetic Turf Contractor shall complete all work on the synthetic turf system in accordance with the published project schedule, or as mutually agreed upon.
- B. The synthetic turf contractor will require unencumbered use of staging area within fifty (50) feet of the synthetic turf area(s) being installed in order to complete the work. The Synthetic Turf Contractor shall also be afforded unencumbered access through the construction site to reach the synthetic turf field area being installed.

1.7 Surface Area

- A. The Synthetic Turf Contractor is to verify all measurements.

1.8 Utilities

- A. Owner or Prime Contractor will supply necessary water, adequate lighting, and electricity for installation. Owner or Prime Contractor shall permit use of toilet and wash up facilities.

2.0 PRODUCTS

2.1 Approved Products: Shaw Sports Turf: Legion Pro; or approved equal

2.2 Materials

- A. Shall be tufted, polyethylene, grass-like fabric coated with a secondary backing of high-grade polyurethane. Refer to grid in section 2.2 H. The two fibers specified in this grid shall be tufted through the same needle in a grass-like fabric to a finished pile-height also specified in the grid. The monofilament fiber must have multiple contours in the fiber cross-section consisting of a four-peak wave. The contour angles of the surface must result in interference of the light rays reflected by the surface to produce a dull appearance to the turf surface. The fiber must exhibit a general decrease in thickness from the center of the cross section to each tip.

- B. All components and their installation method shall be designed and manufactured for use on outdoor athletic fields. The materials as hereinafter specified should be able to withstand exposure in all climates, be resistant to insect infestation, rot, fungus, mildew, ultraviolet light and heat degradation, and shall have the basic characteristics of flow-through drainage, allowing free movement of surface runoff through the synthetic turf fabric where such water may flow to the existing base and into the field drainage system.
- C. The finished playing surface shall appear as mowed grass and shall resist abrasion and cutting from normal use.
- D. The polyethylene pile yarn shall be a proven athletic caliber yarn designed specifically for outdoor use and stabilized to resist the effect of ultraviolet degradation, heat, foot traffic, water, and airborne pollutants.
- E. The system shall be tufted at the pile height and gauge listed in specification grid, refer to grid in section 2.2 H.
- F. The Primary Backing must be a multi-layer backing, contain UV stabilizers and must pass 3000 hours of QUV A testing, refer to grid in section 2.2 H.
- G. The Secondary Backing of high-grade polyurethane shall be applied to the Primary Backing. Secondary Backing adds resistance to water degradation and strengthens grip on fibers, refer to grid in 2.2 H.
- H. The entire backing shall be coated with holes perforated throughout the backing at the Synthetic Turf Manufacturer's recommended interval to allow for drainage. Partially coated backings or latex coating materials shall not be acceptable.

Pile Yarn	Polyethelene Monofilament/Slit Film	METHOD
Linear Density (Denier) Mono/Slit*	10,800/5,000	ASTM D 1577
Yarn Thickness Mono/Slit	300/100 microns	ASTM D 3218
Pile Weight****	46 oz./yd ²	ASTM D 5848
Finished Pile Height****	2.0	ASTM D 5823
Product Weight (total)***	74 oz./yd ²	ASTM D 5848
Primary Backing Weight****	8 oz./yd ²	ASTM D 5848
Secondary Coating Weight+	20 oz./yd ²	ASTM D 5848
Fabric Width	15' (4.57m)	ASTM D 5793
Tuft Gauge	1/2"	ASTM D 5793
Grab Tear Strength Avg.	> 200 lb.-F	ASTM D 5034

Tuft Bind (Avg.)	> 10 lb.-F	ASTM D 1335
Infilltrometer	> 25	ASTM D3885

Except where noted the above specifications are nominal.

* Values are +/- 8%. ***Values are +/- 10 oz. ****Values are +/- 5%. +Values are +/- 3 oz./yd2.

- I. **Approved Infill Product:** Shaw Sports Turf: NaturalPlay; or approved equal
A. Shall be equivalent to NaturalPlay provided by Shaw Sports Turf, 185 S. Industrial Blvd. Calhoun, GA 30701.

B. If the Contractor wishes to provide an equivalent, he/she shall provide information prior to the bid illustrating equivalent performance characteristics of the infill. The following criteria shall be met:

- i. 100% natural combination of coconut husks and fiber with highly rounded shells from black and English walnuts.
- ii. Balanced particle sizes distribution.
- iii. Superior cooling capabilities.
- iv. Perform well in all 7-playability metrics
- v. 12-18 Mesh
- vi. 0.2764 gr/cc density

Property	Standard	Specification
Sand Granule Shape	ASTM D442	Semi-rounded to rounded angularity
Sand Sieve Analysis	ASTM E11	20 / 40 MESH (0.85mm - 0.425 mm)
Infill Lbs. of Geofill	N/A	0.75
Infill Lbs. of Safeshell	N/A	0.75
Infill Lbs. of Sand	N/A	6.0

*Reference installation instructions

- J. Approved Shock Pad: Schmitz EcoSport by Schmitz Foam or approved equal.
- K. Perimeter edge details, underground storm sewer piping and connections, and goal post foundations required for the system shall be as detailed and recommended by the Design Professional, and as approved by the Owner. The cost for these embedded items shall be included in the Sitework Contractor's price along with the compacted, porous base.

3.0 EXECUTION

3.1 General

- A. The installation shall be performed in full compliance with approved shop drawings.

- B. Only factory-trained technicians skilled in the installation of athletic caliber synthetic turf systems shall undertake the placement of the system.
- C. Subject to the requirements in Section 1.2(B), the surface to receive the synthetic turf shall be verified by the Synthetic Turf Contractor as ready for the installation of the synthetic turf system and must be perfectly clean as installation commences and shall be maintained in that condition throughout the process.

3.2 Removal (if necessary)

- A. Synthetic Turf Contractor shall remove the existing synthetic turf and under-pad from the field (as required by contract).
- B. After removal of the stadium surface, the existing synthetic turf and pad materials shall be rolled up and placed at a location designated by the Owner.

3.3 Installation

- A. The completed base and adjacent curbs/perimeter nailer shall be inspected by the Engineer or Sitework Contractor by means of a laser and plotted on a 10-foot grid. Based upon the Contractor's inspection of the topographical survey, the Sitework Contractor shall fine grade the base suitably, including properly rolling and compacting the base to achieve a surface planarity within 1/4" in 10-feet (+0, - 1/4"). OWNER, ENGINEER, OR PRIME CONTRACTOR SHALL NOT APPROVE THE BASE FOR TOLERANCE TO GRADE WITHOUT OBTAINING THE TOPOGRAPHICAL SURVEY.
- B. Subgrade and base shall be uniformly compacted to a minimum of 95% of maximum dry density. Care must be exercised to minimize segregation. Engineer/Sitework Contractor shall make written records available to Synthetic Turf Contractor's inspector for both drainage/permeability and compaction/planarity as obtained from a minimum 10' x 10' grid.
- C. The Synthetic Turf Project Superintendent shall thoroughly inspect all synthetic turf materials delivered to the site for both mixing and quantity to assure that the entire installation shall have sufficient material to maintain proper mixing ratios.
- D. Synthetic turf shall be loose-laid across the field, stretched, and attached to the perimeter edge detail. Synthetic turf shall be of sufficient length to permit full cross-field installation. No head or cross seams will be allowed except as needed for inlaid fabric striping or to accommodate programmed cut-outs.
- E. All seams shall be flat, tight, and permanent with no separation or fraying. Selvedge edges of all panels must be cut and discarded prior to being installed. Gluing method is preferred. Seaming tape is to be constructed of high tenacity,

coated non-woven fabric. Any inlaid markings shall be adhered to seaming tape with a high strength polyurethane adhesive applied per the Synthetic Turf Manufacturer's standard procedures for outdoor applications. All main fabric seams shall be transverse to the field direction (i.e. run perpendicularly across the field).

- F. Infill materials shall be properly applied in numerous lifts using special broadcasting equipment. The synthetic turf shall be raked and brushed properly as the mixture is applied. The infill materials can only be applied when the synthetic turf fabric is dry.

- L. g-Max (shock attenuation) test < 200 at installation.

3.4 Field Markings and Decorations

- A. Field markings and decorations shall be installed in accordance with approved project shop drawings.

3.5 Clean Up

- A. Synthetic Turf Contractor shall provide the labor, supplies, and equipment, as necessary, for final cleaning of the surfaces.
- B. The Synthetic Turf Contractor shall keep the area clean and clear of debris throughout the project.
- C. Surfaces, recesses, enclosures, etc., shall be cleaned as necessary to leave the work area in a clean, immaculate condition ready for immediate occupancy and use by Owner.

SECTION 32 93 00

PLANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: All labor, materials, supplies, tools and transportation to perform all operations in connection with and reasonably incidental to the complete installation of the planting as shown on the Drawings, and specified herein.
- B. Work includes but is not limited to:
 - 1. Plant Material
 - 2. Mulches
 - 3. Weed Barrier (Sheet Mulch)
 - 4. Tree Staking
 - 5. 1-year Landscape Establishment
- C. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 RELATED SECTIONS:

- A. Section 01 74 19 "Construction Waster Management and Disposal"
- B. Section 31 10 13 "Site Preparation and Plant Protection"
- C. Section 32 91 13 "Soil Preparation"
- D. Section 31 23 00 "Excavation and Fill"
- E. Section 32 84 00 "Landscape Irrigation"

1.3 QUALITY ASSURANCE

- A. Contractor must have a valid California C-27 Contractor's license authorized by the State of California.
- B. Contractor shall provide evidence of sufficient experience with similar projects. Provide list including a minimum of five recently installed projects with location, date completed, owner, and contact person and phone number.
- C. Contractor must have assigned to the project at least one employee possessing a

California State Chemical Applicator's License for the control of weeds, plant diseases and other pests.

- D. Plant materials: All plants shall have been grown in nurseries that have been inspected by State of California Department of Agriculture and will be tagged with correct names as per Standard Plant Names. All plant material will be inspected by the Owner's Representative before being planted, and all plant material not meeting specification requirements will be rejected. Replace, at expense of Contractor, rejected trees, shrubs and groundcovers with plant materials of species and variety that meet specification requirements.
- E. Drawings: For the purposes of clarity and legibility, the drawings are essentially diagrammatic, exact location of items are not indicated unless specifically dimensioned. Do not willfully install the landscape materials as shown on the drawings when it is obvious in the field that unknown obstructions, grade differences or discrepancies in area dimensions exist. Such obstructions or differences shall be brought to the attention of the client. In the event this notification is not performed, the Contractor will assume full responsibility for any revision necessary.

1.4 SUBMITTALS

- A. Product Data: For each of the following:
 - 1. Mulch: Cut sheet verifying feedstock type and producer.
 - 2. A complete plant list indicating species, variety, quantity and size shall be submitted to and accepted by the Owner's Representative prior to locating plant material on-site.
 - 3. Tree Staking materials
 - 4. Sheet Mulch Materials: 100% Recycled B Flute Cardboard
- B. Samples for Verification: For each of the following:
 - 1. The following items shall be submitted in a 1-pint minimum volume of each in sealed plastic bag or container. Submittal shall be labeled with weight and source of each item. Each submittal shall represent a true sample of material to be provided at the project site:
 - a. Mulch

PART 2 - PRODUCTS

2.1 PLANT MATERIAL

- A. No planting substitutions will be allowed without prior written approval of the Landscape Architect.
- B. All plant material must be neonicotinoid free.

- C. Provide plants typical of their species or variety, with normal, densely developed branches and vigorous, fibrous root systems. Provide only sound, healthy, vigorous plants free from defects, disfiguring knots, sunscald injuries, frost cracks, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation. All plants shall have a fully developed form without voids and open spaces.
- D. Plants larger than those specified in the plant list may be used when acceptable to the Landscape Architect. If the use of larger plants is acceptable, increase the spread of roots or rootball in proportion to the size of the plant.
- E. Plants planted in rows shall be matched in form.
- F. Meet all requirements of USA Standard for Nursery Stock, published by the American Association of Nurserymen, Inc., except as otherwise supplemented and modified under this specification section.
- G. Cold storage plants are not acceptable.
- H. Container plants, one gallon size and larger, shall have grown therein a minimum of six months and a maximum of two years, with roots filling the containers but not showing evidence of being or having been restricted, deformed or rootbound.
- I. Provide untapped, straight, single-leader trees except for multiple stem (clump) trees. Deciduous trees shall have heavier than normal top and balanced branching.
- J. Trees and shrubs shall have well-developed branch systems; shrubs shall be full-foliaged and not leggy.
- K. Thin, weak and leggy plants will be rejected by the Engineer.
- L. All plant material shall be legibly tagged by specie and variety.
- M. Nomenclature: Genus, species and variety as indicated on Plant Material Listing. Plant names are in accordance with those given in Standardized Plant Names, 1942 edition; names of varieties not included therein go by names generally accepted in nursery trade.
- N. Plant materials not meeting these requirements shall be removed from the site and replaced to the satisfaction of the Owner's Representative Contractor's expense.

2.2 MULCH

- A. Mulch shall be:
 - 1. Made from organic materials including tree trimmings, clean (unpainted and untreated) wood or wood and plant trimmings, including medium-coarse compost.
 - 2. Free of physical contamination with zero visible contamination at time of final walk-through. If contamination is present when mulch is delivered, contractor shall reject load or remove contamination.

3. It cannot include forest industry products and byproducts such as redwood bark, peat moss, or gorilla hair, recycled tires or other inorganic materials.
4. Local and generated from feedstock/ materials sourced within 100 miles or produced at a facility within 100 miles of the project site.
5. Light in color. Black mulches or grape seed pumice mulch is not allowed
6. Acceptable mulch suppliers include:

Recycled mulch- Treeincarnation - Greenwaste recycle yard

<http://www.greenwasterecycleyard.com/mulch.htm>

2.3 WEED BARRIER (SHEET MULCH) CARDBOARD

- A. Cardboard for sheet mulch shall be 100% recycled B flute cardboard 70# weight. Rolls of 70# weight cardboard are 36" x 250' and are sold at a 25 roll minimum.

2.4 TREE STAKING MATERIALS

- A. Staking Materials:

1. Stakes: Lodgepole pine (untreated), 2-inch diameter by 10 feet long minimum actual dimensions, of uniform size and pointed at one end.
2. Ties: recycled car tire straps, recycled bicycle innertube or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive plants for compliance with requirements and conditions affecting installation and performance.
 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 2. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
 3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.

3.2 WEED BARRIER (SHEET MULCH)

A. Shrub, tree and groundcover areas:

1. Sheet mulch to be applied to ALL planting areas.
2. Incorporate 3CY/1000sf of quality compost specified above in section 3.2 into the site soil.
3. Install 5 gallon and larger plant materials
4. Apply a minimum of two layers of 100% recycled B flute cardboard as a biodegradable weed barrier to the entire planting area, completely covering all existing soil and remaining herbaceous vegetation, if any.
 - a. Wet cardboard while applying to prevent it from blowing away.
 - b. Sheets of cardboard shall overlap a minimum of 12".
 - c. Cardboard shall abut directly against edge of pavement, curbs, boulders or other site features. Cardboard shall not cover tree and shrub root crowns.
 - d. Fold excess cardboard under itself when abutting against hardscape objects or root crowns areas, as opposed to being cut, avoid excessive cardboard scraps This folding under process is greatly aided when the cardboard is wet.
 - e. Avoid walking on wet cardboard or tearing cardboard. Tears allow weeds to grow through the barrier.
 - f. All cardboard scraps shall remain separated from other construction debris and shall be disposed at the local recycling facility or used on site to cover any holes in cardboard creating during installation.
5. Install an additional 3CY/1000sf of quality organic compost on top of cardboard layer prior to planting to protect cardboard from tearing.
6. Planting in sheet mulch:
 - a. Include other organic amendments as recommended by the soils report per section 2.2 and 2.3.
 - b. For 4" pots or smaller plant directly into the compost layer on top of the cardboard without additional compost backfill.
 - c. For 1 gallon and larger plants, punch or cut holes in the cardboard to plant. Top of rootball shall be even with top of mulch. Keep stems and trunks of all plants clear of compost, mulch, and debris. Incorporate quality, organic compost with excavated soil from the plant pit at a ratio of 1 part compost to 2 parts soil, or as recommended by the soils report.
7. Layout drip lines.

8. Apply 3 inches of mulch on top of the compost for a total sheet mulch depth of approximately 4 inches.

3.3 TREE, SHRUB, VINE AND GROUNDCOVER PLANTING

- A. Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.
- B. Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.
- C. Excavate circular planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are not acceptable.
- D. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
- E. Scarify sides of planting pit if smeared or smoothed during excavation.
- F. Excavate approximately three times as wide as ball diameter for trees and two times for shrubs.
- G. Maintain required angles of repose of adjacent materials as shown on the Drawings. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
- H. Maintain supervision of excavations during working hours.
- I. Keep excavations covered or otherwise protected when unattended by Installer's personnel.
- J. Imported topsoil removed from excavations may be used as backfill. Backfill mix should be amended per soils test.
- K. Obstructions: Notify Owner's Representative if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
- L. Drainage: Notify Owner's Representative if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits. Fill each pit with water, then observe drainage rate for problems prior to plant installation. If drainage problems are present, discuss with the Engineer.
- M. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

- N. Set trees and shrubs 1" above finished grade. Finish grade is soil level, not including compost and mulch.
- O. Space 1-gallon groundcover and shrubs evenly as indicated on the drawings, staggering the spaces around larger shrubs and trees.
- P. A four-inch-high water basin shall be constructed around each shrub and tree. After planting, water each plant by filling basin twice.
- Q. All trees shall be staked and tied as per detail immediately after planting. Trees will stand plumb after staking.
- R. Water plantings thoroughly every two to three days as required to establish proper rooting.
- S. Groundcovers in Flats: Supply delivery tags to help confirm adequacy of plant spacing's. Engineer will take particular care in ensuring that these plants are spaced as specified on plans.

3.4 TREE AND SHRUB PRUNING

- A. Remove only dead, dying, or broken branches. Do not prune for shape.
- B. Prune, thin, and shape trees, shrubs, and vines as directed by Landscape Architect.
- C. Prune, thin, and shape trees, shrubs, and vines according to standard professional horticultural and arboricultural practices. Unless otherwise indicated by Landscape Architect, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.
- D. All tree species shall have one singular leader unless specified as multi stem. Trees with multiple leaders may be rejected by Landscape Architect; if approved, contractor will preserve the leader that will best promote the symmetry of the plant. Cut branches flush with the trunk or main branch, at a point beyond a lateral shoot or bud a distance of not less than one-half the diameter of the supporting branch. Make cut on an angle.
- E. Do not apply pruning paint to wounds.

3.5 TREE STAKING

- A. Install trunk stabilization as follows unless otherwise indicated:
- B. Staking: Stake all trees per plan and details.

3.6 LANDSCAPE ESTABLISHMENT

- A. See section 1.1 for landscape establishment duration.
- B. Plant trimmings must be cut to less than 4 inches and reincorporated into the mulch layer of the landscape area away from storm drains. If plant trimmings are too much

for the landscape area as directed by the City Contractor to export plant debris to a facility where it will be used to produce compost or mulch. Exempt materials include palm fronds, cactus and poison oak as defined by local regulations.

C. Pruning

1. Selective pruning. Plants shall be pruned selectively to remove individual stems or branches that extend beyond the natural conformation of the plant to a lateral branch or at the point of attachment. Woody groundcovers shall be selectively pruned to control growth towards pavements rather than edged.
2. Hedging and shearing. Contractor shall not sheer plants into formal shapes as this destroys the natural form of the plant and generates excessive waste.
3. Tree pruning shall be performed only by trained, experienced personnel. An I.S.A. Certified Arborist or Tree Worker is to be present at all times during pruning.

D. Protect soil from compaction. Soil may not be worked when wet, generally between October and April. Throughout the year when temporary vehicular access is needed over non-paved areas, distribute the load over the soil with 6 inches of coarse organic mulch or reusable planks. Maintain a 3-inch layer of mulch.

E. Quality, organic compost must be used as the soil amendment for all landscape areas. Compost must meet all requirements in section 2.3 above. Timing of compost applications to be determined by the City.

1. Topdress shrub areas with 3/8-inch compost one time per year (for bidding purposes).

F. Use only organic fertilizers and amendments

1. Acceptable products are those allowed for use in crop production by at least one of the following:
 - a. Organic Materials Review Institute's Generic Materials List
 - b. California Department of Food and Agriculture's Organic Input Materials Program
 - c. U.S. Department of Agriculture's National Organic Program
2. Schedule: For bidding purposes apply the following fertilizers: compost, compost tea, and organic fertilizers. The nitrogen content of compost varies; check with producer. Fertilize per soils test maintenance recommendations.

G. Mulching. Contractor shall maintain a minimum of 3" of mulch at all times over soil surface that is not covered by vegetation. Keep mulch 6" away of tree trunks and 4" away from shrub stems. Mulch shall be reapplied at least once per year. Restore plant basins. Replenish mulch to a three inch depth at 6 months and right before the end of one year establishment period.

H. Irrigation Maintenance, Monitoring and Repair

1. Determine irrigation run time demand monthly by recording water meter reading before and after irrigation. Report water use to the property City at a minimum of once a month. Reconcile this data with run times and flow rates to determine if there is unusual consumption which may indicate stuck valves or leaks.
2. Assess the irrigation system while it is in operation at every site visit during the watering season.
3. Submit monthly documentation of irrigation checks to the City and note any changes or adjustments to the system on the 'as built' irrigation plans.
4. Perform the following weekly April through October and monthly November through March:
 - a. Clean and adjust all sprinkler and bubbler heads, drip emitters and valves for proper coverage.
 - b. Check and adjust irrigation system pressure.
5. Perform the following systems check twice a year, at a minimum:
 - a. Ensure all flush valve/cap locations and valve boxes are visible and can be opened.
 - b. Inspect valves, filters, and pressure regulators for damage or leaks.
 - c. Check wire splices.
 - d. Clean valve boxes of dirt and debris.
 - e. Inspect, clean and flush filters and replace damaged or torn filters.
 - f. Flush laterals.
 - g. Make sure plants have adequate numbers of drip emitters for their size.
 - h. Test backflow preventers.
- I. Soil subsidence- Fill in any soil subsidence that may occur, replant trees and or shrubs that may have settled.
- J. Adjust and repairing tree staking materials.
- K. Utilize Integrated Pest Management- see section 3.16. Utilize Organic Pest Management. Pesticides that are not allowed by OMRI in its generic materials list are prohibited.
- L. Weed management
 1. Weeds must be properly managed throughout the duration of the establishment

period in all planting areas including but not limited to non-irrigated native seed mix, seeded lawn, native no mow seed and biofiltration sod and mulched tree and mulched shrub and groundcover planting areas.

2. Weeds should be removed at a minimum of once a month. Acceptable weed levels to be approved by the City.
3. Herbicides: When cultural, mechanical, physical and biological controls have provided inadequate pest control; the City may select and apply an appropriate least-toxic herbicide as a last resort. Only OMRI- or Our Water Our World (OWOW)- listed herbicides may be used without written permission of the City. Herbicides not on the OMRI or OWOW lists, including Roundup, may only be used with the written permission of the City
4. Approved Herbicides include:
 - a. Herbicidal soaps (fatty acids of potassium salts).
 - b. Acetic and citric acids.
 - c. Clove, citrus, mint and thyme oil.
 - d. Corn gluten meal pre-emergent.
5. Prohibited herbicides:
 - a. Groundwater contaminants such as: Atrazine (Aatrex) - groundwater contaminant, Simazine (Princep), Bromacil (Hyvar, Krovar), Prometon (Pramitol), Bentazon (Basagran) and Norflurazon (Solicam, Predict, Zorial).
 - b. Compost contaminants, such as Picloram and Clopyralid.
6. Notice of herbicide use:
 - a. Use the notification and posting requirements listed above in Section 5.1, E.3.c - Notice of Pesticide Use.

3.7 INTEGRATED PEST MANAGEMENT

- A. Contractor shall utilize integrated pest management (IPM) practices during installation and establishment period to control pests and disease in the landscape. IPM uses cultural, mechanical, physical, and biological control methods before using pesticides. Chemical controls are applied only when monitoring indicates that preventative and non-chemical methods are not keeping pests below acceptable levels. When pesticides are required, the least toxic and the least persistent pesticide that will provide adequate pest control is applied.
- B. Controls:
 1. Cultural/Mechanical/physical methods will be used as the first choice in weed management.

- a. Monitor planting areas frequently to identify and eradicate weeds early in the growth stage prior to their setting seed.
 - b. Cut or pull weeds using hand-operated equipment where possible.
 - c. Mulches shall be maintained at all times over soil surface that is not covered by vegetation.
 - d. Propane-fueled flamers may be used in winter and spring with required permits and approval by the Fire Marshall to kill early-season, non-grass weeds by heating the cells until they burst. The weed quickly wilts and dies.
- C. If allowed on this project, Contractor shall apply all chemicals in a safe manner and according to label instructions and Agency, State and Federal requirements. A California Chemical Applicators license is required by the Contractor for chemical applications. The Contractor shall mix and apply chemicals to protect against accidental spills and drift to non-target areas, and to insure safety of the applicator. Any spilled chemicals, as well as contaminated soil, water, and/or landscape materials must be removed from the Project and disposed of in accordance with the Agency requirements. The Contractor shall maintain applicator's licenses and records of applications as required by the State.
- D. A Chemical Work Report shall be completed for each chemical application.
 - 1. The Contractor is responsible for submitting chemical usage reports to the County Agricultural Department.
 - 2. Contractor shall maintain records of all pest management activities. Each record shall include the following information:
 - a. target pest;
 - b. type and quantity of pesticide used;
 - c. site of the pesticide application;
 - d. date the pesticide was used;
 - e. name of the pesticide applicator;
 - f. application equipment used;
 - g. prevention and other non-chemical methods of control used.
 - 3. Contractor shall submit the pest management record to Owner on monthly basis.

3.8 CLEANUP AND PROTECTION

- A. Contractor shall exercise caution to avoid washing or sweeping dirt and debris into the storm drain system.

3.9 DISPOSAL

- A. Recycle all waste per City of Beaumont mandates. Reuse or return unused items such as palettes, flats and pots. All plant debris shall be separated from other refuse and taken to a facility where it will be recycled i.e., to produce compost or mulch.

END OF SECTION 32 93 00

SECTION 33 05 16

UTILITY STRUCTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Manhole structures for gravity storm drain and sanitary sewer utilities.

1.02 RELATED SECTIONS

- A. Section 31 23 33 – Trenching and Backfilling.
- B. Section 33 40 00 – Storm Drainage Utilities.
- C. Section 32 05 23 – Cement and Concrete for Exterior Improvements.

1.03 RELATED DOCUMENTS

- A. AASHTO:
 - (1) M 199: Precast Reinforced Concrete Manhole Sections.
- B. ASTM:
 - (1) A 615/A615M: Deformed and Billet-Steel Bars for Concrete Reinforcement.
 - (2) C 478: Precast Reinforced Concrete Manhole Sections.
 - (3) C 1244: Test Method for Concrete Sewer Manholes by Negative Air Pressure (Vacuum) Test.
- C. Caltrans Standard Specifications.
 - (1) Section 51, Concrete Structures.
 - (2) Section 75, Miscellaneous Metal.
- D. California Building Code.
 - (1) Section 1172B – Exterior Routes of Travel.

1.04 DEFINITIONS

- A. AASHTO: American Association of State Highway and Transportation Officials.
- B. ASTM: American Society for Testing Materials.

1.05 SUBMITTALS

- A. Follow submittal procedures outlined in Section 01 33 00 – Submittal Procedures.

- B. Product data for the following:
 - (1) Cleanout plugs or caps.
- C. Shop drawings: Include plans, elevations, details and attachments for the following:
 - (1) Precast concrete manholes, frames and covers.
 - (2) Precast concrete clean out boxes and box covers.
- D. Design Mix Reports and Calculations: For each class of cast-in-place concrete.
- E. Field Test Reports: Indicate and interpret test results for compliance with performance.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Handle precast concrete manholes according to manufacturer's written instructions.
- B. Protect imported bedding and backfill material from contamination by other materials.

PART 2 PRODUCTS

2.01 CLEANOUTS

- A. Piping: Same as sanitary sewer line if possible.
- B. Top Cap: Threaded and of same material as piping if possible.
- C. Box Size: As required to provide access and allow easy removal and reinstallation of cap.
- D. Box Types:
 - (1) Landscape Areas: Portland cement concrete box and box cover (bolt-down), light duty.
 - (2) Traffic Areas: Portland cement concrete box and box cover or steel or cast iron cover, heavy duty, both box and cover (bolt down) to be rated for AASHTO H20 loading.
- E. Box Cover Markings: "S.D." for storm drain cleanouts, "S.S." for sanitary sewer cleanouts, unless otherwise specified.
- F. Available Manufacturers: Subject to compliance with requirements, box manufacturers offering products that may be incorporated into the Project include, but are not limited to the following:
 - (1) Associated Concrete Products, Inc. (Santa Ana, California) (Tel. 714-557-7470).

- (2) Brooks Products Inc. (El Monte, California) (Tel. 818-443-3017).
- (3) Christy Concrete Products, Inc. (Fremont, California) (Tel. 800-486 7070).

2.02 MANHOLES

- A. General: Size, shape, configuration, depth, etc. of manhole and frame and cover shall be as indicated.
- B. Portland Cement Concrete and Reinforcing:
 - (1) Cast-In-Place Portion: Use Class A Concrete per Caltrans Standard Specification Section 90, and ASTM A615 Grade 60 reinforcing steel bars.
 - (2) Precast Portion: ASTM C 478. Rate for AASHTO H20 loading in traffic areas.
- C. Frames and Covers: As indicated and in accordance with Caltrans Standard Specification Section 75-1.02.
- D. Steps: ASTM C 478 or AASHTO M 199. Manufacture from deformed, ½-inch steel reinforcement rod complying with ASTM A 615 and encased in polypropylene complying with ASTM D4101. Include pattern designed to prevent lateral slippage off step. Acceptable manufacturer is Hanson Concrete Products, (Milpitas, CA) (Tel 408-262-1091) or equal.
- E. Force Main Piping Access Openings:
 - (1) General: As indicated.

2.03 JOINT SEALANT FOR STRUCTURES AND MANHOLES

- A. Mortar: Caltrans Standard Specification Section 51-1.135.
 - (1) Use to seal around pipes at connections to structures and manholes. Also use to seal joints between precast sections of structures and manholes.
- B. Gaskets: Preformed flexible rubber or plastic gasket.
 - (1) Rubber Gaskets: ASTM C443.
 - (2) Plastic Gaskets: Federal Specification SS-S-00210 (GSA-FSS), Type I, Rope Form; or alternate standard which may exist. Acceptable material is "Ram-Nek," as manufactured by the K. T. Snyder Company (Houston TX), or equal.

PART 3 EXECUTION

3.01 CLEANOUT INSTALLATION

- A. General: Install as indicated.

3.02 MANHOLE INSTALLATION

- A. General: Install as indicated.

3.03 TESTING OF MANHOLES ON GRAVITY LINES

- A. At the option of the Contractor, either the following hydrostatic or vacuum test shall be performed.

- B. Hydrostatic Test:

- (1) Insert inflatable plugs in all sewer inlets and outlets.
- (2) Fill the manhole with water to a point six inches below the base of the manhole frame.
- (3) Maintain the water at this point for one hour to allow time for absorption.
- (4) Begin one-hour test period. Measure the amount of water added in one-hour period to maintain the water level at six inches below the base of the manhole frame. Do not allow water level to drop more than 25% of the manhole depth.
- (5) Determine the allowable leakage by the following formula.
- (6) $L = 0.0002 \times D \times H^{1/2}$
- (7) L = Allowable leakage, gallons per minute.
- (8) D = Depth of manhole from top to bottom, feet.
- (9) H = Head of water in feet as measured from the surface of the water in the manhole to the sewer line invert or to the prevailing ground water surface outside the manhole. The lesser height governs.
- (10) If the leakage exceeds the allowable, determine the cause, take remedial action and re-test the manhole. If the leakage is less than the allowable and leaks are observed, repair the leaks.

- C. Vacuum Test:

- (1) General: Test in accordance with ASTM C 1244.
- (2) Test prior to backfilling around the manhole.
- (3) Test Preparation: Plug all lift holes and pipes entering or exiting the manhole.
- (4) Place test head inside the top section of the manhole's cone section and inflate in accordance with the manufacturers instructions.
- (5) Draw a vacuum of 10-inches of mercury and shut the pump off.
- (6) With the valve closed, the time for the vacuum to drop 9-inches shall be measured.
- (7) The manhole shall pass the test if the time is greater than 60 seconds for

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a 48-inch diameter manhole, 75 seconds for a 60-inch diameter manhole and 90 seconds for a 72-inch diameter manhole.

- (8) If the manhole fails the initial test, make necessary repairs with a non-shrink grout while the vacuum is still being drawn. Retest until a satisfactory test is obtained.

END OF SECTION 33 05 16

SECTION 33 10 00

WATER UTILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Site water distribution system for domestic and fire protection services up to 5 feet of any on-site building being served.
- B. Domestic water and fire protection water transmission or distribution system within a roadway or street right-of-way.

1.02 RELATED SECTIONS

- A. Section 31 23 33 – Trenching and Backfilling.
- B. Section 32 05 23 – Cement and Concrete for Exterior Improvements.

1.03 RELATED DOCUMENTS

- A. ASTM:
 - (1) A 536: Specification for Ductile Iron Castings.
 - (2) B 88: Specifications for Seamless Copper Water Tube.
 - (3) D 1785: Specifications for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
 - (4) D 2564: Specifications for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
- B. AWWA:
 - (1) C104: Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
 - (2) C105: Polyethylene Encasement for Ductile-Iron Pipe Systems.
 - (3) C110: Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In. (76 mm Through 1,219 mm) for Water.
 - (4) C111: Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
 - (5) C115: Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.
 - (6) C150: Thickness Design of Ductile Iron Pipe.
 - (7) C151: Ductile-Iron Pipe, Centrifugally Cast, for Water.
 - (8) C153: Ductile- Iron Compact Fittings for Water Service.

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- (9) C200: Steel Water Pipe-6 In. (150 mm) and larger.
- (10) C203: Coal-Tar Protective Coatings and Linings for Steel Water Pipelines-Enamel and Tape-Hot Applied.
- (11) C205: Cement-Mortar Protective Lining and Coating for Steel Water Pipe-4 In. and Larger-Shop Applied.
- (12) C207: Steel Pipe Flanges for Waterworks Service-Sizes 4 In. Through 144 In. (100 mm Through 3,600 mm).
- (13) C208: Dimensions for Fabricated Steel Water Pipe Fittings.
- (14) C209: Cold Applied Tape Coatings for the Exterior of Special Sections, Connections and Fittings for Steel Water Pipelines.
- (15) C210: Liquid-Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines.
- (16) C213: Fusion-Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines.
- (17) C214: Tape Coating Systems for the Exterior of Steel Water Pipelines.
- (18) C218: Coating the Exterior of Aboveground Steel Water Pipelines and Fittings.
- (19) C219: Bolted, Sleeve-type Couplings for Plain-End Pipe.
- (20) C500: Metal-Seated Gate Valves for Water Supply Service.
- (21) C502: Dry-Barrel Fire Hydrants.
- (22) C503: Wet Barrel Fire Hydrants.
- (23) C504: Rubber Seated Butterfly Valves.
- (24) C507: Ball Valves 6 In. Through 8 In. (150 mm Through 1,200 mm).
- (25) C508: Swing-check Valves for Waterworks Service, 2 In. (50mm) Through 24 In. (600 mm) NPS.
- (26) C509: Resilient-Seated Gate Valves for Water Supply Service.
- (27) C510: Double Check Valve Backflow-Prevention Assembly.
- (28) C511: Reduced-Pressure Principle Backflow-Prevention Assembly.
- (29) C512: Air-Release, Air/Vacuum, and Combination Air Valves for Waterworks Service.
- (30) C550: Protective Epoxy Interior Coatings for Valves and Hydrants.
- (31) C600: Installation of Ductile-Iron Water Mains and Their Appurtenances.

- (32) C605: Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings.
- (33) C606: Grooved and Shouldered Joints.
- (34) C651: Disinfecting Water Mains.
- (35) C800: Underground Service Line Valves and Fittings.
- (36) C900: Polyvinyl Chloride (PVC) Pressure Pipe and Fittings, 4 In. Through 12 In. (100mm Through 300mm) for Water Distribution.
- (37) C901: Polyethylene (PE) Pressure Pipe and Tubing, ½ In. (13mm) Through 3 In. (76mm) for Water Service.
- (38) C905: Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 In. Through 48 In. (350 mm Through 1,200 mm) for Water Transmission and Distribution.
- (39) C906: Polyethylene (PE) Pressure Pipe and Fittings, 4 In. (100 mm) through 63 In (1,575 mm), for Water Distribution and Transmission.
- (40) C907: Polyvinyl Chloride (PVC) Pressure Fittings for Water – 4 In. through 8 In. (100 mm Through 200 mm).
- (41) C908: PVC Self-Tapping Saddle Tees for Use on PVC Pipe.
- (42) M11: Steel Pipe - A Guide for Design and Installation.
- (43) M23: PVC Pipe – Design and Installation.
- (44) M41: Ductile-Iron Pipe and Fittings.

1.04 DEFINITIONS

- A. AASHTO: American Association of State Highway and Transportation Officials.
- B. ASTM: American Society for Testing Materials.
- C. AWWA: American Waterworks Association
- D. DI: Ductile iron.
- E. DIP: Ductile iron pipe.
- F. FM: Factory Mutual.
- G. NFPA: National Fire Protection Association.
- H. NSF: National Sanitation Foundation.
- I. PCC: Portland cement concrete.
- J. PE: Polyethylene.

- K. PVC: Polyvinyl Chloride.
- L. UL: Underwriters Laboratory.

1.05 SYSTEM PERFORMANCE REQUIREMENTS

- A. Minimum Internal Pressures: As indicated on plans.
- B. External Load: Earth load indicated by depth of cover plus AASHTO H20 live load unless indicated otherwise.

1.06 SUBMITTALS

- A. Follow submittal procedures outlined in Section 01 33 00 – Submittal Procedures.
- B. Product Data: For the following:
 - (1) Piping materials and fittings.
 - (2) Pipe couplings.
 - (3) Flexible pipe fittings.
 - (4) Restrained pipe fittings.
 - (5) High deflection fittings/ball joints.
 - (6) Expansion joints.
 - (7) Flexible expansion joints.
 - (8) Gate valves.
 - (9) Butterfly valves.
 - (10) Check valves.
 - (11) Air and vacuum relief valves.
 - (12) Blow-off valves.
 - (13) Pressure reducing valves.
 - (14) Pressure sustaining valves.
 - (15) Ball valves.
 - (16) Fire hydrants.
 - (17) Post indicator valves.
 - (18) Fire department connections.

- (19) Backflow preventers.
- (20) Precast valve boxes and box covers.
- C. Shop drawings: Include plans, elevations, details and attachments.
 - (1) Precast and cast in-place vaults and covers.
 - (2) Wiring diagrams for alarm devices.
- D. Field test reports: Indicate and interpret test results for compliance with the Project requirements.

1.07 QUALITY ASSURANCE

- A. Comply with requirements of utility supplying water. Do not operate existing valves or tap existing piping without written permission and/or presence of utility company representative.
- B. Comply with the following requirements and standards:
 - (1) NSF 61: "Drinking Water System Components-Health Effects" for materials for potable water.
 - (2) NFPA 24: "Installation of Private Fire Service Mains and Their Appurtenances" for materials, installations, tests, flushing, and valve and hydrant supervision.
 - (3) CEC: "California Electric Code" for electrical connections between wiring and electrically operated devices.
- C. Provide listing/approval stamp, label, or other marking on piping and specialties made to a specified standard.

1.08 MATERIAL DELIVERY, STORAGE AND HANDLING

- A. Preparation for Transport: Prepare valves, including fire hydrants, according to the following:
 - (1) Ensure that valves are dry and internally protected against rust and corrosion.
 - (2) Protect valves against damage to threaded ends and flange faces.
 - (3) Set Valves in best position for handling. Set valves closed to prevent rattling.
- B. Deliver piping with factory-applied end-caps. Maintain end-caps through shipping, storage and handling to prevent pipe end damage and to prevent entrance of dirt, debris and moisture.
- C. Handling: Use slings to handle valves and fire hydrants whose size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

- D. During Storage: Use precautions for valves, including fire hydrants according to the following.
 - (1) Do not remove end protectors, unless necessary for inspection, then reinstall for storage.
 - (2) Protection from Weather: Store indoors and maintain temperature higher than ambient dew-point temperature. Store indoors and maintain temperature higher than ambient dew point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.
- E. Do not store plastic pipe and fittings in direct sunlight.
- F. Protect pipe, fittings, flanges, seals and specialties from moisture, dirt and damage.
- G. Protect linings and coatings from damage.
- H. Handle precast boxes, vaults and other precast structures according to manufacturer's written instructions.
- I. Protect imported bedding and backfill material from contamination by other materials.

1.09 COORDINATION

- A. Coordinate connection to existing water mains with water utility supplying water.
- B. Coordinate piping materials, sizes, entry locations, and pressure requirements with building domestic water distribution piping and fire protection piping.

PART 2 PRODUCTS

2.01 SMALL-SIZE SERVICE PIPES

- C. Copper Pipe: Sizes $\frac{3}{4}$ -inch through 2-inch.
 - (1) Pipe and Fittings: ASTM B 88, Type K, seamless water tube, annealed.
 - (2) Joints: Restrain by couplings.
- D. PE Plastic Pipe: Sizes $\frac{1}{2}$ -inch through 3-inch.
 - (1) Pipe and Fittings: AWWA C901.
 - (2) Joints: Restrain with clamps or heat-fusion.
- E. PVC Pipe: Sizes $\frac{1}{8}$ -inch through 3 inch.
 - (1) Pipe and Fittings: ASTM D 1785, Schedule 40
 - (2) Joints: Restrain with solvent cement. Do not use threaded pipe.

- (3) Solvent Cement: ASTM D2564.

2.02 LARGE-SIZE SERVICE AND DISTRIBUTION PIPES

A. DIP: Sizes 4-inch through 48-inch.

- (1) Pipe: AWWA C150 and C151.
- (2) Fittings
 - (a) Standard: AWWA C110, sizes 4-inch through 48-inch.
 - (b) Compact: AWWA C153, sizes 4-inch through 24-inch.
- (3) Pipe and Fitting Lining: Cement Mortar, AWWA C104.
- (4) Pipe and Fitting Coating: Asphaltic, AWWA C151 or C115.
- (5) Exterior Soil Corrosion Protection for Pipe and Fittings: Polyethylene encasement, AWWA C105.
- (6) Unrestrained Joints:
 - (a) Push-On Bell and Spigot Joint: AWWA C111.
 - (b) Mechanical Joint: AWWA C111.
- (7) Restrained Joints:
 - (a) Flanged Joint: AWWA C115.
 - (b) Push-On Bell and Spigot Joint: AWWA C111 with "Field Lok Gasket," sizes 4-inch through 24-inch; "TR Flex," sizes 4-inch through 64-inch; both by U. S. Pipe (Birmingham AL) (Tel. 205-254-7442) or approved equal. "Megalug" restraint harness, Ebaa Iron (Eastland TX) (Tel 800-443-1716) or approved equal.
 - (c) Mechanical Joint: AWWA C111 with "Mega Lug," sizes 3-inch through 48-inch. Ebaa Iron (Eastland TX) (Tel 800-443-1716) or approved equal.
 - (d) Grooved and Shouldered Joints: AWWA C150, AWWA C151 and AWWA C606. 24-inch maximum size.
- (8) Couplings:
 - (a) Plain End Pipe to Plain End Pipe: Ductile iron or steel bolted couplings, manufacturer's shop coating with low alloy steel bolts and nuts. Steel couplings to conform to AWWA C219. Smith-Blair, Inc, (Texarkana, AR) (Tel. 501-773-5127), Dresser (Bradford, PA) (Tel.-814-368-3131) or approved equal.
 - (b) Plain End Pipe to Flanged Pipe: 1) Ductile iron or steel bolted

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flanged coupling adapters, manufacturer's shop coating with low alloy steel bolts and nuts. Steel flanged couplings to conform to AWWA C219. Smith-Blair, Inc, (Texarkana, AR) (Tel. 501-773-5127), Dresser (Bradford, PA) (Tel.-814-368-3131) or approved equal; or 2) restrained flange adapter, "Megaflange," sizes 3-inch through 36 inch, Ebaa Iron (Eastland TX) (Tel 800-443-1716) or approved equal.

B. PE Pipe: Sizes 4-inch through 64-inch.

- (1) Pipe and Fittings: AWWA C906.
- (2) Joints:
 - (a) Thermal Butt Fusion: AWWA C906 and pipe manufacturer's recommendations.
 - (b) Flanged joining: AWWA C906 and pipe manufacturer's recommendations.
 - (c) Other: Check with pipe manufacturer.

C. PVC Pipe: Sizes 4-inch through 48-inch.

- (1) Pipe:
 - (a) 4-inch through 12-inch: AWWA C900.
 - (b) 14-inch through 48-inch: AWWA C905.
- (2) Fittings: DI conforming to 2.2A above.
- (3) Unrestrained Joints:
 - (a) Push-On Bell and Spigot Joint: AWWA C900.
- (4) Restrained Joints:
 - (a) Push-On Bell and Spigot Joint: Harness assembly as manufactured by Ebaa Iron (Eastland, Tx) (Tel. 800-433-1716) or approved equal.
 - (b) Plain End PVC to DI Mechanical Joint: Ebaa Iron (Eastland, Tx) (Tel. 800-433-1716) or approved equal.
- (5) Steel or Ductile Iron Couplings:
 - (a) Plain End Pipe to Plain End Pipe: Ductile iron or steel bolted couplings, manufacturer's shop coating with low alloy steel bolts and nuts. Steel couplings to conform to AWWA C219. Smith-Blair, Inc, (Texarkana, AR) (Tel. 501-773-5127), Dresser (Bradford, PA) (Tel.-814-368-3131) or approved equal.
 - (b) Plain End Pipe to DI or Steel Flanged Pipe: Ductile iron or steel

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bolted flanged coupling adapters, manufacturer's shop coating with low alloy steel bolts and nuts. Steel flanged couplings to conform to AWWA C219. Smith-Blair, Inc, (Texarkana, AR) (Tel. 501-773-5127), Dresser (Bradford, PA) (Tel.-814-368-3131) or approved equal.

(6) PVC Couplings

- (a) Unrestrained Plain End to Plain End Pipe: AWWA C900, as manufactured by CertainTeed (Valley Forge, PA) (Tel. 610 341-6820) or approved equal.
- (b) Restrained Plain End to Plain End Pipe: AWWA C900, "Certa-Lock" as manufactured by CertainTeed (Valley Forge, PA) (Tel. 610 341-6820) or approved equal.

D. Cement Mortar Lined and Coated Steel Pipe: 6-inch and larger.

- (1) Pipe: AWWA C200 and AWWA M11.
- (2) Special Sections and Fittings: AWWA C200, C207, C208 and AWWA M11 for all bends, tees, nozzles, closures, etc.
- (3) Flanges: AWWA C207. Includes blind flanges.
- (4) Linings and Coatings for Pipe, Special Sections and Fittings: Cement Mortar Lining and Coating: AWWA C205.
 - (a) Liquid Epoxy Lining and Coating: AWWA C210.
 - (b) Fusion Bonded Epoxy Lining and Coating: AWWA C213.
 - (c) Coal-Tar Lining and Coating: AWWA C203.
 - (d) Cold-Applied Tape Coatings, Piping: AWWA C214.
 - (e) Cold-Applied Tape Coatings, Specials, Connection and Fittings: AWWA C209.
 - (f) Cold Applied Petrolatum Tape and Petroleum Wax Tape Coatings for the Exterior of Special Sections, Connections, and Fittings for Buried or Submerged Steel Water Pipelines.
 - (g) Aboveground Pipe Coatings: AWWA C218.]
- (5) Non-Restrained Joints: AWWA M11.
 - (a) Rubber Gasket: Carnegie-shape rubber gasket as indicated.
- (6) Restrained Joints: AWWA M11. Where a flanged joint, butt strap or coupling are not indicated, either restrained joint a, or b, as follows, is acceptable, but the selected joint shall be used throughout the project.
 - (a) Rubber Gasket: Carnegie-shape rubber gasket with field welded

restraint bar as indicated.

- (b) Field Lap Welded Slip Joint: As indicated.
 - (c) Field Welded Butt Strap: As indicated.
 - (d) Flanged Joint: AWWA C207 with Type 316L stainless steel bolts and nuts as indicated.
- (7) Joint Coating for Cement Mortar Lined and Coated Steel Pipe:
- (a) Field Joint Encasement: Cement mortar contained in fabric lined with closed cell polyethylene foam as indicated. Attach fabric to pipe with Type 316L stainless steel straps as indicated. Closed cell polyethylene foam encasement shall be by Industrial Specialties (Fullerton, CA) (Tel. 800-638-8127) or approved equal.
- (8) Non-Restrained Flexible Couplings: AWWA C219, Smith Blair, Inc (Texarkana, TX) (Tel. 501-773-5127), Number 411 or approved equal, with factory applied fusion-bond epoxy coating and Type 316L stainless steel bolts and nuts.
- (9) Restrained Flexible Couplings: Non-restrained flexible coupling supplemented with a restraining harness as indicated and as follows:
- (a) Restraining harness design by Contractor's pipe manufacturer using criteria presented in Section 13.10 of AWWA M11.
 - (b) Space harness-lugs and tie bolts equally around the pipe.
 - (c) Type 316L stainless steel harness tie bolts and nuts.
 - (d) Design and dimensions of harness lugs to be modified from that shown in AWWA M11, as necessary, to provide additional height to clear the coupling.
- (10) Field Coating of Coupling Assemblies: Apply either of the following flexible tape and mastic or putty coating systems to the all non-restrained or restrained flexible steel couplings.
- (a) Denso Coating System – Denso North American, Inc., (Houston, TX), (Tel 281-821-3355).
 - (b) Trenton Coating System – Allied Utility Products, (Livermore, CA) (Tel. 510-484-4007 or 510-373-7400).

2.03 HIGH DEFLECTION FITTINGS/BALL JOINTS

- A. Plain End Pipe: Xtra Flex Restrained Joint High Deflection Fittings, 4-inch through 24-inch, U. S. Pipe, (Birmingham, AL) (Tel. 205-254-7442) or approved equal.
- B. Mechanical or Flanged Joint: Flex 900, 4-inch through 12-inch, Ebaa Iron Sales, (Eastland, TX) (Tel. 800-433-1716) or approved equal.

2.04 EXPANSION JOINTS

- A. TR Flex Joints: TR Flex Telescoping Sleeve, 4-inch through 64 inch, U. S. Pipe, (Birmingham, AL) (Tel. 205-254-7442).
- B. Mechanical or Flanged Joint: Ex-Tend 200, 4-inch through 36-inch, EBAA Iron Sales, (Eastland, TX) (Tel. 800-433-1716) or approved equal.

2.05 FLEXIBLE EXPANSION JOINTS

- A. Plain End to Plain End Pipe: "Xtra Flex," sizes 4-inch through 24-inch, U. S. Pipe, (Birmingham AL) (Tel. 205-254-7442) or equal.
- B. Flanged or mechanical Joint: "Flex-Tend," sizes 3-inch through 48-inch, Ebaa Iron (Eastland TX) (Tel. 800-433-1716) or equal.
- C. Flanged Joint: Starflex, Series 500, Star Pipe Products, (Tel. 800-999-3009) or equal.

2.06 GATE VALVES

- A. Provide on lines 10-inch and smaller.
- B. Valves, 3-Inch through 20-Inch: AWWA C509, resilient-seated, non-rising stem, gray or ductile-iron body and bonnet, with bronze or gray or ductile-iron gate, bronze stem and square stem operating nut unless noted otherwise. All bolts, nuts and washers, except operating nut, shall be stainless steel. Stem operating nut to be 2-inches square and open counter-clockwise. Stem extensions shall be installed to bring the stem operating nut to within 2-feet of finish grade where the depth from finish grade to the stem operating nut exceeds 4-feet. Equip valves in pump stations and other interior or vault installations with hand-wheels. Provide protective epoxy interior and exterior coating according to AWWA C550 and manufacturer's recommendations.
- C. Service Line Valves and Fittings, 2-Inch and Smaller: AWWA C800
- D. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
 - (1) Mueller Company (Decatur, IL) (Tel.800-423-1323).
 - (2) M&H Valve Company (Anniston, AL) (Tel. 205-237-3521).
 - (3) Crane Company (New York, NY).
- E. Valve Box and Cover: 9-inch minimum diameter PCC box with extensions of length required for depth of bury of valve, and cast iron or ductile iron cover with lettering "WATER". Both the box and the cover shall be rated for AASHTO H20 loading.

2.07 BUTTERFLY VALVES

- A. Provide on lines larger than 10-inch.

- B. Valves, 3-Inch through 72-Inch: AWWA C 504, rubber seated, Class 150B cast iron body, cast or ductile iron discs, stainless steel shafts, adjustable field replaceable rubber seats mating against stainless steel seat rings and field-replaceable seals. Flanged or mechanical joint end connections. No wafer type valves allowed. Traveling nut type valve actuators designed for buried service unless noted otherwise. All bolts, nuts and washers, except wrench nut, shall be stainless steel. Wrench nut to be 2-inches square and open counter-clockwise. Stem extensions shall be installed to bring the wrench nut to within 2-feet of finish grade where the depth from finish grade to the wrench nut exceeds 4-feet. Equip valves in pump stations and other interior or vault installations with hand-wheels. Provide protective epoxy interior and exterior coating according to AWWA C550 and manufacturer's recommendations.
- C. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
 - (1) Mueller Company (Decatur, IL) (Tel.800-423-1323).
 - (2) M&H Valve Company (Anniston, AL) (Tel. 205-237-3521).
 - (3) Crane Company (New York, NY).
- D. Valve Box and Cover: 9-inch minimum diameter PCC box with extensions of length required for depth of bury of valve, and cast iron or ductile iron cover with lettering "WATER". Both the box and the cover shall be rated for AASHTO H20 loading.

2.08 AIR RELEASE, AIR/VACUUM AND COMBINATION AIR VALVES

- A. AWWA C512, specific type of valve, size, details and valve box as indicated.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
 - (1) Apco Valves, Valve and Primer Corporation (Schaumburg, IL) (Tel. 708-529-9000).
 - (2) Crispin Valve (Berwick, PA) (Tel. 800-247-8258).

2.09 BLOW-OFF VALVES

- A. Blow-off valve assemblies, details and boxes as indicated.

2.10 SWING CHECK VALVES

- A. Valves 2-Inch through 24-Inch: AWWA C508, details as indicated.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:

- (1) Mueller Company (Decatur, IL) (Tel.800-423-1323).
- (2) M&H Valve Company (Anniston, AL) (Tel. 205-237-3521).

2.11 BALL VALVES

- A. Valves 6-Inch through 48-Inch: AWWA C507, details as indicated.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
 - (1) Crane Company (New York, NY).

2.12 PRESSURE-REGULATING VALVES

- A. Valve: Automatic, pilot-operated, cast-iron body with interior coating according to AWWA C550. 250-psi Working-pressure, bronze pressure-reducing pilot valve and tubing, and means for discharge pressure adjustment. Details as indicated.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
 - (1) Cla-Val Company (Newport Beach, CA) (Tel. 714-548-2201).
 - (2) Bermad (Porterville, CA) (Tel. 209-781-6630).
 - (3) Ames Company (Woodland, CA) (Tel. 916-666-2493).

2.13 FLOW-REGULATING VALVES

- A. Valve: Automatic, pilot-operated, cast-iron body with interior coating according to AWWA C550. 250-psi working-pressure, bronze pressure-reducing pilot valve and tubing, and means for flow adjustment. Details as indicated.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
 - (1) Cla-Val Company (Newport Beach, CA) (Tel. 714-548-2201).
 - (2) Bermad (Porterville, CA) (Tel. 209-781-6630).
 - (3) Ames Company (Woodland, CA) (Tel. 916-666-2493).

2.14 SERVICE CONNECTIONS AND WATER METERS

- A. Service connections and water meter details and boxes as indicated.

2.15 FIRE HYDRANTS

- A. Wet Barrel: AWWA C503, details as indicated.

- B. Dry Barrel: AWWA C502, details as indicated.

2.16 REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER

- A. Provide as indicated and as required by State or local agency.
- B. General: AWWA C511, with OS gate valve on inlet and outlet, and strainer on inlet. Include test cocks and pressure-differential relief valve with ASME A112.1.2 air gap fitting located between 2 positive-seating check valves for continuous-pressure application.
- C. Body:
 - (1) 2-Inch and Smaller: Bronze with threaded ends.
 - (2) 2-1/2-Inch and Larger: Bronze, cast iron steel, or stainless steel with flanged ends.
- D. Interior Lining: AWWA C550, epoxy coating for cast iron or steel bodies.
- E. Interior Components: Corrosion-resistant materials.
- F. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
 - (1) Cla-Val Company (Newport Beach, CA) (Tel. 714-548-2201).
 - (2) Ames Company (Woodland, CA) (Tel. 916-666-2493).
 - (3) Febco, CMB Industries, Inc. (Fresno, CA) (Tel. 559-252-0791).
 - (4) Hersey Products, Inc. (Dedham, MA) (Tel. 617-326-9400).

2.17 DOUBLE CHECK DETECTOR ASSEMBLY

- A. FM approved or UL listed, with OS&Y gate valve on inlet and outlet, and strainer on inlet. Include two positive-seating check valves and test cocks, and bypass with displacement-type water meter, valves, and double-check backflow preventer, for continuous pressure application.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
 - (1) Cla-Val Company (Newport Beach, CA) (Tel. 714-548-2201).
 - (2) Ames Company (Woodland, CA) (Tel. 916-666-2493).
 - (3) Febco, CMB Industries, Inc. (Fresno, CA) (Tel. 559-252-0791).
 - (4) Hersey Products, Inc. (Dedham, MA) (Tel. 617-326-9400).

2.18 POST INDICATOR VALVE

- A. General: UL 789, FM approved, vertical-type, cast-iron body with operating wrench extension rod, and adjustable cast-iron barrel of length required for depth of bury of valve. Review fire department connection with agency having jurisdiction. Check hose threads and all sizes with fire department.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
 - (1) Mueller Co. (Decatur, IL) (Tel.800-423-1323).
 - (2) Clow Corporation (Oskaloosa, IA).

2.19 FIRE DEPARTMENT CONNECTION

- A. Exposed, Freestanding Fire Department Connection: UL 405, cast brass body with threaded inlets according to NFPA 1963 and matching local fire department hose threads and threaded bottom outlet. Include lugged caps, gaskets and chains; lugged swivel connections and drop clapper for each hose-connection inlet; 18-inch high brass sleeve; and round escutcheon plate. Four 2-1/2-inch NPS inlets and 6-inch NPS outlet.

2.20 UNDERGROUND VAULTS/PITS

- A. General: Portland cement concrete, precast or cast-in-place as indicated.
- B. Portland Cement Concrete and Reinforcing Steel: Section 32 05 23 – Cement and Concrete for Exterior Improvements.
- C. Access Openings: As indicated.
- D. External Load: Earth load plus AASHTO H20 live load if located in paved areas.
- E. Lids: Bolt down type.

2.21 TRACER WIRE

- A. General: Minimum #12 AWG stranded copper wire with blue THW, THWN, or THHN rated insulation.

2.22 WARNING TAPE

- A. General: Non-detectable 3-inch warning tape made of solid blue film with continuously printed black-letter message reading "CAUTION—WATER LINE BURIED BELOW."

2.23 PCC THRUST BLOCKS

- A. Portland Cement Concrete and Reinforcing Steel: Section 32 05 23 – Cement and Concrete for Exterior Improvements.

PART 3 EXECUTION

3.01 PIPE INSTALLATION

- B. General: Install pipe, fittings, and appurtenances utilizing best practices, manufacturer's instructions, and in accordance with the following:
 - (1) DIP: AWWA M41 and AWWAC600.
 - (2) PVC pipe: AWWA M23 and AWWA C605.
 - (3) Steel Pipe: AWWA M11.
- C. Pipe Depth and Trench Configuration: Conform to elevations, profiles and typical trench section(s) indicated.
- D. Excavation, Bedding, Backfill, and Compaction: Section 31 23 33 – Trenching and Backfilling.
- E. Handling: Carefully handle during loading, hauling, unloading and placing operations to avoid breakage or damage. Use strap type slings for lifting and placing; no chains or hooks will be permitted. Comply with manufacturer's recommendations.
- F. Laying: Before lowering pipe into the trench, remove all stakes, debris, loose rock and other hard materials from the bottom of the trench. Lay accurately in conformance with lines and grades indicated. Lay pipe on a bed of bedding material specified and prepared by handwork, dug true to grade. Furnish firm bearing for pipe throughout it's entire length with bell holes provided at the ends of each pipe length of sufficient size to permit making up the particular type of joint being used. Adjust pipe to line and grade by scraping away or filling and tamping material under the body of the pipe for the entire pipe length and not by blocking or wedging. After final positioning, hold pipe in place in trench with backfill material placed equally on both sides of the pipe at as many locations as required to hold the pipe section in place.
- G. Curved Alignment: When necessary to conform to the alignment specifically indicated, lay pipe on a curved alignment by means of asymmetrical closure of joints or bending of the pipe barrel. If necessary, use shorter than the standard lengths of pipe to achieve curvature specified. Do not exceed the recommendations of the pipe manufacture for deflections at the joints or pipe bending.
- H. Closure: Close open ends of pipes and appurtenance openings at the end of each days work or when work is not in progress.

3.02 CONNECTING TO EXISTING MAINS

- A. Pressure Tap Connections: Perform in accordance with the requirements of the owner of the system being tapped. Maintain a positive pressure flow from the main being tapped to the tapping device to flush plastic chips, metal ribbons, etc. into the tapping devise and not into the pipe being tapped.

- B. Other Connections: As indicated and in accordance with the requirements of the owner of the line being connected to.

3.03 ANCHORAGE INSTALLATION

- A. Mechanically Restrained Joints: Install where indicated for lengths indicated in accordance with manufacturer's instructions.
- B. PCC Thrust Blocks: Install where required and as indicated. Bearing area indicated is to be against undisturbed earth. Allow a minimum of 24-hours curing time before introducing water into the pipeline and allow a minimum of 7-days curing time before pressure testing.

3.04 HIGH DEFLECTION FITTINGS/BALL JOINTS, EXPANSION JOINTS, AND FLEXIBLE EXPANSION JOINTS

- A. Install as indicated and in accordance with the manufacturers recommendations.

3.05 VALVE INSTALLATION

- A. Install all valves in accordance with the manufacturer's instructions and the following:
 - (1) General:
 - (a) Gate Valves: Appendix A of AWWA C509.
 - (b) Butterfly Valves: Appendix A of AWWA C504.
 - (2) Joints:
 - (a) Valves on DI, PE and PVC Pipe: Mechanical joint valves for buried locations. Flanged-end valves for installation in vaults/pits.
 - (b) Valves on Steel Pipe: As indicated for buried locations. Flanged-end valves for installation in vaults/pits.

3.06 SERVICE CONNECTIONS INSTALLATION

- A. Install as indicated and in accordance with the requirements of the owner of the system.

3.07 WATER METER INSTALLATION

- A. Install as indicated and in accordance with the requirements of the owner of the system.

3.08 FIRE HYDRANT INSTALLATION

- A. Install as indicated and in accordance with the requirements of the owner of the system and the fire department.

3.09 REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER INSTALLATION

- A. Install as indicated and in accordance with the requirements of the owner of the system and the local health department requirements.

3.10 DOUBLE CHECK DETECTOR ASSEMBLY INSTALLATION

- A. Install as indicated and in accordance with the requirements of the owner of the system and the fire department.

3.11 POST INDICATOR VALVE INSTALLATION

- A. Install as indicated and in accordance with the requirements of the owner of the system and the fire department.

3.12 FIRE DEPARTMENT CONNECTION INSTALLATION

- A. Install as indicated and in accordance with the requirements of NFPA #24 and the fire department.

3.13 UNDERGROUND VAULT/PIT INSTALLATION

- A. Install as indicated.
- B. Excavation and Backfill: Section 31 23 33 – Trenching and Backfilling.

3.14 TRACER WIRE INSTALLATION

- A. Install on trench bottom under the vertical projection of the pipe to protect it in all installations.
- B. Form a mechanically and electrically continuous line throughout the pipeline, extending to the nearest valve or other pipeline appurtenance designated by the owner of the system or the Owner. Extend the wire up the outside of the valve box/riser and cut a hole that is 8-inches from the top, extend a 12-inch wire lead to the inside of the box. At other pipeline appurtenances, designated by the owner of the system or the Owner, terminate the 12-inch wire lead inside the enclosure.
- C. Splice wire with a splicing device consisting of and electro-tin plated seamless copper sleeve conductor. Install as recommended by the manufacturer. Wrap splices and damaged insulation with electrician's tape.

3.15 WARNING TAPE INSTALLATION

- A. Install tape approximately 1-foot above and along the centerline of the pipe.
- B. Where tape is not continuous, lap tape ends a minimum of 2-feet.

3.16 HYDROSTATIC PRESSURE AND LEAKAGE TEST

- A. General:
 - (1) Provide all necessary materials and equipment, including water.
 - (2) Backfill all trenches sufficient to hold pipe firmly in position.

- (3) Allow time for thrust blocks to cure prior to testing.
- (4) Flush all pipes prior to testing to remove all foreign material.
- (5) Perform pressure and leakage test concurrently.
- (6) Test pressure: See Subsection titled "System Performance Requirements."
- (7) Apply test pressure by means of a pump connected to the pipe.
- (8) Base test pressure on the elevation of the lowest point in the line.
- (9) Fill each closed valve section or bulk-headed section slowly. Expel air from section being tested by means of permanent air vents installed at high points or by means of temporary corporation cocks installed at such points. Remove and plug the temporary corporation cocks at the conclusion of the test.
- (10) Allow water to stand in the pipe for 24 hours before test pressure is applied.
- (11) Allow the system to stabilize at the test pressure before conducting the leakage test.
- (12) Do not operate valves in either the opening or closing direction at differential pressures above the valves rated pressure.
- (13) Maintain test pressure as specified for type of pipe being tested.
- (14) Pressure Test: Examine any exposed pipe, fittings, valves, hydrants and joints during the test, if no leaks are observed the section of line has passed the pressure test. If leaks are observed, repair any damaged or defective pipe, fittings, valves, or hydrants, and repeat the pressure test.
- (15) Leakage Test: Perform as specified hereafter for the type of pipe being installed.

B. DIP Leakage Test: Perform in accordance with AWWA C600. Selected requirements of AWWA C600 are repeated as follows:

- (1) Maintain the test pressure, +/- 5 psi, for a minimum of two hours.
- (2) No piping will be accepted if the leakage is greater than that determined by the following formula:

$$L = (S \times D \times P^{1/2}) / 133,200$$

L = Allowable leakage, gallons per hour.

S = Length of pipe tested, feet.

D = Nominal diameter of pipe, inches.

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P = Average test pressure during the leakage test, pounds per square inch (gauge).

C. PE Pipe Leakage Test:

- (1) Apply the test pressure and allow the pipe to stand, without makeup pressure, for sufficient time to allow for diametric expansion or pipe stretching to stabilize, approximately two to three hours.
- (2) After the above stabilization has occurred, return the section being tested to the test pressure. Hold the test pressure for one to three hours. If the pressure in the test section drops, and it is determined the drop may be the result of expansion resulting from increasing temperature, a limited amount of additional water may be added to bring the pressure back to the test pressure. Allowable amounts of make-up water, to compensate for expansion due to increasing temperature, are as shown in the following table. Make-up water is only allowed during this final test period and not during the initial stabilization described in the previous paragraph. If the additional water added is less than the allowable shown in the table and there are no visual leaks or significant pressure drops, the tested section passes the test.
- (3) Nominal Allowance for Expansion

(U.S. Gals./100 Feet of Pipe)			
Pipe Size (in.)	1-Hour Test	2-Hour Test	3-Hour Test
3	0.10	0.15	0.25
4	0.13	0.25	0.40
6	0.30	0.60	0.90
8	0.50	1.0	1.50
10	0.75	1.3	2.1
11	1.0	2.0	3.0
12	1.1	2.3	3.4
14	1.4	2.8	4.2
16	1.7	3.3	5.0
18	2.2	4.3	6.5
20	2.8	5.5	8.0
22	3.5	7.0	10.5
24	4.5	8.9	13.3
28	5.5	11.1	16.8
32	7.0	14.3	21.5
36	9.0	18.0	27.0
40	11.0	22.0	33.0
48	15.0	27.0	43.0

- D. PVC Pipe Leakage Test: Perform in accordance with AWWA M23. Selected requirements of AWWA M23 are repeated as follows:

- (1) Maintain the test pressure, +/- 5 psi, for a minimum of two hours.
- (2) No piping will be accepted if the leakage is greater than that determined by the following formula:

$$L = (N \times D \times P^{1/2}) / 7,400$$

L = Allowable leakage, gallons per hour.

N = Number of joints in the length of the pipeline tested.

D = Nominal diameter of pipe, inches.

P = Average test pressure during the leakage test, pounds per square inch (gauge).

- E. Cement Mortar Lined and Coated Steel Pipe Leakage Test: Perform in accordance with AWWA M11. Selected requirements of AWWA M11 are repeated as follows:

- (1) Maintain the test pressure, +/- 5 psi, for a minimum of two hours.
- (2) There shall be no significant leakage for pipe with welded joints or mechanical couplings.
- (3) For pipe joined with O-ring rubber gaskets, a leakage of 25 gallons per inch of diameter per mile per 24-hours is allowed.

3.17 DISINFECTION

- A. All New Pipelines shall be disinfected in accordance with one of the three methods specified in AWWA C651 and the following:

- (1) Disinfect after pressure and leakage test have been performed and accepted.
- (2) The method used shall be at the Contractor's option, unless specified by the owner of the water system.
- (3) Engage the services of a commercial testing laboratory, approved by the owner of the water system, to perform the bacteriological tests specified in Section 5.1 of AWWA C651. Direct the testing laboratory to send the original report of the bacteriological testing to the owner of the water system. Should the laboratory report show that any sample taken was not acceptable, repeat the sterilization process shall until a satisfactory sterilization is accomplished.
- (4) Lawfully dispose of the chlorinated water.

END OF SECTION 33 10 00

SANITARY SEWERAGE UTILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Roadway and/or site sanitary gravity sewers and force mains up to 5 feet of any on-site building.

1.02 RELATED SECTIONS

- A. Section 31 23 33 – Trenching and Backfilling.
- B. Section 32 05 23 – Cement and Concrete for Exterior Improvements.
- C. Section 33 05 16 – Utility Structures.

1.03 RELATED DOCUMENTS

- A. AASHTO:
 - (1) M 252: Corrugated Polyethylene Drainage Tubing.
 - (2) M 294: Corrugated Polyethylene Pipe, 12 to 24-inch Diameter.
- B. ASTM:
 - (1) A 615/A615M: Deformed and Billet-Steel Bars for Concrete Reinforcement.
 - (2) A 674 Practice for Polyethylene Encasement for Ductile Iron Pipe for Water and Other Liquids.
 - (3) C 443: Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.
 - (4) C 1173: Flexible Transition Couplings for Underground Piping Systems.
 - (5) D 1785: Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
 - (6) D 2235: Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings.
 - (7) D 2321: Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications.
 - (8) D 2564: Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
 - (9) D 2751: Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.

- (10) D 3034: Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
- (11) D 4101: Propylene Injection and Extrusion Materials.
- (12) F 477: Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- (13) F 656: Primers for Use in Solvent Cement Joints of Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings.
- (14) F 679: Poly(Vinyl Chloride) (PVC) Large Diameter Plastic Gravity Sewer Pipe and Fittings.
- (15) F-1336: Poly(Vinyl Chloride) (PVC) Gasket Sewer Fittings.

C. AWWA:

- (1) C104: Cement Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
- (2) C105: Polyethylene Encasement for Ductile-Iron Pipe Systems.
- (3) C110: Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In. (76 mm Through 1,219 mm) for Water.
- (4) C111: Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
- (5) C150: Thickness design of Ductile Iron Pipe.
- (6) C151: Ductile-Iron Pipe, Centrifugally Cast, for Water.
- (7) C153: Ductile-Iron Compact Fittings for Water Service.
- (8) M41: Ductile Iron Pipe and Fittings.

D. Caltrans Standard Specifications.

- (1) Section 65, Reinforced Concrete Pipe.

E. California Building Code.

F. Section 1806A.11 – Pipes and Trenches.

G. California Plumbing Code.

1.04 DEFINITIONS

- A. AASHTO: American Association of State Highway and Transportation Officials.
- B. ABS: Acrylonitrile-butadiene-styrene.
- C. ASTM: American Society for Testing Materials.
- D. AWWA: American Water Works Association.
- E. HDPE: High-density polyethylene.

- F. PE: Polyethylene.
- G. DIP: Ductile iron pipe.
- H. PVC: Polyvinyl Chloride.
- I. RCP: Reinforced concrete pipe.
- J. NPS: Nominal pipe size.

1.05 SUBMITTALS

- A. Follow submittal procedures outlined in Section 01 33 00 – Submittal Procedures.
- B. Product data for the following:
 - (1) Piping materials and fittings.
 - (2) Special pipe couplings.
 - (3) Joint sealants.
 - (4) Sewage air relief valves.
- C. Shop drawings: Include plans, elevations, details and attachments for the following:
 - (1) Force main piping access openings.
- D. Design Mix Reports and Calculations: For each class of cast-in-place concrete.
- E. Field Test Reports: Indicate and interpret test results for compliance with performance.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Do not store plastic pipe and fittings in direct sunlight.
- B. Protect pipe, fittings, and seals from dirt and damage.
- C. Handle precast concrete pipe and other precast structures according to manufacturer's written instructions.
- D. Protect imported bedding and backfill material from contamination by other materials.

PART 2 PRODUCTS

2.01 PIPING MATERIALS FOR GRAVITY FLOW

- A. ABS Pipe and Fittings: 4-inch through 12 inch, ASTM D 2751, SDR 35. Bell and spigot joints.

- (1) Bell and Spigot Joint Gasket: Elastomeric seal, ASTM F 477.
- B. DIP: Sizes 4-inch through 48-inch.
 - (1) Pipe: AWWA C150 and C151.
 - (2) Pressure Class: Minimum pressure class for size indicated.
 - (3) Fittings
 - (a) Standard: AWWA C110, sizes 4-inch through 48-inch.
 - (b) Compact: AWWA C153, sizes 4-inch through 24-inch.
 - (4) Pipe and Fitting Lining: Cement Mortar, AWWA C104.
 - (5) Pipe and Fitting Coating: Asphaltic, AWWA C151 or C115.
 - (6) Exterior Soil Corrosion Protection for Pipe and Fittings: Polyethylene encasement, AWWA C105.
 - (7) Joints:
 - (a) Push-On Bell and Spigot Joint: AWWA C111.
 - (b) Mechanical Joint: AWWA C111.
 - (c) Flanged joint. AWWA C115.
- C. PE Pipe and Fittings (HDPE): 4-inch through 10-inch, AASHTO M252 Type S, smooth interior and corrugated exterior. Bell and spigot joints.
 - (1) Bell and Spigot Joint Gasket: Elastomeric seal, ASTM F 477.
 - (2) Couplings: AASHTO M 252, corrugated band type, engage a minimum of 4 corrugations, 2 on each side of pipe joint.
- D. PE Pipe and Fittings (HDPE): 12-inch through 48-inch, AASHTO M 294. Type S, smooth interior and corrugated exterior. Bell and spigot joints.
 - (1) Bell and Spigot Joint Gasket: Elastomeric seal, ASTM F 477.
 - (2) Couplings: AASHTO M 252, corrugated band type, engage a minimum of 4 corrugations, 2 on each side of pipe joint.
- E. PVC Pipe:
 - (1) Pipe:
 - (a) 4-inch through 15-inch: ASTM D 3034, SDR 35. Bell and spigot joints.
 - (b) 18 inch through 36-inch: ASTM F 679, T-1 wall. Bell and spigot joints.

- (2) Fittings:
 - (a) 4-inch through 27-inch: ASTM F 1336.
 - (b) 30-inch through 36-inch: ASTM D 3034, SDR 35
- (3) Joint Gasket: Elastomeric seal, ASTM F 477.
- F. Reinforced Concrete Pipe: Designated by Class, rubber gasketed joints, Type II or V cement.
 - (1) Circular Reinforced Concrete Pipe: Caltrans Standard Specification Section 65-1.02A(1). Class III.
 - (2) Oval shaped (Elliptical) Reinforced Concrete Pipe: Caltrans Standard Specification Section 65-1.02B. Class HE-III and VE-III.
 - (3) Rubber Gasketed Joints: Caltrans Standard Specification Section 65-1.06.

2.02 PIPING MATERIALS FOR FORCE MAINS

- A. DIP: See Section 33 10 00 – Water Utilities.
- B. PE Pipe: See Section 33 10 00 – Water Utilities.
- C. PVC Pipe: See Section 33 10 00 – Water Utilities.

2.03 SPECIAL PIPE COUPLINGS

- A. Gravity Piping: ASTM C 1173. Rubber or elastomeric sleeve and band assembly fabricated to match outside diameters of pipes to be joined.
- B. Force Main piping: See Section 33 10 00 – Water Utilities.

2.04 MANHOLES AND CLEANOUTS

- A. See Section 33 05 16 – Utility Structures.

2.05 SEWAGE AIR RELIEF VALVE ASSEMBLY FOR FORCE MAINS

- A. General: As indicated.

2.06 THRUST BLOCKS FOR FORCE MAINS

- A. General: Location, configuration bearing area, etc. as indicated.
- B. Portland Cement Concrete: Section 32 05 23 – Cement and Concrete for Exterior Improvements.

PART 3 EXECUTION

3.01 GRAVITY PIPE INSTALLATION

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- A. General: Install pipe, fittings, and appurtenances utilizing best practices, manufacturer's instructions, and in accordance with Section 6 and 7 of ASTM D 2321 for plastic pipe, Caltrans Standard Specification Section 65-1.07 for reinforced concrete pipe and chapter 11.3.3 of AWWA M41 for ductile iron pipe.
- B. Pipe Depth and Trench Configuration: Conform to typical trench section(s) indicated.
- C. Excavation, Bedding, Backfill, and Compaction: Section 31 23 33 – Trenching and Backfilling.
- D. Handling: Carefully handle during loading, hauling, unloading and placing operations to avoid breakage or damage. Use strap type slings for lifting and placing; no chains or hooks will be permitted. Comply with the manufacturer's recommendations.
- E. Laying: Before lowering pipe into the trench, remove all stakes, debris, loose rock and other hard materials from the bottom of the trench. Lay accurately in conformance with lines and grades indicated. Start laying the pipeline at the low end and proceed upstream. Lay bell and spigot pipe with the bell end facing upstream. Lay pipe on a bed prepared by handwork, dug true to grade. Furnish firm bearing for pipe throughout it's entire length with bell holes provided at the ends of each pipe length of sufficient size to permit making up the particular type of joint being used. Adjust pipe to line and grade by scraping away or filling and tamping material under the body of the pipe for the entire pipe length and not by blocking or wedging. After final positioning, hold pipe in place in trench with backfill material placed equally on both sides of the pipe at as many locations as required to hold the pipe section in place.
- F. Curved Alignment: When necessary to conform to the alignment specifically indicated, lay pipe on a curved alignment by means of asymmetrical closure of joints or bending of the pipe barrel. Use shorter lengths of pipe than the standard length if necessary to achieve curvature specified. Do not exceed the recommendations of the pipe manufacture for deflections at the joints or pipe bending.
- G. Closure: Close open ends of pipes and appurtenance at the end of each days work or when work is not in progress.

3.02 FORCE MAIN PIPE INSTALLATION

- A. General: See Section 33 10 00 – Water Utilities.

3.03 SPECIAL PIPE COUPLINGS

- A. General: Use where required to join piping and no other appropriate method is specified. Do not use instead of specified joining methods.
- B. Installation: Per manufacturer's instructions.

3.04 AIR RELIEF VALVE ASSEMBLY INSTALLATION

- A. General: Install as indicated.

3.05 TESTING OF GRAVITY PIPING MAINS

- A. Obstructions: After backfilling and compacting, but before paving or other surface improvements, test sewer for obstructions either by rodding or by the sewer ball method. Provide for intercepting all grit, rocks and other flushed debris to keep debris from entering the existing system.
- B. At the option of the Contractor, either the following hydrostatic or air test shall be performed.
- C. Hydrostatic Test:
 - (1) Test after backfilling to finish grade or pavement structural section subgrade in paved areas.
 - (2) Test sewer mains between successive manholes by closing the lower end of the sewer main to be tested and the inlet sewer main of the upper manhole with stoppers.
 - (3) Fill pipe and manholes with water to a point four feet below the ground surface of the upper manhole, but in no case less than four feet above the pipe invert. If ground water is present, the water surface at the upper manhole shall be at least four feet above the level of the ground water.
 - (4) Fill piping at least one hour prior to testing.
 - (5) Test piping at least two hours by maintaining the head specified above with measured additions of water. The sum of these additions of water, in the two-hour test period, shall be the leakage amount.
 - (6) The maximum allowable head of water above any portion of sewer being tested shall be 15-feet. Where the difference in elevation between successive manholes exceeds 15-feet, a test tee shall be installed between manholes, and the testing shall be carried on between the tee and the manhole.
 - (7) The allowable leakage shall not exceed 0.1-gallons per minute per inch diameter, per 1000-feet of sewer main being tested.
 - (8) If the leakage exceeds the above amount, determine the cause and remedy it prior to retesting.
 - (9) If the leakage is less than the allowable, but leaks are observed, repair the observed leaks.
- D. Air Test:
 - (1) Test after backfilling to finish grade or pavement structural section subgrade in paved areas.
 - (2) Apply to each length between adjacent manholes.
 - (3) Supply pressure gauge with minimum divisions of 0.10-psi and with an accuracy of +/- 0.04-psi. When requested by the Owner, provide

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certification that the gauge has been tested for accuracy within the last six months by a reliable testing firm.

- (4) Pressurize the test section to 3.5-psi, and then hold the pressure above 3.0-psi during a saturation period of at least 5 minutes. At the end of the saturation period, note the pressure, which must be a minimum of 3.0-psi, and begin the timed period. If the pressure drops 0.5-psi in less than the time given in the following table the section of pipe has not passed the test.

- (5)

PipeSize	Minimum Time Allowed for Pressure to Drop 0.5-PSI
4"	125 seconds
6"	185 seconds
8"	245 seconds
10"	310 seconds
12"	370 seconds
15"	460 seconds
18"	555 seconds
21"	10 minutes
24"	12 minutes
27"	14 minutes
30"	16 minutes
36"	18 minutes
42"	20 minutes
48"	23 minutes
54"	26 minutes

4"	125 seconds
6"	185 seconds
8"	245 seconds
10"	310 seconds
12"	370 seconds
15"	460 seconds
18"	555 seconds
21"	10 minutes
24"	12 minutes
27"	14 minutes
30"	16 minutes
36"	18 minutes
42"	20 minutes
48"	23 minutes
54"	26 minutes

- (6) If the time for the pressure to drop 0.5-psi is 125% or less of the time indicated, the line shall immediately be re-pressurized to 3.0-psi and the test repeated. If, during the 5-minute saturation period, the pressure drops less than 0.5-psi after the initial pressurization and air is not added, the section undergoing the test shall have passed.
- (7) If the test did not pass, find and repair the leak to the satisfaction of the Owner.
- (8) When the prevailing ground water is above the line being tested the air pressure shall be increased 0.43-psi for each foot the water table is above the invert of the pipe at the highest manhole.

3.06 TESTING OF LATERALS

- A. At the option of the Contractor, either the following hydrostatic or air test shall be performed.
- B. Hydrostatic Test:
- (1) Test laterals before backfilling.
 - (2) Plug lateral at its ends and fill with water through the cleanouts.
 - (3) Maintain the water level in the cleanouts as high as possible throughout

the test period.

- (4) One hour after filling with water, examine the lateral for leakage.
- (5) Repair all leaks to the satisfaction of the Owner.
- (6) Do not backfill the trench until testing and repairs of the lateral are complete, and approved by the Owner.
- (7) Following approval of the Owner, remove all plugs, dispose of the water and complete the connection to the main.

C. Air Test

- (1) Test after backfilling to finish grade or pavement structural section subgrade in paved areas.
- (2) Test in accordance with subsection above titled "Testing of Gravity Piping Mains," paragraph titled "Air Test."

3.07 HYDROSTATIC AND LEAKAGE TESTING OF FORCE MAINS

- A. General: Perform hydrostatic and leakage test in accordance with Section 33 10 00 – Water Utilities.

END OF SECTION 33 30 00

STORM DRAINAGE UTILITIES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Roadway and/or site storm drainage up to 5-feet of any on-site building.

1.02 RELATED SECTIONS

- A. Section 31 23 33 – Trenching and Backfilling.

1.03 RELATED DOCUMENTS

A. AASHTO:

- (1) M 252: Corrugated Polyethylene Drainage Tubing.
- (2) M 294: Corrugated Polyethylene Pipe, 12 to 24-inch Diameter.

B. ASTM:

- (1) A 74: Cast Iron Soil Pipe and Fittings.
- (2) A 615/A615M: Deformed and Billet-Steel Bars for Concrete Reinforcement.
- (3) C 443: Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.
- (4) C 564: Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
- (5) C 1173: Flexible Transition Couplings for Underground Piping Systems.
- (6) D 1785: Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
- (7) D 2235: Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and fittings.
- (8) D 2321: Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications.
- (9) D 2564: Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
- (10) D 2751: Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.
- (11) D 3034: Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
- (12) D 4101: Specifications for Propylene Injection and Extrusion Materials.

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- (13) F 477: Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- (14) F 656: Primers for Use in Solvent Cement Joints of Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings.
- (15) F 679: Specification for Poly(Vinyl Chloride) (PVC) Large Diameter Plastic Gravity Sewer Pipe and Fittings.
- (16) F-1336: Poly(Vinyl Chloride) (PVC) Gasket Sewer Fittings.

C. AWWA:

- (1) C104: Cement Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
- (2) C105: Polyethylene Encasement for Ductile-Iron Pipe Systems.
- (3) C110: Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In. (76 mm Through 1,219 mm) for Water.
- (4) C111: Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
- (5) C150: Thickness design of Ductile Iron Pipe.
- (6) C151: Ductile-Iron Pipe, Centrifugally Cast, for Water.
- (7) C153: Ductile-Iron Compact Fittings for Water Service.
- (8) M41: Ductile Iron Pipe and Fittings.

D. Caltrans Standard Specifications:

- (1) Section 65, Reinforced Concrete Pipe.
- (2) Section 66, Corrugated Metal Pipe.
- (3) Section 70. Miscellaneous Facilities.
- (4) Section 72, Slope Protection.

E. Caltrans Standard Plans:

- (1) Plan D94A: Metal and Plastic Flared End Sections.
- (2) Plan D94B: Concrete Flared End Sections.
- (3) Plan D97A: Corrugated Metal Pipe Coupling Details No.1, Annular Coupling Band Bar and Strap and Angle Connection.
- (4) Plan D97B: Corrugated Metal Pipe Coupling Details No. 2, Hat Band Coupler and Flange Details.
- (5) Plan D97C: Corrugated Metal Pipe Coupling Details No. 3, Helical and Universal Couplers.

- (6) Plan D97D: Corrugated Metal Pipe Coupling Details No. 4, Hugger Coupling Bands.
- (7) Plan D97E: Corrugated Metal Pipe Coupling Details No. 5, Standard Joint.
- (8) Plan D97F: Corrugated Metal Pipe Coupling Details No. 6, Positive Joint.
- (9) Plan D97G: Corrugated Metal Pipe Coupling Details No. 7, Positive Joints and Downdrains.
- (10) Plan D98A: Slotted Corrugated Steel Pipe Drain Details.
- (11) Plan D98B: Slotted Corrugated Steel Pipe Drain Details.
- F. California Building Code:
- G. Section 1806A.11 – Pipes and Trenches.
- H. Section 1133B.7.2 – Gratings.
- I. California Plumbing Code.

1.04 DEFINITIONS

- A. AASHTO: American Association of State Highway and Transportation Officials.
- B. ABS: Acrylonitrile-butadiene-styrene.
- C. ASTM: American Society for Testing Materials.
- D. AWWA: American Water Works Association.
- E. CMP: Corrugated metal pipe.
- F. DIP: Ductile iron pipe.
- G. HDPE: High-density polyethylene.
- H. NPS: Nominal pipe size.
- I. PE: Polyethylene.
- J. PVC: Polyvinyl chloride.
- K. RCP: Reinforced concrete pipe.

1.05 SUBMITTALS

- A. Follow submittal procedures outlined in Section 01 33 00 – Submittal Procedures.
- B. Product Data Shop Drawings, Etc.: For the following:
 - (1) Piping materials and fittings.

- (2) Special pipe couplings.
 - (3) Polymer-concrete, channel drainage systems (trench drains).
 - (4) Joint sealants.
 - (5) Plastic area drains.
 - (6) Precast concrete catch basins, inlets, curb inlets, and area drains, including frames and grates.
 - (7) Concrete, metal and plastic flared end sections.
- C. Design Mix Reports and Calculations: For each class of cast in place concrete.
- D. Field Test Reports: Indicate and interpret test results for compliance with performance.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Do not store plastic structures, pipe and fittings in direct sunlight.
- B. Protect pipe, fittings, and seals from dirt and damage.
- C. Handle precast concrete pipe and other precast structures according to manufacturer's written instructions.
- D. Protect imported bedding and backfill material from contamination by other materials.

PART 2 PRODUCTS

2.01 PIPING MATERIALS

- A. ABS Pipe and Fittings: Smaller than 4-inch, ASTM D 2751, SDR 35. Solvent cement joints.
 - (1) Solvent Cement: ASTM D 2235.
- B. ABS Pipe and Fittings: 4-inch through 12 inch, ASTM D 2751, SDR 35. Bell and spigot joints.
 - (1) Bell and Spigot Joint Gasket: Elastomeric seal, ASTM F 477.
- C. Cast Iron Pipe and Fittings: Hub and spigot, 2-inch through 15-inch, ASTM A74, service class.
 - (1) Gaskets: ASTM 564, rubber, compression type, thickness to match class of pipe.
- D. Corrugated Metal Pipe and Fittings: Caltrans Standard Specification Section 66.
 - (1) Bituminous Coating: Caltrans Standard Specification Section 66-1.03.

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- (2) Bituminous Lining: Caltrans Standard Specification Section 66-1.03.
 - (3) Bituminous Pavings: Caltrans Standard Specification Section 66-1.03.
 - (4) Corrugated Aluminum Pipe: Caltrans Standard Specification Section 66-2.
 - (5) Corrugated Steel Pipe: Caltrans Standard Specification Section 66-3.
 - (6) Slotted Corrugated Steel Pipe: Caltrans Standard Specification Section 66-3.09.
 - (7) Details: Caltrans Standard Plans D97A, D97B, D97C, D97D, D97E, D97F, D97G, D98A and D98B.
- E. DIP: Sizes 4-inch through 48-inch.
- (1) Pipe: AWWA C150 and C151.
 - (2) Pressure Class: Minimum pressure class for size indicated.
 - (3) Fittings:
 - (a) Standard: AWWA C110, sizes 4-inch through 48-inch.
 - (b) Compact: AWWA C153, sizes 4-inch through 24-inch.
 - (4) Pipe and Fitting Lining: Cement Mortar, AWWA C104.
 - (5) Pipe and Fitting Coating: Asphaltic, AWWA C151 or C115.
 - (6) Exterior Soil Corrosion Protection for Pipe and Fittings: Polyethylene encasement, AWWA C105.
 - (7) Joints:
 - (a) Push-On Bell and Spigot Joint: AWWA C111.
 - (b) Mechanical Joint: AWWA C111.
 - (c) Flanged joint. AWWA C115.
- F. Reinforced Concrete Pipe: Designated by Class, rubber gasketed joints.
- (1) Circular Reinforced Concrete Pipe: Caltrans Standard Specification Section 65-1.02A(1). Class III.
 - (2) Oval shaped (Elliptical) Reinforced Concrete Pipe: Caltrans Standard Specification Section 65-1.02B. Class HE-III and VE-III.
 - (3) Reinforced Concrete Pipe Arch: Caltrans Standard Specification Section 65-1.02C.

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- (4) Rubber Gasketed Joints: Caltrans Standard Specification Section 65-1.06.
- G. PE Pipe and Fittings: 4-inch through 10-inch, AASHTO M 252 Type S, smooth interior and corrugated exterior. Bell and spigot joints.
 - (1) Bell and Spigot Joint Gasket: Elastomeric seal, ASTM F 477.
 - (2) Couplings: AASHTO M 252, corrugated band type. Engage a minimum of 4 corrugations, 2 on each side of pipe joint.
- H. PE Pipe and Fittings: 12-inch through 48-inch, AASHTO M 294. Type S, smooth interior and corrugated exterior. Bell and spigot joints.
 - (1) Bell and Spigot Joint Gasket: Elastomeric seal, ASTM F 477.
 - (2) Couplings: AASHTO M 252, corrugated band type. Engage a minimum of 4 corrugations, 2 on each side of pipe joint.
- I. PVC Pipe and Fittings-Smaller than 4-Inch: ASTM D1785, Schedule 40.
 - (1) Joints: Solvent Cement, ASTM D 2564. Include primer according to ASTM F656.
- J. PVC Pipe and Fittings, 4-Inch and Larger
 - (1) Pipe:
 - (a) 4-inch through 15-inch: ASTM D 3034, SDR 35. Bell and spigot joints.
 - (b) 18 inch through 36-inch: ASTM F 679, T-1 wall. Bell and spigot joints.
 - (2) Fittings:
 - (a) 4-inch through 27-inch: ASTM F 1336.
 - (b) 30-inch through 36-inch: ASTM D 3034, SDR 35
 - (3) Joint Gasket: Elastomeric seal, ASTM F 477.

2.02 PIPE ANCHORS

- A. Section 32 05 23 – Cement and Concrete for Exterior Improvements.

2.03 SPECIAL PIPE COUPLINGS

- A. Plastic, Cast Iron and Ductile Iron Pipe: ASTM C 1173, rubber or elastomeric sleeve and band assembly fabricated to match outside diameters of pipes to be joined.
- B. Reinforced Concrete Pipe: Portland cement concrete collar as indicated.

2.04 CURB INLETS, CATCH BASINS, DROP INLETS, AREA DRAINS, ETC.

- A. General: Size, shape, configuration, depth, etc. of structure and frame, grate, or cover shall be as indicated.
- B. Precast Structure: Rate for AASHTO H20 loading in paved areas.
- C. Steps: ASTM C 478 or AASHTO M 199. Manufacture from deformed, ½-inch steel reinforcement rod complying with ASTM A 615 and encased in polypropylene complying with ASTM D4101. Include pattern designed to prevent lateral slippage off step. Acceptable manufacturer is Hanson Concrete Products, (Milpitas, CA) (Tel 408-262-1091).
- D. Frames, Grates and Covers: Caltrans Standard Specification Section 75-1.02, 75-1.03 and 75-1.05.
 - (1) Galvanize steel frames, grates and covers.
 - (2) Grates and covers shall be non-rocking, bolt-down type.
 - (3) Rate for AASHTO H20 loading in paved areas.

2.05 METAL, CONCRETE OR PLASTIC FLARED END SECTIONS

- A. General: Caltrans Standard Specification Section 70-1.02C and Caltrans Standard Plan D94A and D94B.

2.06 SLOPE PROTECTION

- A. Rock Slope Protection: Caltrans Standard Specification Section 72-2.02.
 - (1) Fabric: Caltrans Standard Specification Section 72-2.025.
- B. Concrete/Shotcrete Slope Protection: Caltrans Standard Specification Section 72-4.03.
 - (1) Bar Reinforcement: Caltrans Standard Specification Section 52-1.02A, minimum Grade 40.
 - (2) Welded Wire Fabric: Caltrans Standard Specification Section 52-1.02C. Use 6 x 6-W1.4 xW1.4 unless otherwise indicated.
- C. Concreted-Rock Slope Protection: Caltrans Standard Specification Section 72-5.02.
- D. Sacked Concrete Slope Protection.
 - (1) Concrete: Caltrans Standard Specification Section 90, Class 3.
 - (2) Sacks: 10 ounce burlap measuring approximately 19.5-inches by 36 inches when empty and laid flat.

2.07 CONCRETE/SHOTCRETE DITCH LINING

- A. General: Caltrans Standard Specification Section 72-4.03.
 - (1) Bar Reinforcement: Caltrans Standard Specification Section 52-1.02A, minimum Grade 40.
 - (2) Welded Wire Fabric: Caltrans Standard Specification Section 52-1.02C. Use 6 x 6-W1.4 xW1.4 unless otherwise indicated.

PART 3 EXECUTION

3.01 PIPE INSTALLATION

- A. General: Install pipe, fittings, and appurtenances utilizing best practices, manufacturer's instructions, and in accordance with Section 6 and 7 of ASTM D 2321 for plastic pipe, Caltrans Standard Specification Section 65-1.07 for reinforced concrete pipe, Caltrans Standard Specification Sections 66-1.045 and 66-1.05 for corrugated metal pipe and chapter 11.3.3 of AWWA M41 for cast iron and ductile iron pipe.
- B. Pipe Depth and Trench Configuration: Conform to typical trench section(s) indicated.
- C. Excavation, Bedding, Backfill, and Compaction: Section 31 23 33 – Trenching and Backfilling.
- D. Handling: Carefully handle during loading, hauling, unloading and placing operations to avoid breakage or damage. Use strap type slings for lifting and placing; no chains or hooks will be permitted. Comply with manufacturer's recommendations.
- E. Laying: Before lowering pipe into the trench, remove all stakes, debris, loose rock and other hard materials from the bottom of the trench. Lay accurately in conformance with lines and grades indicated. Start laying the pipeline at the low end and proceed upstream. Lay bell and spigot pipe with the bell end facing upstream. Lay pipe on a bed prepared by handwork, dug true to grade. Furnish firm bearing for pipe throughout its entire length with bell holes provided at the ends of each pipe length of sufficient size to permit making up the particular type of joint being used. Adjust pipe to line and grade by scraping away or filling and tamping material under the body of the pipe for the entire pipe length and not by blocking or wedging. After final positioning, hold pipe in place in trench with backfill material placed equally on both sides of the pipe at as many locations as required to hold the pipe section in place.
- F. Curved Alignment: When necessary to conform to the alignment specifically indicated, lay pipe on a curved alignment by means of asymmetrical closure of joints or bending of the pipe barrel. Use shorter lengths of pipe than the standard length if necessary to achieve curvature specified. Do not exceed the recommendations of the pipe manufacture for deflections at the joints or pipe bending.
- G. Closure: Close open ends of pipes and appurtenance openings at the end of each days work or when work is not in progress.

3.02 INSTALLATION OF PIPE ANCHORS

- A. Install at location, configuration and details shown on the Plans.

3.03 SPECIAL PIPE COUPLINGS

- A. General: Use where required to join piping and no other appropriate method is specified. Do not use instead of specified joining methods.
- B. Installation: Per manufacturer's instructions.

3.04 INSTALLATION OF CURB INLETS, CATCH BASINS, DROP INLETS, AREA DRAINS, ETC.

- A. Excavation, Bedding, Backfill, and Compaction: Section 31 23 33 – Trenching and Backfilling.
- B. Poured in Place Structures: Install as indicated and Caltrans Standard Specification Section 51.
 - (1) Shape bottoms to convey flows as indicated.
- C. Precast Structures: Install as indicated.
 - (1) Seal all joints and pipe entrances and exits.
 - (2) Place concrete in bottom and shape to convey flows as indicated.

3.05 POLYMER-CONCRETE TRENCH DRAIN INSTALLATION

- A. Excavation, Bedding, Backfill, and Compaction: Section 31 23 33 – Trenching and Backfilling.
- B. Install: As indicated and in accordance with the manufacturer's instructions.

3.06 CONCRETE OR PLASTIC FLARED END SECTION INSTALLATION

- A. Install: As indicated.

3.07 SLOPE PROTECTION PLACEMENT

- A. Rock Slope Protection: Caltrans Standard Specification Section 72-2.03 and as indicated.
 - (1) Use Method B Placement unless otherwise indicated.
- B. Concrete/Shotcrete Slope Protection: Caltrans Standard Specification Section 72-4.02 and 72-4.04.
- C. Concreted-Rock Slope Protection: Caltrans Standard Specification Section 72-5.03 and 72-5.04.
 - (1) Use Method B Placement unless otherwise indicated.
- D. Sacked Concrete Slope Protection.

- (1) Detailed configuration: As indicated.
- (2) Use one cubic foot of concrete per sack.
- (3) Locate headers and stretchers as indicated.
- (4) Headers: Folded end to bank.
- (5) Stretchers: Folded ends are not to be adjacent.
- (6) Place no more than four vertical courses until initial set has taken place in first course.

3.08 CONCRETE/SHOTCRETE DITCH LINING PLACEMENT

- A. Concrete/Shotcrete Slope Protection: Caltrans Standard Specification Section 72-4.02 and 72-4.04.

3.09 TESTING

- A. General: Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.
- (1) Do not enclose, cover, or put into service before inspection and approval.
 - (2) Test completed piping systems according to authorities having jurisdiction.
 - (3) Schedule tests and inspections by authorities having jurisdiction with at least 24 hours advance notice.
 - (4) Submit separate reports for each test.
 - (5) Where authorities having jurisdiction do not have published procedures, perform tests in accordance with latest edition of the Uniform Plumbing Code (UPC) Section 1109.0, Testing.
 - (6) Leaks and loss in test pressure constitute defects that must be repaired.
 - (7) Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

END OF SECTION 33 40 00

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SECTION 33 46 00
SUBDRAINAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Subdrains in trenches and subdrains or prefabricated composite drainage panels at walls or foundations.

1.02 RELATED SECTIONS

- A. Section 31 23 33 – Trenching and Backfilling.
- B. Section 33 05 16 – Utility Structures.
- C. Section 33 40 00 – Storm Drainage Utilities.

1.03 RELATED DOCUMENTS

- A. AASHTO:
 - (1) M 252: Corrugated Polyethylene Drainage Tubing.
 - (2) M 278: Class PS 50 Polyvinyl Chloride (PVC) Pipe.
 - (3) M 288: Geotextiles Used for Subsurface Drainage Purposes.
 - (4) M 294: Corrugated Polyethylene Pipe, 12- to 24-in. Diameter.
- B. ASTM:
 - (1) C 1173: Specifications for Flexible Transition Couplings for Underground Piping System.
 - (2) D 448: Classification for Sizes of Aggregate for Road and Bridge Construction.
 - (3) D 1621: Test Method for Compressive Properties of Rigid Cellular Plastics.
 - (4) D 1785: Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
 - (5) D 2235: Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and fittings.
 - (6) D 2321: Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
 - (7) D 2564: Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.

- (8) D 2729: Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
- (9) D 2751: Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.
- (10) D 3034: Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
- (11) D 4716: Test Method for Constant Head Hydraulic Transmissivity (in-Plane Flow) of Geotextiles and Geotextile Related Products.
- (12) F 477: Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- (13) F 656: Primers for Use in Solvent Cement Joints of Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings.
- (14) F-1336: Poly(Vinyl Chloride) (PVC) Gasket Sewer Fittings.
- C. Caltrans Standard Specifications:
 - (1) Section 68-Subsurface Drains
 - (2) Section 88-Engineering Fabrics

1.04 DEFINITIONS

- A. AASHTO: American Association of State Highway and Transportation Officials.
- B. ABS: Acrylonitrile-Butadiene-Styrene.
- C. AWWA: American Water Works Association.
- D. ABS: Acrylonitrile-butadiene-styrene.
- E. HDPE: High-density polyethylene.
- F. PE: Polyethylene.
- G. PVC: Polyvinyl Chloride.

1.05 SUBMITTALS

- A. Follow submittal procedures outlined in Section 01 33 00 – Submittal Procedures.
- B. Product data for the following:
 - (1) Perforated pipe and fittings.
 - (2) Solid pipe and fittings.
 - (3) Prefabricated composite drainage panels.
 - (4) Geotextile fabrics.
- C. Samples:

- (1) Drainage Fill.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Do not store plastic structures, pipe, and fittings in direct sunlight.
- B. Protect pipe, pipe-fittings, and seals from dirt and damage.
- C. Protect permeable material from contamination by other materials.

PART 2 PRODUCTS

2.01 PERFORATED WALL AND SOLID WALL PIPE

- A. ABS Pipe and Fittings: Smaller than 4-inch, ASTM D 2751, SDR 35. Solvent cement joints.
 - (1) Solvent Cement: ASTM D 2235.
 - (2) Perforation Size, Location, and Spacing: ASTM D 2729.
- B. ABS Pipe and Fittings: 4-inch through 12-inch, ASTM D 2751, SDR 35. Bell and spigot joints.
 - (1) Bell and Spigot Joint Gasket: Elastomeric seal, ASTM F 477.
 - (2) Perforation Size, Location, and Spacing: ASTM D 2729.
- C. PE Pipe and Fittings (HDPE): 4-inch through 10-inch, AASHTO M252 Type S (Solid wall.) or SP (Perforated wall.), smooth interior and corrugated exterior. Bell and spigot joints.
 - (1) Bell and Spigot Joint Gasket: Elastomeric seal, ASTM F 477.
 - (2) Couplings: AASHTO M 252, corrugated band type. Engage a minimum of 4 corrugations, 2 on each side of pipe joint.
 - (3) Perforation Size, Location, and Spacing: AASHTO M 252, Class 2.
- D. PE Pipe and Fittings (HDPE): 12-inch through 48-inch, AASHTO M 294. Type S (Solid Wall.) or Type SP (Perforated wall.), smooth interior and corrugated exterior. Bell and spigot joints.
 - (1) Bell and Spigot Joint Gasket: Elastomeric seal, ASTM F 477.
 - (2) Couplings: AASHTO M 252, corrugated band type. Engage a minimum of 4 corrugations, 2 on each side of pipe joint.
 - (3) Perforation Size, Location, and Spacing: AASHTO M 294, Class 2.
- E. PVC pipe and Fittings: Smaller than 4-inch, ASTM D1785, Schedule 40. Solvent cement joints.
 - (1) Solvent Cement: ASTM D 2564. Include primer according to ASTM F656.

- (2) Perforation Size, Location, and Spacing: ASTM D 2729.

F. PVC Pipe and Fittings:

- (1) Pipe: 4-inch through 15-inch, ASTM D 3034, SDR 35. Bell and spigot joints.
- (2) Perforation Size, Location, and Spacing: ASTM D 2729.
- (3) Fittings: ASTM F 1336.
- (4) Joint Gasket: Elastomeric seal, ASTM F 477.

2.02 SPECIAL PIPE COUPLINGS

- A. Description: ASTM C 1173. Rubber or elastomeric sleeve and band assembly fabricated to match outside diameters of pipes to be joined.

2.03 CLEANOUTS

- A. See 33 05 16 – Utility Structures.

2.04 PREFABRICATED COMPOSITE DRAINAGE PANELS

- A. Description: Prefabricated composite panels, 36 to 60-inches wide and manufactured with geotextile facing laminated to molded drainage core.
- B. Drainage Core: Three-dimensional, non-biodegradable, molded Polypropylene or Polystyrene.
 - (1) Minimum Compressive Strength: 10,000-lbf./sq. ft. when tested according to ASTM D 1621.
 - (2) Minimum Flow Rate: 7 gpm per foot at hydraulic gradient of 0.1 and compressive stress of 25 psig when tested according to ASTM D 4716.
- C. Geotextile: Non-woven needle-punched geotextile, manufactured for subsurface drainage, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with the following properties determined according to AASHTO M 288.
 - (1) Survivability Class: 2.
 - (2) Apparent Opening Size: No. 60 sieve maximum.
 - (3) Permittivity: 0.2 per second, minimum.
- D. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Project include, but are not limited to, the following:
 - (1) American Wick Drain Corporation (Matthews, NC).
 - (2) Mirafi Inc. (Charlotte, NC) (Tel. 800-438-1855).

(3) Multi-Flow (Prinsburg, MN) (Tel. 800978-8007).

(4) Phillips Fibers Corporation (Greenville, SC) (Tel. 800-845-5737).

2.05 DRAINAGE FILL MATERIAL

A. Caltrans Permeable Material: Conform to Section 68-1.025 of Caltrans Standard Specifications.

(1) Class 2

B. Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, ASTM D 448, coarse aggregate, Sieve No. 57, with 100 percent passing 1-1/2-inch sieve and not more than 5 percent passing No. 8 sieve.

C. Sand: Conform to Section 19-3.025B of Caltrans Standard Specifications.

2.06 FILTER FABRIC

A. When required, use filter fabric for encasing permeable material around subdrains.

(1) Caltrans Filter Fabric: Section 88-1.03 of Caltrans Standard Specifications.

(2) Mirafi 140N (Mirafi Inc., Charlotte, NC) (Tel. 800-438-1855) or equal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine surfaces and areas for suitable conditions where subdrainage systems are to be installed.

B. Install only after unsatisfactory conditions have been corrected.

3.02 PIPING APPLICATIONS

A. Refer to Plans for location, size, and material designation for individual subdrains.

3.03 INSTALLATION OF PERFORATED PORTIONS OF SUBDRAINS

A. Excavation: Section 6 of ASTM D 2321 and as indicated.

B. Subdrain Bedding: Place supporting layer of drainage fill over compacted subgrade to compacted depth indicated. If drainage fill requires encasement in filter fabric, lay filter fabric in trench and overlap trench sides before installing drainage fill.

C. Piping Installation: Install pipe in accordance with Section 7 of ASTM D 2321. Install piping beginning at low point of system, true to grades and alignment indicated, with unbroken continuity of invert. Excavate recesses for bottoms of bell ends of pipe. Lay pipe with bells facing upslope and with spigot end centered

fully into adjacent bell. Bed piping with full pipe bearing in drainage fill material. Lay perforated pipe with perforations down. Install gaskets, seals, sleeves, and couplings in accordance with manufacturers written instructions. Use increasers, reducers, and couplings made for different sizes of materials of pipes and fittings being connected. Reduction of pipe size in direction of flow is prohibited.

- D. Initial Subdrain Backfill: After installing drainage piping, add drainage fill up to top of pipe to perform tests.
- E. Testing Subdrain: After installing drainage fill to top of pipe, test drain piping with water to ensure free flow before backfilling with drainage fill. Remove obstructions, replace damaged components, and repeat test until results are satisfactory.
- F. Subsequent Subdrain Backfill: After satisfactory testing, cover piping with drainage fill to width and height indicated. Place drainage fill in layers not exceeding 3 inches in loose depth; compact each layer placed. If filter fabric is required complete the filter fabric encasement by bringing fabric to top and closing the encasement.
- G. Fill to Grade: Place native fill material over compacted drainage fill to thickness indicated. Place material in loose-depth layers not exceeding 6 inches. Thoroughly compact each layer. Fill to finish elevations unless otherwise specified on the plans.

3.04 INSTALLATION OF NON-PERFORATED PORTIONS OF SUBDRAINS

- A. Conform to Section 31 23 33 – Trenching and Backfilling, and Section 33 46 00 – Storm Drainage Utilities.

3.05 PREFABRICATED COMPOSITE DRAINAGE PANELS

- A. Coordinate placement with other drainage materials.
- B. Install prefabricated drainage panels in accordance with manufacturer's instructions.
- C. Place perforated drainage pipe at base of footing and attach to composite drainage panels in accordance with the manufacturer's instructions.

3.06 JOINING PIPE

- A. Join ABS and PVC pipe and fittings with elastomeric seals according to ASTM D 2321 or solvent cement.
- B. Special pipe couplings: Join piping made of different materials and dimensions with special couplings made for this application. Use couplings that are compatible with and that fit both pipe materials and dimensions.

3.07 CLEANING

- A. Clear interior of installed piping and structures of dirt and other superfluous material as work progresses. Maintain swab or drag in piping and pull past each joint as it is completed. Place plugs in ends of uncompleted pipe at end of each day or when work stops.

**SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT
CITY OF BEAUMONT
END OF SECTION 33 46 00**



SPECIAL CONDITIONS

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SC-05. Construction Soils Testing.	1
SC-06. Water, Gas, and Communication Utility Relocations.....	1



SC-01. Construction Water and Dust Control. The Contractor is responsible for providing all arrangements for construction water and to have a sufficient supply of construction water for the project. The Contractor shall comply with South Coast Air Quality Management District Rule 403 – Fugitive Dust. The Contractor shall use water trucks or other means to actively prevent, reduce, and mitigate dust emissions using the best available control measures as referenced in Rule 403.

SC-02. Preconstruction Photos and Video. The Contractor shall take preconstruction photos of the entire project site and shall prepare a full-color pre-construction video recording of the project site with the Inspector present prior to mobilizing. Photos and video shall be submitted to the City.

SC-03. Coordination with the Public. If the City receives complaints from individuals or agencies affected by the project; the Contractor shall take immediate action to correct the situation as directed by the City. If the Contractor receives complaints directly, the Contractor shall immediately notify the City Inspector. Thereafter, the Contractor shall take immediate action to correct the situation as directed by the City.

SC-04. Referenced Drawings and Detailed Provisions. Any and all referenced Standard Drawings and Detailed Provisions, including City, County, or any other details or standards referenced in the contract documents shall be considered part of the contract drawings and specifications. The Contractor shall not be entitled to any compensation due to referenced documents not included in the Specifications and Contract Drawings.

SC-05. Construction Soils Testing. Geotechnical observation and compaction testing are required during all grading, earthwork, and compaction activities. The City shall provide this testing through a third-party geotechnical professional. The contractor shall coordinate with the geotechnical professional for all required field observation and testing and provide sufficient time to respond to requests. Any required re-compaction or re-installation of fill material as determined by the geotechnical professional shall be performed at no additional cost to the City. No additional compensation shall be provided due to delays resulting from late or insufficient coordination with the geotechnical professional.

SC-06. Water, Gas, and Communication Utility Relocations. Unless otherwise indicated on the plans or directly by the utility owner, all utilities shall be protected in place and service maintained. Utilities marked for relocation on the plans shall be relocated by the respective utilities. It is the Contractor's responsibility to coordinate the relocation with the individual utility owners. Utility owners should be given sufficient time to respond to the relocation requests without affecting the Contractor's

SPECIAL CONDITIONS



construction schedule, generally at least one months' notice. No additional compensation shall be provided due to delays resulting from late or insufficient coordination with the utility owners.

SPECIAL CONDITIONS



CONTRACT DRAWINGS

All standard drawings and detailed provisions referenced in the Contract Documents shall be considered part of the contract drawings. These drawings include, but are not limited to, the following standard drawings and detailed provisions:

1. **City of Beaumont Public Works Standard Drawings:** latest standards available at <https://www.beaumontca.gov/1236/Standards>
2. **County of Riverside Standards and Specifications (Ordinance 461):** latest edition available at: <https://rctlma.org/trans/Land-Development/Road-Standards>)
3. **County of Riverside Flood Control and Water Conservation District Standard Drawings:** latest edition available at: <http://content.rcflood.org/downloads/Standard%20Drawings/@@Standard%20Drawings%2007102019.pdf>)
4. **Caltrans Standard Plans and Caltrans Revised Standard Plans:** latest edition available at: <https://dot.ca.gov/programs/design/ccs-standard-plans-and-standard-specifications>)
5. **Greenbook Standard Specifications for Public Works Construction:** latest standards available at: <https://www.bnibooks.com/products/standard-plans-for-public-works-construction-2021-edition>
6. **EMWD Standard Drawings and Specification for Sewer:** latest standards available at: <https://www.emwd.org/work-us/development/engineering-standards-specifications-and-drawings/sewer-standard-drawings>
7. **Bid Plans:** Construction Plans for P-04 Sports Park Lighting and Expansion Project are a part of the construction contract documents.



APPENDICES

APPENDIX A.	PROJECT PLANS
APPENDIX B.	SEWER IMPROVEMENTS EXHIBIT
APPENDIX C.	SEWER AS-BUILT PLANS
APPENDIX D.	GEOTECHNICAL REPORT



APPENDIX A – PROJECT PLANS

(Due to file size, Project Plans are provided as a separate file.)



APPENDIX B – SEWER IMPROVEMENTS EXHIBIT



APPENDIX C – SEWER ASBUILT PLANS



APPENDIX D – GEOTECHNICAL REPORT



Hellas Construction, Inc. (P) (512) 250-2910
12000 West Parmer Lane (F) (512) 250-1960
Austin, TX 78613 hellasconstruction.com

OWNER:

PROJECT:
SYNTHETIC TURF FIELD

PROJECT LOCATION:



COMMENTS:

DRAWN BY: JA

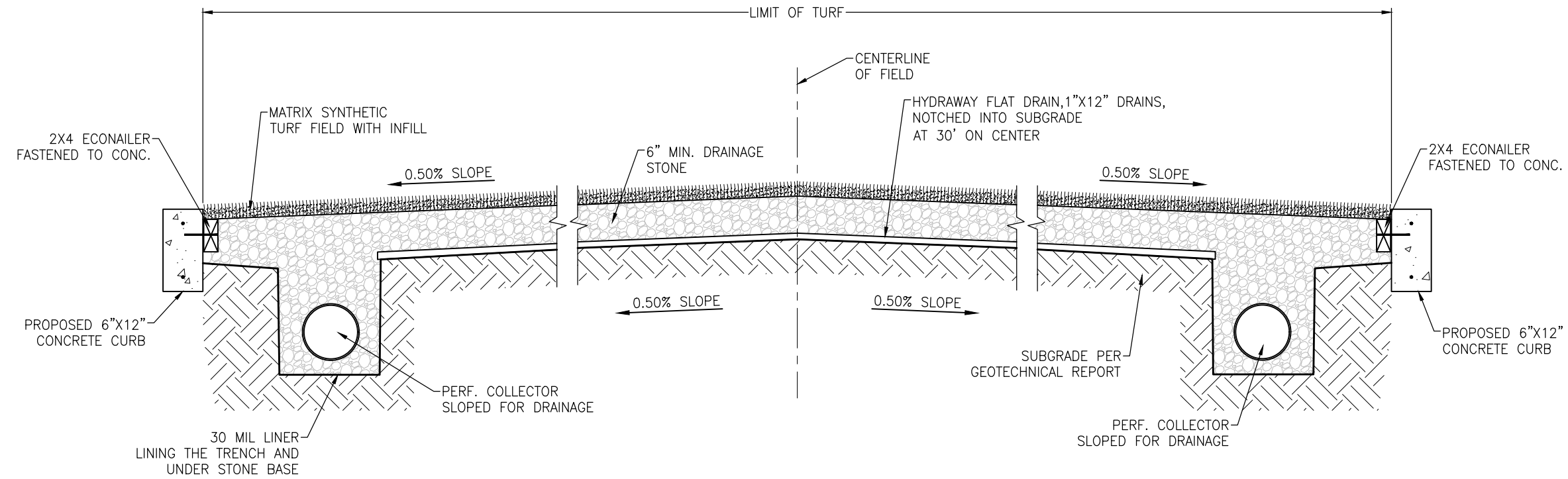
All drawings and written material appearing herein constitute original unpublished work, and may not be duplicated, used or disclosed without the written consent of Hellas Construction, Inc.

DATE:

REVISION:
January 19, 2023

SHEET TITLE:
SECTIONS AND DETAILS

SHEET NUMBER:
D1.1



1 SYNTHETIC TURF FIELD CROSS SECTION (TYP.)
Scale: NTS

**CITY OF BEAUMONT
PUBLIC WORKS AGREEMENT**

EXHIBIT "B"

CONTRACTOR'S Bid

(Insert behind this page.)



BID FORM

NAME OF BIDDER: Zeco, Inc.

The undersigned, hereby declare that we have carefully examined the location of the proposed Work, and have read and examined the Contract Documents, including all plans, specifications, and all addenda, if any, for the following Project:

CIP P-04 SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

We hereby propose to furnish all labor, materials, equipment, tools, transportation, and services, and to discharge all duties and obligations necessary and required to perform and complete the Project for the following BASE BID TOTAL BID PRICE:

BASE BID	BASE BID PRICE (IN WRITTEN FORM)	BID PRICE (IN NUMBERS)
TOTAL BID PRICE	Three million nine hundred fifty seven thousand six hundred sixty one Dollars and $\frac{00}{100}$	3,957,661

In case of discrepancy between the written price and the numerical price, the written price shall prevail.

A large, stylized handwritten signature in blue ink, likely belonging to a representative of Zeco, Inc.



BASE BID
BID SCHEDULE
CIP P-04 SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

ITEM NO.	DESCRIPTION OF ITEMS	EST. QUANTITY/ UNIT		UNIT PRICE (FIGURES)	TOTAL COST (FIGURES)
1	MOBILIZATION	1	LS	200,000	200,000
2	STORMWATER POLLUTION CONTROL (PREPARATION AND IMPLEMENTATION OF SWPPP)	1	LS	50,000	50,000
3	CLEARING AND GRUBBING	1	LS	46000	46000
4	SITE DEMOLITION	1	LS	120,626	120,626
5	SITE GRADING	1	LS	400,000	400,000
6	CONSTRUCT 12 X 12 CATCH BASIN CAST IN PLACE CONCRETE	10	EA	3750	37,500
7	CONSTRUCT 6" CONCRETE HEADWALL (4)	54	LF	250	13,500
8	CONSTRUCT 6" RIP RAP	324	SF	30	9720
9	CONSTRUCT SD3 - 8" PVC SDR35 STORM DRAIN	600	LF	90	54000
10	CONSTRUCT SD4 - VDS EZFLOW 6" FRENCH DRAIN	430	LF	35	15,050
11	CONSTRUCT SD5 - SUBSURFACE DRAIN FOR TURF FIELDS	4,733	LF	15	70,995
12	ABANDON EXISTING (4") SEWER LINE AND INSTALL PVC SEWER MAINLINE (6") AND SEWER CLEANOUTS INCLUDING ALL APPURTENANCES AS PER APPENDIX B	1	LS	75,000	75,000
13	INSTALL SYNTHETIC TURF - NATURAL PLAY INFILL & PAD	136,000	SF	8.50	1,156,000
14	INSTALL 6' HT BLACK AMERISTAR FENCE	1,554	LF	122	189,588
15	CONSTRUCT 8"X8" CIP CURB AT FENCE	1,554	LF	45	69,930
16	INSTALL 6' HIGH TUBULAR STEEL GATE	1	EA	3000	3000
17	INSTALL 6' HIGH DOUBLE LEAF TUBULAR STEEL GATE	1	EA	4,500	4,500
18	INSTALL (4) 20' HIGH NETTING	320	LF	180	57,600



ITEM NO.	DESCRIPTION OF ITEMS	EST. QUANTITY/ UNIT		UNIT PRICE (FIGURES)	TOTAL COST (FIGURES)
19	CONSTRUCT DECOMPOSED GRANITE (4" ORGANIC LOCK)	18,000	SF	4.20	75,600
20	REMOVE AND REPLACE CONCRETE PAVING 4" BROOM FINISH	2,050	SF	16	32,800
21	CONSTRUCT CONCRETE PAVING 6" VEHICULAR RATED - BROOM FINISH	4,450	SF	14	62,300
22	FURNISH AND INSTALL MUSCO LIGHTING STANDARDS (PROPOSED AT BASEBALL AND SYNTHETIC TURF SOCCER FIELDS)	13	EA	81000	1,053,000
23	MODIFICATION AT EXISTING BUILDING FOR MUSCO LIGHTING CONNECTIONS	1	EA	20,000	20,000
24	FURNISH AND INSTALL PATHWAY LIGHTING AT SOUTH END CONNECTION TO FIELDS U-12 AND U-19	1	EA	15000	15,000
25	INSTALL IRRIGATION SYSTEM	1	LS	65,000	65,000
26	INSTALL FIELD HOSE DOWN SYSTEM - QCV (12)	1	LS	20,000	20,000
27	PLANT 36" BOX TREE	15	EA	320	4,800
28	PLANT 5 GALLON SHRUB	163	EA	26	4,238
29	PLANT 1 GALLON SHRUB	678	EA	13	8,814
30	INSTALL 3" SHREDDED BARK MULCH	154	CY	150	23,100
PROJECT BASE BID SUBTOTAL:					3,957,661

In case of discrepancy between the unit price and the item cost set forth for a unit basis item, the unit price shall prevail and, shall be utilized as the basis for determining the lowest responsive, responsible bidder. However, if the amount set forth as a unit price is ambiguous, unintelligible or uncertain for any cause, or is omitted, or is the same amount as the entry in the "Item Cost" column, then the amount set forth in the "Item Cost" column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price. Final payment shall be determined by the Engineer from measured quantities of work performed based upon the unit price. In case of discrepancy between the written price and the numerical price, the written price shall prevail.



BID CERTIFICATION

Bidder certifies that it is licensed in accordance with the law providing for the registration of Contractors,

License No. 1031463

Expiration Date 09/30/2025

Class of license A, B, D21, C13, C27

If the bidder is a joint venture, each member of the joint venture must include the above information.

The undersigned acknowledges receipt, understanding and full consideration of the following addenda to the Contract Documents:

1. Addenda No. 1 thru 2
2. Attached is the required bid security in the amount of not less than 10% of the Total Bid Price.
3. Attached is the fully executed Non-Collusion Affidavit form.
4. Attached is the completed Designation of Subcontractors form.
5. Attached is the completed Bidder Information Form.
6. Attached is the completed Contractor's Certificate Regarding Workers' Compensation form.

Bidder acknowledges and understands that, pursuant to Public Contract Code Section 20676, sellers of "mined material" must be on an approved list of sellers published pursuant to Public Resources Code Section 2717(b) in order to supply mined material for this Contract.

I hereby certify under penalty of perjury under the laws of the State of California, that all of the information submitted in connection with this Bid and all of the representations made herein are true and correct.

Name of Bidder Zeco, Inc.

Signature 

Name and Title Amin Nazarinia- President

Dated 07-01-2025



CONTRACTOR'S CERTIFICATE REGARDING WORKERS' COMPENSATION

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

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.

Name of Bidder Zeco, Inc.

Signature

Name and Title Amin Nazarinia- President

Dated 07-01-2025

CONTRACTOR'S CERTIFICATE REGARDING
WORKERS' COMPENSATION



BID BOND
SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

The makers of this bond are,

Zeco, Inc

as Principal, and

United Fire & Casualty Company

as Surety

and are held and firmly bound unto the City of Beaumont, hereinafter called the City, in the penal sum of TEN PERCENT (10%) OF THE TOTAL BID PRICE of the Principal submitted to CITY for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted the accompanying bid dated July 1st, 2025, for

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

If the Principal does not withdraw its bid within the time specified in the Contract Documents; and if the Principal is awarded the Contract and provides all documents to the City as required by the Contract Documents; then this obligation shall be null and void. Otherwise, this bond will remain in full force and effect.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents shall in affect its obligation under this bond, and Surety does hereby waive notice of any such changes.

In the event a lawsuit is brought upon this bond by the City and judgment is recovered, the Surety shall pay all litigation expenses incurred by the City in such suit, including reasonable attorneys' fees, court costs, expert witness fees and expenses.



IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals this 24th day of June, 2025, the name and corporate seal of each corporation.

(Corporate Seal)

Zeco, Inc

Principal

By

Title

United Fire & Casualty Company

Surety

By

Emmanuel Brizuela

Attorney-in-Fact

Attorney-In-Fact

Title

(Attach Attorney-in-Fact Certificate)

City of Beaumont
Request for Bid



*Please see Notary Acknowledgment Attached

CIP P-04
Sports Park Field Lighting
and Expansion Project

STATE OF CALIFORNIA)

) ss.

CITY OF _____)

On this _____ day of _____, in the year 20____, before me,
_____, a Notary Public in and for said state, personally
appeared _____, known to me to be the person
whose name is subscribed to the within instrument as the Attorney-In-Fact of the
(Surety) acknowledged to me that he subscribed the name of the
_____ (Surety) thereto and his own name as Attorney-In-
Fact.

Notary Public in and for said State

(SEAL)

Commission expires: _____

NOTE: A copy of the Power-of-Attorney to local representatives of the bonding
company must be attached hereto.

Sec attached

BID BOND

CALIFORNIA ALL-PURPOSE ACKNOWLEDGEMENT

"A Notary Public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document."

State of: California

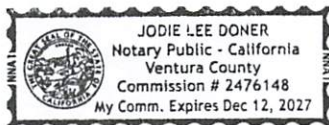
County of Ventura

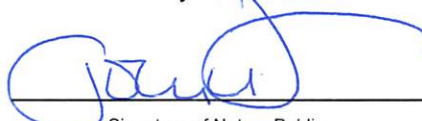
On 6-24-25 before me, Jodie Lee Doner, Notary Public,
personally appeared Emmanuel Brizuela

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I Certify under PENALTY OF PERJURY under the laws of The State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.




Signature of Notary Public

OPTIONAL

Though the data below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent reattachment of this form.

CAPACITY CLAIMED BY SIGNER

- ☐ INDIVIDUAL
☐ CORPORATE OFFICER

DESCRIPTION OF ATTACHED DOCUMENT

TITLES(S)

- ☐ PARTNERS ☐ LIMITED
☐ GENERAL

- ☒ ATTORNEY-IN-FACT
☐ TRUSTEE(S)
☐ GUARDIAN/CONSERVATOR
☐ OTHER

TITLE OR TYPE OF DOCUMENT

NUMBER OF PAGES

DATE OF DOCUMENT

SIGNER IS REPRESENTING:
NAME OF PERSON(S) OR ENTITY(IES)

SIGNER(S) OTHER THAN NAMED ABOVE



UNITED FIRE & CASUALTY COMPANY, CEDAR RAPIDS, IA
 UNITED FIRE & INDEMNITY COMPANY, WEBSTER, TX
 FINANCIAL PACIFIC INSURANCE COMPANY, LOS ANGELES, CA
 CERTIFIED COPY OF POWER OF ATTORNEY
 (original on file at Home Office of Company – See Certification)

Inquiries: Surety Department
 118 Second Ave SE
 Cedar Rapids, IA 52401

KNOW ALL PERSONS BY THESE PRESENTS, That United Fire & Casualty Company, a corporation duly organized and existing under the laws of the State of Iowa; United Fire & Indemnity Company, a corporation duly organized and existing under the laws of the State of Texas; and Financial Pacific Insurance Company, a corporation duly organized and existing under the laws of the State of California (herein collectively called the Companies), and having their corporate headquarters in Cedar Rapids, State of Iowa, does make, constitute and appoint

KEVIN P. REED, JESSICA GARCIA, AARON FOSBURG, JODIE LEE DONER, EMMANUEL BRIZUELA, EACH INDIVIDUALLY

their true and lawful Attorney(s)-in-Fact with power and authority hereby conferred to sign, seal and execute in its behalf all lawful bonds, undertakings and other obligatory instruments of similar nature provided that no single obligation shall exceed \$50,000,000.00 and to bind the Companies thereby as fully and to the same extent as if such instruments were signed by the duly authorized officers of the Companies and all of the acts of said Attorney, pursuant to the authority hereby given and hereby ratified and confirmed.

The Authority hereby granted shall expire the 1st day of April, 2026 unless sooner revoked by United Fire & Casualty Company, United Fire & Indemnity Company, and Financial Pacific Insurance Company.

This Power of Attorney is made and executed pursuant to and by authority of the following bylaw duly adopted by the Boards of Directors of United Fire & Casualty Company, United Fire & Indemnity Company, and Financial Pacific Insurance Company.

"Article VI – Surety Bonds and Undertakings"

Section 2, Appointment of Attorney-in-Fact. "The President or any Vice President, or any other officer of the Companies may, from time to time, appoint by written certificates attorneys-in-fact to act in behalf of the Companies in the execution of policies of insurance, bonds, undertakings and other obligatory instruments of like nature. The signature of any officer authorized hereby, and the Corporate seal, may be affixed by facsimile to any power of attorney or special power of attorney or certification of either authorized hereby; such signature and seal, when so used, being adopted by the Companies as the original signature of such officer and the original seal of the Companies, to be valid and binding upon the Companies with the same force and effect as though manually affixed. Such attorneys-in-fact, subject to the limitations set forth in their respective certificates of authority shall have full power to bind the Companies by their signature and execution of any such instruments and to attach the seal the Companies thereto. The President or any Vice President, the Board of Directors or any other officer of the Companies may at any time revoke all power and authority previously given to any attorney-in-fact.

IN WITNESS WHEREOF, the COMPANIES have each caused these presents to be signed by its vice president and its corporate seal to be hereto affixed this 1st day of April, 2024

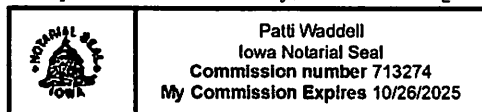
UNITED FIRE & CASUALTY COMPANY
 UNITED FIRE & INDEMNITY COMPANY
 FINANCIAL PACIFIC INSURANCE COMPANY

By: *Kyanna M. Saylor*
 Vice President



State of Iowa, County of Linn, ss:

On 1st day of April, 2024, before me personally came Kyanna M. Saylor to me known, who being by me duly sworn, did depose and say; that she resides in Cedar Rapids, State of Iowa; that she is a Vice President of United Fire & Casualty Company, a Vice President of United Fire & Indemnity Company, and a Vice President of Financial Pacific Insurance Company the corporations described in and which executed the above instrument; that she knows the seal of said corporations; that the seal affixed to the said instrument is such corporate seal; that it was so affixed pursuant to authority given by the Board of Directors of said corporations and that she signed her name thereto pursuant to like authority, and acknowledges same to be the act and deed of said corporations.



Patti Waddell
 Notary Public
 My commission expires: 10/26/2025

I, Mary A. Bertsch, Assistant Secretary of United Fire & Casualty Company and Assistant Secretary of United Fire & Indemnity Company, and Assistant Secretary of Financial Pacific Insurance Company, do hereby certify that I have compared the foregoing copy of the Power of Attorney and affidavit, and the copy of the Section of the bylaws and resolutions of said Corporations as set forth in said Power of Attorney, with the ORIGINALS ON FILE IN THE HOME OFFICE OF SAID CORPORATIONS, and that the same are correct transcripts thereof, and of the whole of the said originals, and that the said Power of Attorney has not been revoked and is now in full force and effect.

In testimony whereof I have hereunto subscribed my name and affixed the corporate seal of the said Corporations this 24th day of June, 2025.



By: *Mary A. Bertsch*
 Assistant Secretary,
 UF&C & UF&I & FPIC



DESIGNATION OF SUBCONTRACTORS

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

In compliance with the Subletting and Subcontracting Fair Practices Act of the Public Contract Code of the State of California, each bidder shall set forth below: (a) the name and the location of the place of business and (b) the portion of the work which will be done by each subcontractor who will perform work or labor or render service to the Contractor in excess of one-half of 1 percent of the prime contractor's total bid or ten thousand dollars (\$10,000), whichever is greater.

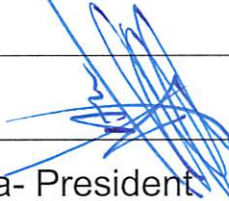
Portion of the Work	Subcontractor	Location of Business	% of Work
Electrical	Southern Contracing Company	San Marcos, CA	27%
Survey	OnPoint Survey	Redlands, CA	0.5%

DESIGNATION OF SUBCONTRACTORS



Portion of the Work	Subcontractor	Location of Business	% of Work

Name of Bidder Zeco, Inc.

Signature 

Name and Title Amin Nazarinia- President

Dated 07-01-2025



INFORMATION REQUIRED OF BIDDERS

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

A. INFORMATION ABOUT BIDDER

[**Indicate not applicable ("N/A") where appropriate.**]

NOTE: Where Bidder is a joint venture, pages shall be duplicated and information provided for all parties to the joint venture.

1.0 Name of Bidder: Zeco, Inc.

2.0 Type, if Entity: S-Corp

3.0 Bidder Address: 22845 Savi Ranch Pkwy, Unit C

Yorba Linda, CA 92887

844-932-6462
Facsimile Number Telephone Number

4.0 License Information:

<u>1031463</u>	<u>A,B,D21,C13,C27</u>	<u>09/21/2025</u>
License No.	Class of License	Expiration Date

1000053551
DIR Registration No.

5.0 How many years has Bidder's organization been in business as a Contractor?
+ 8 Years

5.1 How many years has Bidder's organization been in business under its present name? + 8 Years

6.0 Under what other or former names has Bidder's organization operated?
Zeco

7.0 If Bidder's organization is a corporation, answer the following:

INFORMATION REQUIRED OF BIDDERS



7.1 Date of Incorporation: 07/11/2017

7.2 State of Incorporation: CA

7.3 President's Name: Amin Nazarinia

7.4 Vice-President's Name(s): Alex Rodriguez

7.5 Secretary's Name: Amin Nazarinia

7.6 Treasurer's Name: Amin Nazarinia

8.0 If an individual or a partnership, answer the following:

8.1 Date of Organization: N/A

8.2 Name and address of all partners (state whether general or limited partnership): N/A

9.0 If other than a corporation or partnership, describe organization and name principals: N/A

10.0 List other states in which Bidder's organization is legally qualified to do business.
N/A

11.0 What type of work does the Bidder normally perform with its own forces?

We self-perform civil & utility work, concrete/CMU structures (A & B), specialty fencing (C-13), full landscape + irrigation (C-27), and pump-mechanical installs (D-21).
All other trades are subcontracted to appropriately licensed specialists.

12.0 Has Bidder ever failed to complete any work awarded to it? If so, note when,



where, and why:

No

13.0 Within the last five years, has any officer or partner of Bidder's organization ever been an officer or partner of another organization when it failed to complete a contract?

If so, attach a separate sheet of explanation:

No

14.0 List Trade References:

MasterHalco	949-835-6300

Filanc JR. Construction	760-377-0145

Pacal and Ludwig Constructors	760-614-3416

15.0 List Bank References (Bank and Branch Address):

Wells Fargo

Address: 5625 E Santa Ana Canyon Rd, Anaheim, CA 92807

Phone: (714) 685-4020

16.0 Name of Bonding Company and Name and Address of Agent:

United Fire and Casualty

Address: 1300 Dove St #300, Newport Beach, CA 92660

Phone: (949) 261-5335



D. EXPERIENCE AND TECHNICAL QUALIFICATIONS QUESTIONNAIRE

Personnel:

The Bidder shall identify the key personnel to be assigned to this project in a management, construction supervision or engineering capacity.

1. List each person's job title, name and percent of time to be allocated to this project:

Amin Nazarinia PM 50%

Daniel Alcaraz Superintendent 100%

Theo Kasper Foreman 100%

2. Summarize each person's specialized education:

Amin Nazarinia BSCE, PMP, QSP/QSD, DBIA

Daniel Alcaraz Union Carpenter

Theo Kasper Union Labor/Operator

3. List each person's years of construction experience relevant to the project:

Amin Nazarinia +22 Years

Daniel Alcaraz +25 Years

Theo Kasper +20 Years

4. Summarize such experience:

Amin Nazarinia — 22 + yrs; BSCE, PMP, QSP/QSD, DBIA- civil engineer & project manager.

Daniel Alcaraz — 25 + yrs in public work; seasoned union carpenter

Theo Kasper — 20 + yrs; in public work; union laborer/operator.

Bidder agrees that personnel named in this Bid will remain on this Project until completion of all relevant Work, unless substituted by personnel of equivalent experience and qualifications approved in advance by the City.



Additional Bidder's Statements:

If the Bidder feels that there is additional information which has not been included in the questionnaire above, and which would contribute to the qualification review, it may add that information in a statement here or on an attached sheet, appropriately marked:

N/A

E. VERIFICATION AND EXECUTION

These Bid Forms shall be executed only by a duly authorized official of the Bidder:
I declare under penalty of perjury under the laws of the State of California that the foregoing information is true and correct:

Name of Bidder Zeco, Inc.

Signature

Name and Title Amin Nazarinia President

Dated 07-01-2025

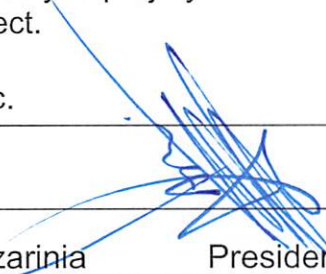


NON-COLLUSION AFFIDAVIT

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT

I, Amin Nazarinia, being first duly sworn, deposes and says that he is President of Zeco, Inc. the party making the attached bid; 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.

I certify (or declare) under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Name of Bidder	<u>Zeco, Inc.</u>
Signature	<u></u>
Name and Title	<u>Amin Nazarinia President</u>
Dated	<u>07-01-2025</u>



PERFORMANCE BOND

N/A

KNOW ALL PERSONS BY THESE PRESENTS:

THAT WHEREAS, _____ (hereinafter referred to as "City")
has awarded to _____, (hereinafter referred to as the "Contractor")
_____ an agreement for _____
(hereinafter referred to as the "Project").

WHEREAS, the work to be performed by the Contractor is more particularly set forth in
the Contract Documents for the Project dated _____, (hereinafter referred
to as "Contract Documents"), the terms and conditions of which are expressly
incorporated herein by reference; and

WHEREAS, the Contractor is required by said Contract Documents to perform the terms
thereof and to furnish a bond for the faithful performance of said Contract Documents.

NOW, THEREFORE, we, _____, the undersigned Contractor and
_____ as Surety, a corporation
organized and duly authorized to transact business under the laws of the State of
California, are held and firmly bound unto the City in the sum of
_____ DOLLARS, (\$ _____), said sum being not less
than one hundred percent (100%) of the total amount of the Contract, for which amount
well and truly to be made, we bind ourselves, our heirs, executors and administrators,
successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that, if the Contractor, 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 agreements in the
Contract Documents and any alteration thereof made as therein provided, on its part, to
be kept and performed at the time and in the manner therein specified, and in all respects
according to their intent and meaning; and shall faithfully fulfill all obligations including the
one-year guarantee of all materials and workmanship; and shall indemnify and save
harmless the City, its officers and agents, as stipulated in said Contract Documents, 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 enforcing such obligation.

As a condition precedent to the satisfactory completion of the Contract Documents,
unless otherwise provided for in the Contract Documents, the above obligation shall hold
good for a period of one (1) year after the acceptance of the work by City, during which



time if Contractor shall fail to make full, complete, and satisfactory repair and replacements and totally protect the City from loss or damage resulting from or caused by defective materials or faulty workmanship. The obligations of Surety hereunder shall continue so long as any obligation of Contractor remains. Nothing herein shall limit the City's rights or the Contractor or Surety's obligations under the Contract, law or equity, including, but not limited to, California Code of Civil Procedure section 337.15.

Whenever Contractor shall be, and is declared by the City to be, in default under the Contract Documents, the Surety shall remedy the default pursuant to the Contract Documents, or shall promptly, at the City's option:

- (1) Take over and complete the Project in accordance with all terms and conditions in the Contract Documents; or
- (2) Obtain a bid or bids for completing the Project in accordance with all terms and conditions in the Contract Documents and upon determination by Surety of the lowest responsive and responsible bidder, arrange for a Contract between such bidder, the Surety and the City, and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the City under the Contract and any modification thereto, less any amount previously paid by the City to the Contractor and any other set offs pursuant to the Contract Documents.
- (3) Permit the City to complete the Project in any manner consistent with California law and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the City under the Contract and any modification thereto, less any amount previously paid by the City to the Contractor and any other set offs pursuant to the Contract Documents.

Surety expressly agrees that the City may reject any contractor or subcontractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Contractor.

Surety shall not utilize Contractor in completing the Project nor shall Surety accept a bid from Contractor for completion of the Project if the CITY, when declaring the Contractor in default, notifies Surety of the City's objection to Contractor's further participation in the completion of the Project.



The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents or to the Project to be performed thereunder shall in any way 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 Contract Documents or to the Project.

[Remainder of Page Left Intentionally Blank.]



IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day
of _____, 20__.

CONTRACTOR/PRINCIPAL

Name

By _____

SURETY:

By: _____
Attorney-In-Fact

The rate of premium on this bond is _____ per thousand. The total amount of
premium charges, \$_____.
(The above must be filled in by corporate attorney.)

THIS IS A REQUIRED FORM

Any claims under this bond may be addressed to:

(Name and Address of Surety) _____

(Name and Address of Agent or
Representative for service of
process in California, if different
from above) _____

(Telephone number of Surety and
Agent or Representative for service
of process in California) _____

CIP P-04
Sports Park Field Lighting
and Expansion Project

[illegible]

On this _____ day of _____, in the year 20____, before me,
_____, a Notary Public in and for said state, personally
appeared _____, known to me to be the person
whose name is subscribed to the within instrument as the Attorney-In-Fact of the (Surety)
acknowledged to me that he subscribed the name of the
_____ (Surety) thereto and his own name as Attorney-In-
Fact.

Notary Public in and for said State

(SEAL)

Commission expires: _____

NOTE: A copy of the Power-of-Attorney to local representatives of the bonding company must be attached hereto.



PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS That

WHEREAS, the City of Beaumont (hereinafter designated as the "City"), by action taken or a resolution passed _____, 20__ has awarded to _____ hereinafter designated as the "Principal," a contract for the work described as follows:

_____ (the "Project"); and

WHEREAS, said Principal is required to furnish a bond in connection with said contract; providing that if said Principal or any of its Subcontractors shall fail to pay for any materials, provisions, provender, equipment, or other supplies used in, upon, for or about the performance of the work contracted to be done, or for any work or labor done thereon of any kind, or for amounts due under the Unemployment Insurance Code or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of said Principal and its Subcontractors with respect to such work or labor the Surety on this bond will pay for the same to the extent hereinafter set forth.

NOW THEREFORE, we, the Principal and _____ as Surety, are held and firmly bound unto the City in the penal sum of _____ Dollars (\$_____) lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal, his or its subcontractors, heirs, executors, administrators, successors or assigns, shall fail to pay any of the persons named in Section 3181 of the Civil Code, fail to pay for any materials, provisions or other supplies, used in, upon, for or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or amounts due under the Unemployment Insurance Code with respect to work or labor performed under the contract, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department or Franchise Tax Board from the wages of employees of the contractor and his subcontractors pursuant to Section 18663 of the Revenue and Taxation Code, with respect to such work and labor the Surety or Sureties will pay for the same, in an amount not exceeding the sum herein above specified, and also, in case suit is brought upon this bond, all litigation expenses incurred by the City in such suit, including reasonable attorneys' fees, court costs, expert witness fees and investigation expenses.

This bond shall inure to the benefit of any of the persons named in Section 3181 of the Civil Code so as to give a right of action to such persons or their assigns in any suit brought upon this bond.



It is further stipulated and agreed that the Surety on this bond shall not be exonerated or released from the obligation of this bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described, or pertaining or relating to the furnishing of labor, materials, or equipment therefore, nor by any change or modification of any terms of payment or extension of the time for any payment pertaining or relating to any scheme or work of improvement herein above described, nor by any rescission or attempted rescission or attempted rescission of the contract, agreement or bond, nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond, nor by any fraud practiced by any person other than the claimant seeking to recover on the bond and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given, and under no circumstances shall Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the owner or City and original contractor or on the part of any obligee named in such bond, but the sole conditions of recovery shall be that claimant is a person described in Section 3110 or 3112 of the Civil Code, and has not been paid the full amount of his claim and that Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned.

IN WITNESS WHEREOF, two (2) identical counterparts of this instrument, each of which shall for all purposes be deemed unoriginal thereof, have been duly executed by the Principal and Surety above named, on the _____ day of _____, 20____ the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

(Corporate Seal of Principal,
if corporation)

Principal (Property Name of Contractor)

By _____
(Signature of Contractor)

(Seal of Surety)

Surety

By _____
Attorney in Fact

(Attached Attorney-In-Fact Certificate and Required Acknowledgements)

*Note: Appropriate Notarial Acknowledgments of Execution by Contractor and +surety and a power of Attorney MUST BE ATTACHED.



02 GENERAL CONDITIONS

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT



03 TECHNICAL SPECIFICATIONS

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT



04 SPECIAL CONDITIONS

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT



05 SUPPLEMENTAL SPECIAL CONDITIONS

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT



06 CONTRACT DRAWINGS

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT



07 PUBLIC WORKS AGREEMENT

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT



08 APPENDICES

SPORTS PARK FIELD LIGHTING AND EXPANSION PROJECT



Addendum No. 1

P-04 SPORTS PARK FIELD LIGHTING AND EXPANSION

This Addendum is for the purpose of adding, clarifying, or deleting certain information to the Bid Specifications as follows:

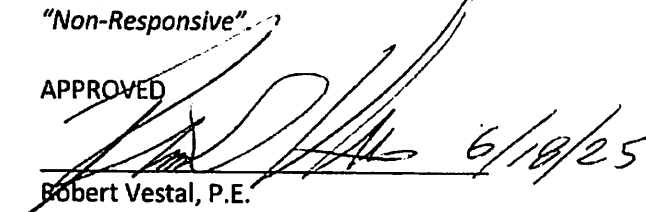
Bid Specification Requirements

The following shall be considered as incorporated into the Bid Specifications for the aforementioned project and/or services. Information not specifically mentioned in this Addendum shall remain in force.

- **ACKNOWLEDGMENT** of the Questions and Answers for clarification and direction on submitting a responsive bid.
- **REMOVE** page 3 in the Instruction to Bidders in the Request for Bids (RFB); **REPLACE** with revised page 3 herein attached, clarifying that the general contractor shall perform most of the work.
- **REMOVE** Base Bid (Bid Schedule) on page 13 in the Request for Bids (RFB); **REPLACE** with Base Bid herein attached. The revised Bid Schedule shall include clarification (Red) for Bid Item #23.
- **REMOVE** Technical Specification 32-33-00-1 (Site Furnishings).

Proposers are hereby notified that Addendum No. 1 must be acknowledged as stipulated in the Bid Specification instructions. Failure to do so shall result in the City designating such bid as "Incomplete" or "Non-Responsive".

APPROVED


Robert Vestal, P.E.

Director of Public Works/City Engineer

End of Addendum No. 1



BEAUMONT
550 E. 6th Street
Phone (951) 572-3236
BeaumontCa.gov

City of Beaumont

RFB: SPORTS PARK FIELD LIGHTING & EXPANSION PROJECT

- 1.) Please confirm whether this project is subject to a PLA (Project Labor Agreement), a PSA (Project Stabilization Agreement), a CBA (Collective Bargaining Agreement), a CWA (Community Workforce Agreement), or anything of that nature?
 - None. The awarded contractor will enter into the City's Public Works Agreement (PWA) that references adherence to the bid specifications that include prevailing wage requirements (see GC33).
- 2.) Is this project subject to State Prevailing Wage Rates OR Federal Davis-Bacon Wage Rates (or both)?
 - State Prevailing Wages. See Page 9 in the Instructions to Bidders and GC33.
- 3.) Please confirm if a Mandatory Pre-Bid Meeting will be held? If so, what date, time, and location? For bid bond purposes, what is the Engineer's Estimate or city budget for this project?
 - No mandatory Pre-Bid Meeting. The City does not provide an engineer's estimate during the bid process.
- 4.) Is there an engineer's estimate? If yes, what is it?
Please confirm that the Synthetic Turf Contractor's insurance policy must be submitted with the bid.
 - The City does not provide an engineer's estimate during bidding. Only the information requested in the RFB is required. The awarded contractor will be required to furnish bonds and insurance.
- 5.) Please confirm that builder's risk coverage is required.
 - The awarded contractor will need to perform work in and around the existing restroom building. Builder's Risk Insurance protects the City from any damage caused by the contractor/subcontractors. This is also specified in GC27.
- 6.) Is there a self-performance minimum for prime contractors?
 - The prime contractor shall perform at least 51% of the work.
- 7.) Confirm electrical utility trench, conduit, wire, pull boxes, wire, shall be included under bid item #22: Furnish & Install Musco Lighting Standards.



BEAUMONT
550 E. 6th Street
Phone (951) 572-3236
BeaumontCa.gov

City of Beaumont

- Confirming that Bid Item #22 shall include all materials and labor to install thirteen (13) Musco Lights.

8.) Do you have an expected start date or NOA issuance date?

- A contract award is anticipated on August 5, 2025, with a Notice to Proceed issued August 18, 2025.

9.) Scope of services states retrofit existing sports lighting. If the existing Musco sport lighting will be retrofitted, please provide Musco light scans and control summary. This is not included in the current bid documents.

- Sports Lighting Technical Specifications are embedded and included in Plan Sheets SL1 – SL7

10.) Planet bids posting states bid due date is July 1st at 11:05 AM (PST). NIB document states bid due date is July 1st at 11:00 AM (PST). Please clarify.

- Bid is due July 1, 2025, by 11:05 AM (PST)

11.) Provide desired pole height, square/diameter dimensions, and metal finish/type for pole type 'A2' to match existing site lighting poles.

- Per Detail 11 on Sheet LS2.301, the pole heights shall be 18' above a 30" concrete base above finished grade and 6'-6" foundations.

12.) Provide type and manufacturer of breaker to be added to existing 800A switchboard.

- See Single Line Diagram Notes on Sheet ESO.1: Square D /Cutler-Hammer

13.) Bid item #23 unit of measure is EA for a quantity of 2. Are there 2 buildings or 1? Suggestion to make this unit of measure LS for a quantity of 1.

- Addendum No. 1 will also revise Bid Item #23 to Lump Sum (LS).

14.) Electrical panel schedule 'SP1' states emergency inverter for type. Please clarify.

- SP1 is a regular subpanel that includes the notes panel schedule on Sheet ESO.1; disregard the Type in the panel schedule identifying 'Emergency Inverter'.

15.) Half of Division 26 specifications are missing. Please provide Division 26 technical specification for Electrical complete.

- Division 26 provides typical specifications for electrical work. Many of the electrical specifications needed are embedded and included in the electrical sheets of the plan set.



BEAUMONT
550 E. 6th Street
Phone (951) 572-3236
BeaumontCa.gov

City of Beaumont

16.) Is bid item #23 for all electrical scope within the building, or only for the removal/modifications of electrical items that will need to be removed or relocated? Can you also provide photos or a floor plan of items that will need to be removed/relocated? Conduit, wire, devices, junction boxes, etc....

- Bid Item #23 will be a Lump Sum (LS) price for all the electrical scope of work in the existing restroom building/electrical room that shall include, but not be limited to, electrical panels, inverters, connections, conduit, etc.

17.) Shade sail/s mentioned in spec section 323300. Can you please provide what plan sheet it can be found on.

- No Shade Sails. Section 32-33-00-1 will be removed.

18.) Please provide an engineer's estimate and the estimated start date for the project.

- A Notice to Proceed is anticipated to be issued on August 18, 2025.

19.) Please confirm who will be providing construction management services for the project

- Construction Management will be provided by Transtech Engineers in coordination with City Public Works Inspection.

20.) Please provide exact depths of PCC Pavement and subgrade base segments per detail A "Concrete Paving" Sheet L2.401

- Per Detail A on Sheer L2.401, all paving thickness and subgrade for P-01 shall be 4 inches (**). All paving thickness and subgrade for P-05 shall be 6 inches (**).

21.) Per demolition plan sheet C1.20 note #11, contractor is to protect-in-place trees and "adjust to new grade as needed". Please clarify what this scope of work entails. Additionally, there are only three trees that fall within the limits of the demolition and grading line limits on sheet C1.30 and 14 trees are outside. Are we responsible for the adjustment of trees outside the demo and grading limits?

- No. To confirm, the demo and grading limits are within (inside the dashed line). Some trees will be protected in place, removed, or adjusted to accommodate the new improvements.



BEAUMONT
550 E. 6th Street
Phone (951) 572-3236
BeaumontCa.gov

City of Beaumont

Acknowledgement of Addendum #1 (To be included with proposal)

Signature

Date

Print Name



ITEM NO.	DESCRIPTION OF ITEMS	EST. QUANTITY/ UNIT		UNIT PRICE (FIGURES)	TOTAL COST (FIGURES)
19	CONSTRUCT DECOMPOSED GRANITE (4" ORGANIC LOCK)	18,000	SF		
20	REMOVE AND REPLACE CONCRETE PAVING 4" BROOM FINISH	2,050	SF		
21	CONSTRUCT CONCRETE PAVING 6" VEHICULAR RATED - BROOM FINISH	4,450	SF		
22	FURNISH AND INSTALL MUSCO LIGHTING STANDARDS (PROPOSED AT BASEBALL AND SYNTHETIC TURF SOCCER FIELDS)	13	EA		
23	MODIFICATION AT EXISTING BUILDING FOR MUSCO LIGHTING CONNECTIONS	1	LS		
24	FURNISH AND INSTALL PATHWAY LIGHTING AT SOUTH END CONNECTION TO FIELDS U-12 AND U-19	1	EA		
25	INSTALL IRRIGATION SYSTEM	1	LS		
26	INSTALL FIELD HOSE DOWN SYSTEM – QCV (12)	1	LS		
27	PLANT 36" BOX TREE	15	EA		
28	PLANT 5 GALLON SHRUB	163	EA		
29	PLANT 1 GALLON SHRUB	678	EA		
30	INSTALL 3" SHREDDED BARK MULCH	154	CY		
PROJECT BASE BID SUBTOTAL:					

In case of discrepancy between the unit price and the item cost set forth for a unit basis item, the unit price shall prevail and, shall be utilized as the basis for determining the lowest responsive, responsible bidder. However, if the amount set forth as a unit price is ambiguous, unintelligible or uncertain for any cause, or is omitted, or is the same amount as the entry in the "Item Cost" column, then the amount set forth in the "Item Cost" column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price. Final payment shall be determined by the Engineer from measured quantities of work performed based upon the unit price. In case of discrepancy between the written price and the numerical price, the written price shall prevail.



bidder as determined from the base bid. The City reserves the right to reject any or all bids or to waive any irregularities or informalities in any bids or in the bidding process.

The City of Beaumont hereby affirmatively ensures that minority business enterprises will be afforded full opportunity to submit Bids in response to this Notice, and that minorities nor minority business enterprises will not be discriminated against on the basis of race, color, national origin, ancestry, sex, or religion in any consideration leading to the award of contract. For further information, please see the form titled "Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)" within the Bid Documents.

CONTRACT DOCUMENTS AND SPECIFICATION:

Copies of the Contract Documents and Specification are available for inspection at no cost to the bidder at City Hall. The documents can also be downloaded from the City's Website (<https://vendors.planetbids.com/portal/66785/bo/bo-search>) and reviewed at no cost.

BID & BIDDER:

Bids must be accompanied by cash, a certified or cashier's check, or a Bid Bond in favor of the City in an amount not less than ten percent (10%) of the submitted Total Bid Price.

Each bid shall be accompanied by the security referred to in the Contract Documents, the non-collusion affidavit, the list of proposed subcontractors, and all additional documentation required by the Instructions to Bidders.

The successful bidder will be required to furnish the City with a Performance Bond equal to 100% of the successful bid, and a Payment (Labor and Materials) Bond equal to 100% of the successful bid, prior to execution of the Contract. All bonds are to be secured from a surety that meets all of the State of California bonding requirements, as defined in Code of Civil Procedure Section 995.120, and is admitted by the State of California.

Each bidder shall be a licensed contractor pursuant to the Business and Professions Code and shall be licensed in the following appropriate classification(s) of contractor's license(s), for the work bid upon, and must maintain the license(s) throughout the duration of the Contract:

- California Class "A"

The Class A contractor is required to perform most of the work or, at least, fifty-one percent (51%) of the total contracted work.

FOR FURTHER INFORMATION CONTACT:

Raveena Chara

E-mail: rchara@beaumontca.gov

INSTRUCTIONS TO BIDDERS



BEAUMONT
550 E. 6th Street
Phone (951) 572-3236
BeaumontCa.gov

City of Beaumont

PAddendum #2

RFB: SPORTS PARK FIELD LIGHTING & EXPANSION

Questions & Answers

1. After going over addendum 1 for this project it states that the prime needs to self-perform 51% of the contract, the electrical alone on this project is around 40%, an A license cannot perform electrical work that is required by a specialty license. Would it be 51% not including a specialty license like Electrical (C10)?
 - Since civil work comprises the majority of the project scope, C-10 contractors are advised to subcontract with a Class A General Engineering Contractor for proper execution
2. Please see attached our substitution request for to participate in your Beaumont Sports Field project. In our substitution request we believe we not only meet the specification requirements, but we exceed them. Please review and let me know of any questions you and your team may have.
 - To clarify, the City will award a contract to the lowest responsive bidder. Typically, the awarded general contractor will provide a technical submittal for City review before procuring this item. At that time, the City will review and decide if this submittal meets the required specifications for that item. At this time, the contractor may propose an alternative or an equivalent that still meets these specifications. It will be up to the City to either accept or reject this submittal.
3. Please confirm whether the project duration is 140 working days or calendar days.
 - The project duration is **140 working days**, as specified in the RFB. The technical specifications are standard boilerplate, used in this case because the designer did not provide written specifications
4. Could you please confirm the base section for the synthetic turf field? The plans say per manufacturer/geotech report and neither have the base section noted.
 - The preferred synthetic turf manufacturer will provide the base requirement when the turf submittal is transmitted.



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City of Beaumont

5. A. Can there be a rock section basis for the bid?

- If this is regarding the rip rap (Sheet C5.00), the City prefers 6" rock for the four headwalls.

B. This is in regards to the permeable base section for the synthetic turf. It also affects the grading portion for the field as well, since the volume of dirt being removed is subject to the depth of the base section.

- 6" minimum drainage stone. This information will be added to the bid solicitation.

C. Can you also advise whether the liner on the turf is impermeable or permeable?

- Impermeable to maintain the integrity of the perforated drain pipe trench and push water to the pipe underneath the synthetic turf.

Acknowledgement of Addendum #1 (To be included with proposal)

Signature

Date

Amin Nazari

Print Name

**CITY OF BEAUMONT
PUBLIC WORKS AGREEMENT**

EXHIBIT "C"

Insurance Certificates and Endorsements

(Insert behind this page.)



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

8/5/2025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER U.S. National Insurance LLC 8201 N Hayden Rd Scottsdale AZ 85258	CONTACT NAME: Jackie Sloat PHONE (A/C, No, Ext): (425) 941-1835 E-MAIL: jsloat@usnational.com ADDRESS: jsloat@usnational.com	FAX (A/C, No):
INSURED ZECO INC 22845 SAVI RANCH PKWY STE C YORBA LINDA CA 92887-4625	INSURER(S) AFFORDING COVERAGE INSURER A : NAVIGATORS SPECIALTY INS CO INSURER B : INFINITY SELECT INS CO INSURER C : KINSALE INS CO INSURER D : PALMS INS CO LTD INSURER E : INSURER F :	NAIC # 36056 20260 38920 056454

COVERAGES**CERTIFICATE NUMBER:****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS		
A	☒ COMMERCIAL GENERAL LIABILITY	Y	Y	SF25CGLZ0M5HTIC	08/04/2025	08/04/2026	EACH OCCURRENCE	\$ 1,000,000	
	☐ CLAIMS-MADE ☒ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 100,000	
							MED EXP (Any one person)	\$ 5,000	
							PERSONAL & ADV INJURY	\$ 1,000,000	
	GEN'L AGGREGATE LIMIT APPLIES PER: ☒ POLICY ☐ PRO-JECT ☐ LOC OTHER:						GENERAL AGGREGATE	\$ 2,000,000	
							PRODUCTS - COMP/OP AGG	\$ 2,000,000	
								\$	
B	AUTOMOBILE LIABILITY	Y	Y	50020900602	03/14/2025	09/14/2025	COMBINED SINGLE LIMIT (Ea accident)	\$ 1,000,000	
	☐ ANY AUTO						BODILY INJURY (Per person)	\$	
	☐ OWNED AUTOS ONLY ☒ SCHEDULED AUTOS						BODILY INJURY (Per accident)	\$	
	☒ HIRED AUTOS ONLY ☒ NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	\$	
								\$	
C	UMBRELLA LIAB ☒ OCCUR	Y	Y	0100368572-0	05/03/2025	09/14/2025	EACH OCCURRENCE	\$ 1,000,000	
	☒ EXCESS LIAB ☐ CLAIMS-MADE						AGGREGATE	\$ 1,000,000	
	DED RETENTION \$								
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						PER STATUTE		
								OTH-ER	
							E.L. EACH ACCIDENT	\$	
							E.L. DISEASE - EA EMPLOYEE	\$	
							E.L. DISEASE - POLICY LIMIT	\$	
D	CONTRACTOR POLLUTION LIABILITY	Y	Y	PACS03-00225	07/25/2025	07/25/2026	EACH OCCURRENCE	\$5,000,000	
							AGGREGATE	\$5,000,000	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Coverage applies as per the terms, conditions, definitions and endorsements of the policies.

The City of Beaumont, its elected and appointed officers, employees, agents and volunteers

Project: SPORTS PARK FIELD LIGHTING & EXPANSION PROJECT

Excess Liability over Commercial Auto

CERTIFICATE HOLDER**CANCELLATION**

City of Beaumont 550 E 6th St Beaumont CA 92223	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE Jackie Sloat

© 1988-2015 ACORD CORPORATION. All rights reserved.

This endorsement, effective: 07/25/2025
(at 12:01 A.M. standard time at the address of the Named Insured as showing in the Declarations)
forms a part of Policy No: PACS03-00225
Issued to: Zeco Inc
By: Palms Insurance Company, Limited

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED
OWNERS, LESSEES OR CONTRACTORS – SCHEDULED PERSON OR ORGANIZATION

It is agreed that the following changes are made to the policy:

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	Location(s) Of Covered Operations
Any person or organization to whom the Named Insured has agreed by a fully executed written contract that such person or organization be added as an Additional Insured, but only with respect to "your work" performed by or on behalf of the Named Insured and only with respect to "pollution incidents" taking place subsequent to the making of such fully executed written contract otherwise covered by this insurance.	Where specified by fully executed written contract prior to the "pollution incident".
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. SECTION IV – WHO IS AN INSURED of the policy is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage", or "environmental damage" arising out of a "pollution incident" that is caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf;

in the performance of "your work" for the additional insured(s) at the location(s) designated above.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury", "property damage", or "environmental damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or
2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

All other terms, conditions and exclusions under the Policy are applicable to this Endorsement and remain unchanged.

This endorsement, effective: 07/25/2025
(at 12:01 A.M. standard time at the address of the Named Insured as showing in the Declarations)
forms a part of Policy No: PACS03-00225
Issued to: Zeco Inc
By: Palms Insurance Company, Limited

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED
OWNERS, LESSEES OR CONTRACTORS – COMPLETED OPERATIONS**

It is agreed that the following changes are made to the Policy:

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	Locations of covered operations
Any person or organization with whom the Named Insured enters into a written contract that requires them to be named as an Additional Insured and the contract is fully executed prior to the start of the project.	Where specified by written contract fully executed prior to the start of the project.
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

SECTION IV - WHO IS AN INSURED of the Policy is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage", or "environmental damage" caused, in whole or in part, by "your work", at the location designated and described in the Schedule of this Endorsement, performed for that additional insured and included in the "completed operations hazard".

Solely as respects insurance provided under this Endorsement, the following definition is added to SECTION II – DEFINITIONS:

Completed operations hazard":

- A. Includes all "bodily injury", "property damage", and "environmental damage" occurring away from premises you own or rent and arising out of "your work" except:
- Work that has not yet been completed or abandoned. However, "your work" will be deemed completed at the earliest of the following times:
- (1) When all of the work called for in your contract has been completed.
 - (2) When all of the work to be done at the job site has been completed if your contract calls for work at more than one job site.
 - (3) When that part of the work done at a job site has been put to its intended use by any person or organization other than another contractor or subcontractor working on the same project.
- Work that may need service, maintenance, correction, repair or replacement, but which is otherwise complete, will be treated as completed.
- B. Does not include "bodily injury", "property damage", or "environmental damage" arising out of:
- (1) The transportation of property, unless the injury or damage arises out of a condition in or on a vehicle not owned or operated by you, and that condition was created by the "loading or unloading" of that vehicle by any insured; or
 - (2) The existence of tools, uninstalled equipment or abandoned or unused materials.

All other terms, conditions and exclusions under the Policy are applicable to this Endorsement and remain unchanged.



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
7/25/2025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

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PRODUCER CA Contractors Insurance Services, Inc. 9848 Business Park Dr Suite H Sacramento, CA 95827	CONTACT NAME:	James Drake	INSURER D:
	PHONE (A/C, No., Ext):	(916) 363-2663	FAX (A/C, No): (916) 363-2662
	E-MAIL ADDRESS:	certificates@ccisbonds.com	
	PRODUCER CUSTOMER ID#:		
	INSURER(S) AFFORDING COVERAGE		NAIC #
INSURED ZECO INC 359 S AVENIDA MARGARITA ANAHEIM CA 92807	INSURER A:	Berkley Assurance Company	39462
	INSURER B:		
	INSURER C:		
	INSURER D:		
	INSURER E:		

COVERAGES**CERTIFICATE NUMBER:****REVISION NUMBER:**

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INSR LTR	TYPE OF INSURANCE	ADD'L INSRD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	GENERAL LIABILITY						
	☒ COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE \$1,000,000
	☐ CLAIMS MADE ☒ OCCUR	X	X	VUMD0361800	8/14/2024	8/14/2025	DAMAGE TO RENTED PREMISES (Ea occurrence) 100,000.00
							MED EXP (Any one person) 5,000.00
							PERSONAL & ADV INJURY 1,000,000.00
							GENERAL AGGREGATE \$2,000,000
							PRODUCTS = COMP/OP-AGG \$2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						
	☐ POLICY ☒ PROJECT ☐ LOC						
	AUTOMOBILE LIABILITY						
	☐ ANY AUTO						COMBINED SINGLE LIMIT (Ea accident) \$
	☐ ALL OWNED AUTOS						BODILY INJURY (Per person) \$
	☐ HIRED AUTOS						BODILY INJURY (Per accident) \$
	☐ SCHEDULED AUTOS						PROPERTY DAMAGE (Per accident) \$
	☐ NON-OWNED AUTOS						
	UMBRELLA LIAB						EACH OCCURRENCE
	☐ OCCUR						AGGREGATE
	EXCESS LIAB						
	☐ CLAIMS-MADE						
	DED ☐ RETENSION \$						
	WORKERS COMPENSATION AND EMPLOYER'S LIABILITY Y/N	N/A	☐				WC STATUTORY LIMITS ☐ OTHER ☐
	ANY PROPRIETOR/PARTNER/EXECUTIVE (Mandatory in N/H) If yes, describe under DESCRIPTION OF OPERATIONS below)						E. L. EACH ACCIDENT
							E. L. DISEASE-EA EMPLOYEE
							E. L. DISEASE-POLICY LIMIT
			☐				

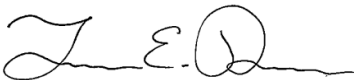
DESCRIPTION OF OPERATIONS/LOCATIONS /VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

City of Beaumont and its officers, officials, employees, agents, and volunteers are named as additional insured on the General Liability policy, per attached endorsements. The coverage is subject to the policy's limits, exclusions, and limitations. Insurance is primary and noncontributory. Waiver of subrogation included for the General Liability. 30-Day written notice of cancellation. 10-Day notice of nonpayment of premium.

RE: SPORTS PARK FIELD LIGHTING & EXPANSION PROJECT

License# 1031463

CERTIFICATE HOLDER**CANCELLATION**

City of Beaumont 550 E. 6th Street Beaumont, CA 92223	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE 



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

7/29/2025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

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PRODUCER U.S. National Insurance LLC 8201 N Hayden Rd Scottsdale AZ 85258	CONTACT NAME: Jackie Sloat PHONE (A/C, No, Ext): (425) 941-1835 E-MAIL: jsloat@usnational.com ADDRESS: jsloat@usnational.com	FAX (A/C, No):
INSURER(S) AFFORDING COVERAGE		NAIC #
INSURER A : INFINITY SELECT INS CO		20260
INSURER B : KINSALE INS CO		38920
INSURER C : PALMS INS CO LTD		056454
INSURER D :		
INSURER E :		
INSURER F :		

COVERAGES	CERTIFICATE NUMBER:	REVISION NUMBER:
THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.		

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☐ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☐ PRO-JECT ☐ LOC OTHER:						EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$ \$
A	AUTOMOBILE LIABILITY ☐ ANY AUTO ☐ OWNED AUTOS ONLY ☒ SCHEDULED AUTOS ☒ HIRED AUTOS ONLY ☒ NON-OWNED AUTOS ONLY	Y		50020900602	03/14/2025	09/14/2025	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
B	UMBRELLA LIAB ☒ OCCUR EXCESS LIAB ☐ CLAIMS-MADE DED RETENTION \$	Y		0100368572-0	05/03/2025	09/14/2025	EACH OCCURRENCE \$ 1,000,000 AGGREGATE \$ 1,000,000 \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐ Y / N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N / A					PER STATUTE ☐ OTH-ER ☐ E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$
C	CONTRACTORS POLLUTION LIABILITY	Y		PACS03-00225	07/25/2025	07/25/2026	EACH OCCURRENCE \$5,000,000 AGGREGATE \$5,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Coverage applies as per the terms, conditions, definitions and endorsements of the policies.

The City of Beaumont, its elected and appointed officers, employees, agents and volunteers

Project: SPORTS PARK FIELD LIGHTING & EXPANSION PROJECT

Excess Liability over Commercial Auto

CERTIFICATE HOLDER	CANCELLATION
City of Beaumont 550 E 6th St Beaumont CA 92223	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE <i>Jackie Sloat</i>

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CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

7/28/2025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER U.S. National Insurance LLC 8201 N Hayden Rd Scottsdale AZ 85258	CONTACT NAME: Jackie Sloat PHONE (A/C, No, Ext): (425) 941-1835 E-MAIL: jsloat@usnational.com ADDRESS: jsloat@usnational.com	FAX (A/C, No):
INSURER(S) AFFORDING COVERAGE		NAIC #
INSURER A : INFINITY SELECT INS CO		20260
INSURER B : KINSALE INS CO		
INSURER C : PALMS INS CO LTD		056454
INSURER D :		
INSURER E :		
INSURER F :		

COVERAGES**CERTIFICATE NUMBER:****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☐ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☐ PRO-JECT ☐ LOC OTHER:						EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$ \$
A	AUTOMOBILE LIABILITY ☐ ANY AUTO ☐ OWNED AUTOS ONLY ☒ HIRED AUTOS ONLY ☐ SCHEDULED AUTOS ☒ NON-OWNED AUTOS ONLY	Y		50020900602	03/14/2025	09/14/2025	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
B	UMBRELLA LIAB ☒ OCCUR EXCESS LIAB ☐ CLAIMS-MADE DED RETENTION \$	Y		0100368572-0	05/03/2025	09/14/2025	EACH OCCURRENCE \$ 1,000,000 AGGREGATE \$ 1,000,000 \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐ Y / N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N / A					PER STATUTE ☐ OTH-ER ☐ E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$
C	CONTRACTORS POLLUTION LIABILITY			PACS03-00225	07/25/2025	07/25/2026	EACH OCCURRENCE \$5,000,000 AGGREGATE \$5,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Coverage applies as per the terms, conditions, definitions and endorsements of the policy.

PROJECT: SPORTS PARK FIELD LIGHTING & EXPANSION

* Excess Liability over Commercial Auto

CERTIFICATE HOLDER**CANCELLATION**

City of Beaumont 550 E 6th St Beaumont CA 92223	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE <i>Jackie Sloat</i>

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CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

07/30/2025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Automatic Data Processing Insurance Agency, Inc. 1 Adp Boulevard Roseland NJ 07068		CONTACT NAME: Automatic Data Processing Insurance Agency, Inc. PHONE (A/C, No, Ext): 1-800-524-7024 FAX (A/C, No): E-MAIL ADDRESS:	
INSURED ZECO INC 22845 Savi Ranch Parkway, Unit C Yorba Linda CA 92887		INSURER(S) AFFORDING COVERAGE INSURER A: State Compensation Insurance Fund INSURER B: INSURER C: INSURER D: INSURER E: INSURER F:	
		NAIC # 35076	

COVERAGES**CERTIFICATE NUMBER:** 4459569**REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☐ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☐ PRO-JECT ☐ LOC ☐ OTHER:						EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$ \$
	AUTOMOBILE LIABILITY ☐ ANY AUTO ☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS ☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
	UMBRELLA LIAB ☐ OCCUR EXCESS LIAB ☐ CLAIMS-MADE DED ☐ RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$ \$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N ☒ Y	N/A	Y	9363048-2025	07/10/2025	07/10/2026 ☒ PER STATUTE ☐ OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

This certificate has a blanket Waiver of Subrogation for the following state(s) :CA

CERTIFICATE HOLDER**CANCELLATION**

City of Beaumont 550 E 6th Street Beaumont CA 92223	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

DESIGNATED CONSTRUCTION PROJECT(S) GENERAL AGGREGATE LIMIT WITH A CAP

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE

SCHEDULE

Designated Construction Projects: Construction project sites at which you perform work for additional insureds that require you to obtain per project general aggregate limits under a written contract that was executed prior to the date of any "occurrence" covered under this policy.

Maximum Aggregate Limit: \$5,000,000

- A. For all sums which the insured becomes legally obligated to pay as damages caused by "occurrences" under **COVERAGE A BODILY INJURY AND PROPERTY DAMAGE LIABILITY** and for all medical expenses caused by accidents under **COVERAGE C – MEDICAL PAYMENTS**, which can be attributed only to ongoing operations at a single designated construction project shown in the Schedule above:
1. A separate Designated Construction Project General Aggregate limit applies to each designated construction project, subject to an overall maximum aggregate limit as shown in the Schedule above, is equal to the amount of the General Aggregate Limit shown in the Declarations.
 2. The Designated Construction Project General Aggregate Limit is the most we will pay for the sum of all damages under **COVERAGE A**, except damages because of "bodily injury" or "property damage" included in the "products-completed operations hazard", and for medical expenses under **COVERAGE C** regardless of the number of:
 - a. Insureds; or
 - b. Claims made or "suits" brought; or
 - c. Persons or organizations making claims or bringing "suits".
 3. Any payments made under **COVERAGE A** for damages or under **COVERAGE C** for medical expenses shall reduce the Designated Construction Project Aggregate Limit for that designated construction project. Such payments shall not reduce the General Aggregate Limit shown in the Declarations nor shall they reduce any other Designated Construction Project General Aggregate Limit for any other designated construction project shown in the Schedule above.
 4. The limits shown in the Declarations for Each Occurrence, Fire Damage and Medical Expenses continue to apply. However, instead of being subject to the General Aggregate Limit shown in the Declarations, such limits will be subject to the applicable Designated Construction Project General Aggregate Limit.

- B. For all sums which the insured becomes legally obligated to pay as damages caused by "occurrences" under **COVERAGE A** and for all medical expenses caused by accidents under **COVERAGE C**, which cannot be attributed only to ongoing operations at a single designated construction project shown in the Schedule above:
1. Any payments made under **COVERAGE A** for damages or under **COVERAGE C** for medical expenses shall reduce the amount available under the General Aggregate Limit or the Products-Completed Operations Aggregate Limit, whichever is applicable; and
 2. Such payments shall not reduce any Designated Construction Project General Aggregate Limit.
- C. When coverage for liability arising out of the "products-completed operations hazard" is provided, any payments for damages because of "bodily injury" or "property damage" included in the "products-completed operations hazard" will reduce the Products-Completed Operations Aggregate Limit, and not reduce the General Aggregate Limit nor the Designated Construction Project General Aggregate Limit.
- D. If the applicable designated construction project has been abandoned, delayed, or abandoned and then restarted, or if the authorized contracting parties deviate from plans, blueprints, designs, specifications or timetables, the project will still be deemed to be the same construction project.
- E. The provisions of LIMITS OF INSURANCE SECTION III not otherwise modified by this endorsement shall continue to apply as stipulated.

ALL OTHER TERMS AND CONDITIONS OF THIS POLICY REMAIN UNCHANGED

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED – OWNERS, LESSEES OR
CONTRACTORS – SCHEDULED PERSON OR
ORGANIZATION**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)	Location(s) Of Covered Operations
As required by written contract executed and signed by all parties prior to the date of loss but only to the extent permitted by law. The insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.	As designated in written contract with the Named Insured.
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or
2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

- C. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or

2. Available under the applicable limits of insurance;

whichever is less.

This endorsement shall not increase the applicable limits of insurance.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – COMPLETED OPERATIONS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)	Location And Description Of Completed Operations
As required by written contract executed prior to the date of occurrence but only to the extent permitted by law and the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.	As designated in written contract with the Named Insured.
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the location designated and described in the Schedule of this endorsement performed for that additional insured and included in the "products-completed operations hazard".

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following is added to Section III – Limits Of Insurance:

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
2. Available under the applicable limits of insurance;

whichever is less.

This endorsement shall not increase the applicable limits of insurance.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US (WAIVER OF SUBROGATION)

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
ELECTRONIC DATA LIABILITY COVERAGE PART
LIQUOR LIABILITY COVERAGE PART
POLLUTION LIABILITY COVERAGE PART DESIGNATED SITES
POLLUTION LIABILITY LIMITED COVERAGE PART DESIGNATED SITES
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART
RAILROAD PROTECTIVE LIABILITY COVERAGE PART
UNDERGROUND STORAGE TANK POLICY DESIGNATED TANKS

SCHEDULE

Name Of Person(s) Or Organization(s):

Any person or organization to whom or to which you are obligated by virtue of a written contract to waive your right of recovery.

Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The following is added to Paragraph 8. **Transfer Of Rights Of Recovery Against Others To Us** of Section IV – Conditions:

We waive any right of recovery against the person(s) or organization(s) shown in the Schedule above because of payments we make under this Coverage Part. Such waiver by us applies only to the extent that the insured has waived its right of recovery against such person(s) or organization(s) prior to loss. This endorsement applies only to the person(s) or organization(s) shown in the Schedule above.