WARNING: ALL INDIVIDUALS INTERESTED IN BIDDING ON THIS PROJECT MUST OBTAIN THE FINAL PLANS AND SPECIFICATIONS FROM THE DEPARTMENT MANAGING THE PROJECT OR AS OTHERWISE STATED IN THE ADVERTISEMENT FOR BIDS FOR THE PROJECT. DO NOT USE THE PLANS AND SPECIFICATIONS POSTED ON THE CLERK OF THE BOARD'S WEBSITE FOR BIDDING ON THIS PROJECT.

Project and Facilities Management Department
385 N. Arrowhead Avenue, 3rd Floor San
Bernardino, CA 92415 www.SBCounty.gov

Our job is to create a county in which those who reside and invest can prosper and achieve well-being.

SAN BERNARDINO COUNTY SPECIFICATIONS

For:

SAN BERNARDINO COUNTY SHERIFF'S DEPARTMENT

EMERGENCY VEHICLE OPERATIONS CENTER

ASPHALT & LIGHTING REPLACEMENT PROJECT NO. 10.10.1222

Prepared by:
IMEG
901 Via Piemonte, Suite 400
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John Mark Thompson, PE
Civil Client Executive, Principal

Preparation Date: December 6, 2023

SECTION 00 01 10
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END OF SECTION

DOCUMENT 00 31 32
GEOTECHNICAL DATA

PART 1 - REPORT AND INFORMATION

1.1 Existence of Reports

A. County, its consultants, and prior contractors may have collected documents providing a general description of the Site and conditions of the Work. These documents may consist of geotechnical reports for and around the Site, contracts, contract specifications, tenant improvement contracts, as-built drawings, utility drawings, and information regarding Underground Facilities. These reports, documents and other information are not part of the Contract Documents.

1.2 Inspection of Reports

A. Bidders may inspect geotechnical reports and information regarding existing conditions at the Site. These documents are available for review at the County of San Bernardino Project & Facilities Management Department, located at 385 N Arrowhead Avenue, 3rd Floor, San Bernardino, CA 92415 and copies may be obtained for the cost of reproduction and handling upon Bidder's payment for the costs. These reports, documents and other information are not part of the Contract Documents. Nevertheless, by submitting a Bid, Bidder accepts full responsibility for reviewing, knowing and understanding the contents of all of these materials.

1.3 Inclusion in Project Manual

A. Geotechnical reports may be included in the Project Manual and information regarding existing conditions may also be included in the Project Manual, but neither shall be considered part of the Contract Documents.

1.4 Available Documentation

A. The following documentation is available for review through the County for this Contract:

Geotechnical (Soils) Report

Subject: Limited Geotechnical Investigation
Proposed Pavement
Emergency Vehicle Operations Center
San Bernardino County Sheriff's Department
San Bernardino, California
Project No. T3006-99-01

Prepared by: Geocon West, Inc.
78-075 Main St #G-203, La Quinta, California 92253
(760) 565-2002

Date Prepared: December 13, 2022

Part 2 - USE OF INFORMATION ON EXISTING CONDITIONS

2.1 Aboveground Existing Conditions

A. Under no circumstances shall the County be deemed to make a warranty or representation of existing aboveground conditions, as-built conditions, or other aboveground actual conditions verifiable by reasonable independent investigation. These conditions are verifiable by Bidder by the performance of its own independent investigation that Bidder must perform prior to bidding and Bidder must not rely on the information supplied by the County regarding existing conditions. Bidder represents and agrees that in submitting its Bid, it is not relying on any information regarding existing conditions supplied by the County.

2.2 Underground Facilities

A. Information supplied regarding existing Underground Facilities at or contiguous to the Site is based on information furnished to the County by others (e.g., the builders of such Underground Facilities or others). Except as expressly set forth in this Document, County does not assume responsibility for the accuracy, completeness or thoroughness of this information, and Bidder is solely responsible for any interpretation or conclusion drawn from this information. Except as expressly set forth in this Document, County will be responsible only for the general accuracy of information regarding Underground Facilities, and only for those Underground Facilities that are owned by the County. This express assumption of responsibility applies only if Bidder has conducted the independent investigation required of it and discrepancies were not apparent.

PART 3 - LIMITED RELIANCE PERMITTED ON CERTAIN GEOTECHNICAL INFORMATION

3.1 Geotechnical Data

A. Except as expressly set forth in this Document, County does not warrant, and makes no representation regarding, the accuracy or thoroughness of any geotechnical data. Bidder represents and agrees that in submitting its Bid, it is not relying on any geotechnical data supplied by County, except as specifically set forth herein.

1. Bidder may rely upon the general accuracy of the "technical data" contained in the geotechnical reports and drawings identified above, but only insofar as it relates to subsurface conditions, provided Bidder has conducted the independent investigation required of it and discrepancies were not apparent. The term "technical data" in the referenced reports and drawings shall be limited as follows:

   a. The term "technical data" shall include actual reported depths, reported quantities, reported soil types, reported soil conditions, and reported material, equipment, or structures that were encountered during subsurface exploration.

   b. The term "technical data" does not include, and Bidder may not rely upon, any other data, interpretations, opinions or information shown or

indicated in such drawings or reports that otherwise relate to subsurface conditions or described structures.

c. The term "technical data" shall not include the location of Underground Facilities.

d. Bidder may not rely on the completeness of reports and drawings for the purposes of bidding or construction. Bidder may rely upon the general accuracy of the "technical data" contained in such reports or drawings.

e. Bidder is solely responsible for any interpretation or conclusion drawn from any "technical data" or any other data, interpretations, opinions, or information contained in supplied geotechnical data.

3.2 Investigations

A. Before submitting a Bid, each Bidder shall be responsible to obtain such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site or otherwise, which may affect cost, progress, performance or furnishing of Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of Contract Documents. Bidders shall advise County in writing during the Bid period of any questions, suppositions, inferences or deductions Bidders may have for County's review and response.

B. County has provided time in the period prior to bidding for Bidder to perform these investigations.

Part 4 - ACCESS TO SITE FOR INVESTIGATIONS

4.1 During the Pre-Bid Site Visit(s)

A. County will provide each bidder will provide each Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies, as each Bidder deems necessary for submission of a Bid. Bidders must fill all hole and clean up and restore the Site to its former conditions upon completion of such explorations, investigations, tests, and studies. Proof of insurance and obligation to indemnify against claims arising from such investigation work. Each Bidder shall supply all equipment required to perform any investigations as each Bidder deems necessary. County has the right to limit the number of pieces of machinery operating at one time due to safety concerns.

END OF SECTION

SECTION 01 01 00
SUMMARY OF WORK AND SEQUENCE OF CONSTRUCTION

PART 1 - GENERAL

1.1 Work Covered by Contract Documents

A. The Work includes furnishing products, labor, tools, transportation, and services to:

1. Demolish existing pavement, improvements, and vegetation to the limits as shown on plans.
2. Regrade areas indicated on plans for new pavement construction.
3. Pave areas and construct improvements to the limits as shown on plans.
4. Paint pavement striping, markings and install pavement markers in paved areas and relocate traffic control signage as shown on plans.
5. Upgrade existing light pole fixture units per electrical drawings.
6. Add-alternate #1 – Grade and construct east asphalt paved parking lot.
7. Add-alternate #2 – Grade and construct west asphalt paved parking lot.

1.2 Project Location

A. Project is located at 18958 Institution Road, San Bernardino, CA 92407.

1.3 Reference Standards

A. Where items of Work are not fully specified in this document, refer to the following Reference Standards in order of precedence shown.

1. Federal, State, and local regulations and permit requirements
2. Published Design Criteria and Standard Drawings of public and private agencies having jurisdiction over portions of work within their service area. These include:
   a. Agency Standards
   b. County of San Bernardino Standard Plans and Specifications
3. California Department of Transportation (Caltrans) Standard Plans and Specifications, "SS", current edition
4. Standard Specifications for Public Works, "Greenbook", current edition

B. The most recent editions and supplements to these documents adopted as of date of advertisement for bid shall govern Work covered by these Contract Documents except as expressly modified herein.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.1 Work Sequence

A. General sequence of Work shall be as follows:

1. Preparation

a. Before beginning Work, coordinate with utility companies servicing and existing facilities within the site. Obtain required permits, licenses and construction easements. Call **Underground Service Alert** to obtain staking and marking of buried utilities. Submit proposed schedule of Work, insurance and bonds. Pothole as needed to supplement staking and marking. Take preconstruction photographs.

b. Verify existing site conditions, utility locations, field dimensions, pipe types and voltage and phase of on-site electrical services. If discrepancies or conflicts are found, bring these to attention of Owner's Representative.

c. Coordinate sequence of construction and submit phasing plans to Engineer of Record and County and Sheriff's Department representative for approval. Construction shall be phased and coordinated with Sheriff Department's training schedule. The training facilities will need to be relocated as necessary to remain operational at all times during construction.

d. Submit shop drawings and other submittals.

e. Begin manufacturing and shipping materials and equipment after receiving approved submittals.

f. Complete construction of above-ground and buried piping according to proposed Work schedule.

g. Demonstrate satisfactory installation and operation of installed work, including performing vendor and system functional tests.

2. Closeout

a. Provide operator training, including O&M manuals that contain engineering cut- sheets on all equipment.

b. Provide record drawings.

c. Clean up and restore construction areas.

d. Provide warranty as specified.

3.2 Normal Working Hours

A. Contractor shall conduct all Work within the following Owner-accepted schedule:
   1. Normal Work Hours: 7:00 AM to 5:00 PM

   2. Normal Work Days: Monday through Friday, excepting legal holidays.

B. Exceptions to this Work schedule shall be only as accepted in writing by Owner.

C. No work shall be done outside of normal work hours and work days, except where necessary for proper care and protection of Work already performed, or except in case of emergency, and in any case only with written notice to Owner's Representative.

D. Night work may be established as regular procedure by Contractor if they first obtain written acceptance from Owner. Such notice may be revoked at any time by Owner if Contractor fails to maintain adequate nighttime force and equipment for reasonable prosecution and to justify inspection of Work.

3.3 Cooperation with Other Contractors

A. Owner may have additional work performed in this area by other Contractors. Contract requires cooperation with those contractors in the area. Any difference or conflict which may arise between Contractor and other contractors shall be adjusted and determined by Owner. Contractor shall conduct their operations as to minimize interference with work being done by other contractors. Contractor shall, at their sole expense, make good, promptly, any injury or damage to other contractors' work caused at their hands.

3.4 Contractor Use of Premises

A. The following facilities shall remain operational during construction of this project:

   1. Existing main office building and access to the main office building.

   2. Do not shut off utilities or take action which might adversely affect Owner's use or operation of his facilities or premises without prior written authorization from Owner.

   3. Install approved signs, barricades and lights necessary to ensure public safety and safety of Owners operators and personnel. Provide steel plates across ditches to enable safe access of Owner's personnel to facilities.

B. Fences, walls, shrubs, sprinkler systems, substructures or other improvements removed or disturbed by Contractor during construction shall promptly be replaced and/or repaired at Contractor's sole expense to Owner's satisfaction.

3.5 Responsibility for Job Site Conditions

A. Contractor agrees they shall assume sole and complete responsibility for job site conditions during course of construction of Work, including safety and health of all persons and property; that this requirement shall apply continuously and not be limited to normal working hours; and that Contractor shall defend, indemnify and hold Owner and design consultant harmless from any and all liability except that arising from the sole negligence of Owner or design consultant.

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 Work Included

A. General procedures and requirements for submittals, initial submittal, submittals required on Owner's request, progress reports, Shop Drawings, product data and samples, notification of affected residences and businesses, and submittal forms.

1.2 Related Work

A. Section 01 65 00: Product Delivery Requirements

B. Section 01 66 00: Product Storage and Handling Requirements

C. Section 01 73 00: Execution

1.3 Electronic (Digital) Submittals

A. Submit digital copy of **each** submittal using one of following methods chosen by Owner:

1. Email: Send submittal as pdf attachment to Owner and Owner's Representative.

2. Data tracking System (DTS): Upload digital file to server maintained by Owner's Representative.

3. CD: Burn a CD containing one or more submittals and furnish copy of CD to Owner and Owner's Representative.

B. Multiple hard copies of submittals will not be accepted in lieu of digital submittal unless otherwise authorized or directed by Owner's Representative.

C. One digital copy of stamped submittal with cover letter will be returned to Contractor by email or DTS as appropriate.

D. Contractor shall verify emails sent with large attachments have been successfully received by Owner and Owner's Representative. Files in excess of 5 MB in size shall not be sent as attachments to emails due to size restrictions associated with users' email systems.

E. Number submittals using numbering system as directed by Owner's Representative.

F. Shop Drawing Transmittal Form. Use form included at end of this section unless otherwise directed by Owner. Submit separate form for each submittal and assign a submittal number. Form shall be first page of each digital submittal. Submittals without completed Contractor's Transmittal Form as first page will be returned without review and stamped "REJECTED/RESUBMIT AS SPECIFIED."

G. Stock or standard drawings will not be accepted for review unless full identification and supplementary information is shown thereon in ink or typewritten form.

H. Exceptions and departures from Contract Documents shall be clearly noted, along with brief justification for each exception or departure.

1.4 Owner's Review of Submittals

A. Owner's review or acceptance of submittals shall only constitute acceptance of the following:

1. Portions of submittal in compliance with Contract Documents.

2. Exceptions or departures expressly noted on Contractor's submittal as "exceptions" or "departures" and accepted in writing by Owner.

3. Exceptions or departures Owner or their Representative may by chance discover and acknowledge and accept in writing in Owner's response to said submittal.

B. If any submittal's exception or departure from Contract Documents is neither noted by Contractor on their submittal nor acknowledged and expressly accepted by Owner, Contract shall remain unchanged. Owner's failure to discover all exceptions and departures in submittals whether intentional or unintentional on Contractor's part shall not relieve Contractor of any Contract responsibilities.

C. Review of submittals will proceed as follows:

1. Submit specified quantity of complete submittals together with Contractor's submittal forms to Owner's Representative for review. At Owner's discretion, Owner may review submittals prior to, parallel with, or after Owner's Representative has reviewed submittals.

2. Submittals will be stamped "ACCEPTED", "ACCEPTED AS NOTED", "REVISE AS NOTED/RESUBMIT", "REJECTED/RESUBMIT AS SPECIFIED," "NO ACTION REQUIRED," or "SUBMITTAL NOT REQUESTED, RETURNED WITHOUT REVIEW." Three copies with letter of transmittal will be returned to Contractor.

3. If drawing or data is returned stamped "ACCEPTED", "ACCEPTED AS NOTED", "NO ACTION REQUIRED," or "SUBMITTAL NOT REQUESTED, RETURNED WITHOUT REVIEW." No further resubmittals will be required for that item.

4. If drawing or data is stamped "REVISE AS NOTED/RESUBMIT," or "REJECTED/RESUBMIT AS SPECIFIED," make necessary corrections and resubmit documents as required in Instruction 1. Contractor's submittal form transmitting revised documents shall show that documents comprise a resubmittal. Revisions and re-submittals shall be numbered as Revision #1, Revision #2, or as appropriate.

5. If changes other than those noted by Owner are made on submittal before resubmittal, note such changes on resubmittal.

6. Revise and resubmit submittals as required, until confirmation of compliance is obtained.

7. Costs incurred by Owner for original submittal and first re-submittal will be paid by Owner. Costs incurred by Owner for second and subsequent re-submittals will be deducted from payment due Contractor.

D. Allow not less than 10 calendar days for review and response to submittals. Review may be delayed if contingent on receipt of other submittals. Upon timely written request by Contractor, Owner's Representative will make reasonable efforts to shorten review periods which may fall on Contractor's critical path.

E. Correct and resubmit rejected submittals within 14 calendar days.

F. Do not order products or begin work described in required submittals until such submittals have been reviewed and returned by Owner stamped "ACCEPTED" or "ACCEPTED AS NOTED". Contractor's acceptance of delivery of products prior to receipt of Owner's Representative's satisfactory return of applicable submittals shall be at Contractor's risk.

G. Review of submittals by Owner's Representative shall extend solely to general type and layout of Work and shall not be construed as relieving Contractor of full responsibility for adequacy and accuracy of submitted designs and details shown in submittals.

1.5 Initial Submittal

A. Submit the following within 72 hours after pre-construction meeting.

1. Names and addresses of Manufacturers furnishing products valued greater than either 4 percent of contract value or $40,000, whichever is less. State locations of shops at which manufacture will take place. State whether products are already designed or in production. Include brief description of products proposed, including sizes and catalog numbers.

2. Letter addressed to Owner's Representative identifying Contractor's superintendent, safety officer, and traffic control coordinator, including emergency telephone numbers and signature authorization, and listing names, addresses and telephones for subcontractors.

3. Proposed Construction Schedule.

1.6 Submittals on Owner's Request - Supplemental Information

A. Detailed construction schedule updates shall be submitted, with monthly pay requests to describe scheduling of elements of construction requiring Owner's or Contractor's coordination with public, or other private parties or public agencies.

B. Supplemental information will be requested for "accepted equals" and may be requested when there is a question a Manufacturer's product conforms to Contract Documents. Owner reserves right to require submittal of supplemental information as described herein before acceptance of product.

C. Certification of compliance with listed reference standards shall be submitted by Manufacturers on Owner's request. Failure of Owner to request certification of compliance shall not serve as waiver of Contractor's duty to comply with reference standards.

D. Transcripts of results of acceptance tests performed at point of manufacture of products furnished shall be submitted by Manufacturers on Owner's request.

E. Samples shall be submitted on Owner's request.

F. Names and addresses of nearest local service representatives maintaining technical service personnel and complete inventory of spare parts and accessories shall be submitted on Owner's request.

G. List of 3 installations in which products comparable in size, capacity and rating with those required in Contract Documents are now in regular operation shall be submitted on Owner's request. Include listing of size capacity or rating of each installation. Include name and telephone number of at least one reference responsible for operations at each installation whom Owner's Representative may contact.

1.7 Progress Reports

A. Daily log shall be submitted by Contractor's superintendent on one-page form provided by Owner. These logs shall be detailed with activities that took place during each day. Submit logs daily to Owner's Representative by end of following workday.

B. Schedule updates shall be submitted with monthly pay requests. If Work falls behind schedule, monthly pay requests shall include revised schedules to demonstrate how Contractor intends to bring work back on schedule.

C. Record drawings, consisting of one set of full size annotated blue-line plans and other drawings forming a part of contract, showing installed locations of improvements and all changes made during construction shall be available to Owner for inspection throughout project. Record all deviations from Contract Documents, including accepted change orders, using additional sketches or ink revisions, immediately after installing each portion of Work. Show locations of underground piping, conduit, sensor lines, valves, capped ends, branch fittings, pull boxes and Work. Keep one current record copy of Contract Documents, addenda, supplementary drawings, working drawings, change orders and clarifications at site and in good order. Report changes and deviations promptly to Owner's Representative.

D. Partial payment requests may be withheld if daily logs, schedule updates or record drawings are damaged, lost or not kept current to satisfaction of Owner's Representative.

1.8 Contractor's Notice of Pending Delay Claim

A. In event a delay claim is foreseen by Contractor, Contractor shall immediately notify Owner in writing. Following said notice, Contractor shall have no more than 7 calendar days to furnish follow-up information as required by Owner to allow Owner to act judiciously to minimize losses. As a minimum, said information shall consist of a letter identifying and substantiating cost of expected claim per day of delay accompanied by schedule showing any available float and delay's impact on overall schedule.

1.9 Shop Drawings and Product Data

A. Shop Drawings shall be defined as job-specific drawings showing details of manufactured or assembled products.

B. Shop Drawings shall be prepared to scale wherever possible and shall include project name on shop drawing.

C. Except where preparation of a submittal is contingent upon acceptance of a prior submittal, Contractor shall make every reasonable effort to combine all submittals relating to same class or portion of Work into one package, regardless of variety of trades or types of equipment required to construct that portion of Work. *e.g.* all above ground piping, fittings, valves, actuators, pipe stands, couplings, flow meters and appurtenances shall be submitted as one package for review.

1. Packages shall clearly reference specification sections and specified submittal requirements therein, showing where in submitted literature each submittal requirement is satisfied.

2. Packages clearly incomplete will be returned without review.

3. To facilitate approval of critical path items or to facilitate Contractor's communication with multiple suppliers and subcontractors, packages may contain several submittals from several suppliers so long as all relevant submittals are contained in package.

4. Where expedited review of one submittal item within package is desired to facilitate critical path items, notify Owner's Representative in writing to request expedited review of said item. Contractor's request for expedited review of a portion of a submittal package shall be taken as full acceptance of responsibility by Contractor for any subsequent field modifications or substitutions later necessary to remedy any conflict between expedited submittals and other submittals or to remedy any conflict between expedited submittals and Contract Documents not brought to Owner's attention at time of submittal.

D. Catalog Data shall be defined as Manufacturer's pre-printed drawings which need not include project name. However, where multiple products or options are shown in same catalog cut, product or option being furnished shall be clearly delineated as specified below.

E. All submittals shall show US units. For submittals prepared in foreign countries where Manufacturer's literature is printed solely in metric units, Contractor may make hand annotations to convert to US units as long as annotations are legible. Submittals not bearing US units will be returned without review.

F. Submittals bearing text in languages other than English will be returned without review.

G. Shop Drawings for piping or ductwork shall include:

1. Key or index showing locations of spools and fittings.

2. Order of installation. Each spool shall receive a unique mark number. No other spool or fitting, even on separate pipelines or casings included in Contract, shall have same mark number. Sequential order of mark numbers shall correspond to a logical order of installation for each pipeline.

3. Laying lengths, dimensions, clearances and tolerances for all spools and fittings.

4. Clearly legible drawing showing each pipe or duct fitting and/or spool in plan view and in profile.

5. Station and invert elevation of all grade changes and changes in horizontal alignment

6. Slopes of pipe not vertical or horizontal.

7. Horizontal and vertical alignment data for all curves, bends, tees and outlets.

8. Couplings and end types of all pipe, spools, fittings, outlets and adjacent valves or pipeline equipment.

9. Proposed pipeline linings and coatings including thicknesses.

10. How connections will be made between Work under this contract and existing work or work under other contracts.

11. Pipe, duct and valve support sizes and locations including anchor bolt sizes and embedments.

12. Relationship of piping and ductwork to other Work.

H. Shop Drawings for valves, pumps or pipeline equipment shall include:

1. Laying lengths and dimensions, clearances, tolerances and end types.

2. Weight and type of valves, pumps or equipment.

3. Valve and pump port sizes and tolerances.

4. Dimensions and orientation of actuators and pilot systems. Locations of actuator stops.

5. Proposed linings and coatings.

6. Performance characteristics.

7. Parts and materials lists and ratings and details of appurtenances to be furnished, along with references to appropriate ASTM, Federal Specifications and other reference standards and grades.

8. Piping and conduit attachments and sizes.

I. Shop Drawings for structural and architectural items shall include:

1. Lengths, widths, thickness, embedment, dimensions and tolerances of structural members or architectural items.

2. Detailing of openings and wall penetrations including doors, windows, hatches, louvers, vents, ducts, pipes and all floor, slab, wall and door penetrations.

3. Connection details including applicable sizes, diameters, thickness, spacing, embedment and edge distances of bolts, anchors, rivets, nails, screws, spikes, connection plates, holdowns, joints, sleepers and other fasteners and fastening systems.

4. Welding details using standard ANSI/AWS 2.4 symbols and showing type, electrode, length, spacing and thickness of welds.

5. Materials listing and properties, including types, strengths and finishes of concrete, masonry, metals, wood, plastics and other construction materials.

J. Shop Drawings for equipment shall include:

1. Dimensions, clearances and floor space requirements.

2. Weight and type of equipment.

3. Location where product will be installed.

4. Anchor bolt sizes and embedments.

5. Finishes and coatings.

6. Performance characteristics.

7. Parts and materials lists and ratings and details of appurtenances to be furnished, along with references to appropriate ASTM, Federal Specifications and other reference standards and grades.

8. Piping and conduit attachments and sizes.

K. In addition to above requirements for Shop Drawings for equipment, Shop Drawings for electrically powered or controlled equipment shall include:

1. Elevations showing arrangements and positions of all panel components including nameplates.

2. Electrical diagrams as needed to show wiring circuit schematics, single line diagrams, voltage wire numbers and identified interlocks and terminals.

3. Logic diagrams for programmable controllers or relays if used.

4. Nameplate data showing nameplate material, height of letters, number of lines, inscriptions and dimensions.

L. Shop Drawings for replacement items shall include field measurements needed to verify fit in existing spaces.

M. Catalog Data shall clearly indicate applicable items when several products are covered on one page. Using black ink, indicate on submitted catalog data, specification section or plan reference being satisfied.

N. Installation Instructions or Application Instructions shall be defined as Manufacturer's printed instructions including warranty requirements, clearances required and proper field procedures to deliver, handle, install and prepare product for use. In absence of Manufacturer's published literature, ASTM, AWWA or trade standards for installation will usually be accepted. If no instructions are submitted for installing or applying item of Work, Owner reserves right to stop work on subject item at any time, and to retain experts of Owner's choosing to prepare appropriate instructions to control Contractor's work. Installation Instructions shall include recommended bolt torques for assembly and installation of bolted items.

O. Operation and Maintenance Instructions shall be defined as Manufacturer's printed instructions for correct operation and maintenance procedures for product, along with data which must accompany manual as directed by current regulations of government agency. Include operating instructions for each piece of equipment. Describe equipment function, operating characteristics, limiting conditions, operating instructions, startup procedures, normal and emergency conditions, regulation and control, and shutdown. Include preventative maintenance instructions. List warranty requirements. Explain and illustrate preventative maintenance tasks. Include lubrication charts, lists of acceptable lubricants, trouble shooting instructions, and lists of required maintenance tools and equipment. List recommended spare parts, their costs, and ordering information for one Manufacturer who can supply these parts. Index instructions for easy reference. Include information for installed equipment only.

P. Manufacturer's Statement of Responsibility shall be copy of form attached, signed by authorized factory representative for Manufacturer whose product is being furnished.

Q. Certificate of compliance shall certify materials or procedures have been sampled, tested and found to comply with applicable reference standards, and shall be accepted by Owner prior to shipping items described therein.

R. Engineering calculations shall be clearly legible, shall follow recognized engineering principles and shall be sufficiently detailed to permit ready check of procedures used. Where published tables or charts are included in calculations, clearly show design or load variables used to make selection, highlighting applicable columns or rows in tables and highlighting intersecting variables on chart axes. Engineering calculations shall demonstrate compliance with current state and local codes, applicable standards, and contract requirements. Calculations shall be sealed by registered engineer licensed in State of California. Calculations or drawings bearing seals with expired expiration dates will not be accepted.

S. Foundry or test record transcripts shall fully describe required tests in accordance with specified test standards, shall certify that factory quality control, testing and inspection requirements have been successfully completed and shall be accepted by Owner prior to shipping items described therein.

T. Statements of Qualifications for optional maintenance contracts from Manufacturers or suppliers of products shall fully describe Manufacturer's qualifications, experience, pricing, and recommended maintenance schedule. Contractor's submittal of Manufacturer's qualifications for optional maintenance contracts shall not be construed as placing maintenance service contracts within scope of this contract, except Contractor may be obligated to pay for maintenance contract if:

1. Contract Documents expressly state Contractor shall bear this responsibility and expense under warranty or other express obligations, or

2. Acceptance of a Manufacturer as an accepted equal is predicated in writing on Contractor's furnishing operation and maintenance services for stipulated period as part of warranty requirement.

U. Furnish the following submittals

SUBMITTAL	DESCRIPTION	

Preconstruction Photographs or Videos	Preconstruction photographs or videos shall be submitted to Owner before Work is performed which has potential to disturb or modify public or private property not owned by Owner. Photographs shall be of sufficient quality and thoroughness to fully document preexisting damage or wear to photographed property for which Contractor or Owner might be asked to compensate property owner were it not for photographic evidence of preexisting damage. Where existing cracks in concrete, masonry or other materials are wider than thickness of a dime, include dime or similar visual standard in photo or video for reference. Failure by Contractor to submit preconstruction photographs or videos, may be taken by owner as evidence that subsequent claims by property owners for damage to their property can be rightfully attributed to Contractor's actions.	
	See Section 01 32 33.	
Schedule for Lubrication and Run-in Procedures	Submit 2 weeks before beginning procedures.	
Manufacturer's Written Acceptance of Installation (where "Manufacturer's Statement of Responsibility" is required)	Written acceptance of installation of products shall be certified and submitted by authorized factory representative. This written acceptance shall state factory authorized representative has inspected installation, alignment, lubrication and operation of furnished equipment and found it to fully comply with specified design and warranty requirements and be ready for safe operation.	
Warranty	Unless otherwise stated, furnish one-year warranty from date of final acceptance.	

V. Owner's Representative's review of submittals shall be limited to review of products to be incorporated in Work and to remain in place upon project completion.

1. Contractor shall have sole responsibility at all times for construction means, methods and jobsite safety.

2. Contractor shall retain services of California-licensed civil, structural or traffic engineer, as appropriate, to design and prepare plans for necessary safety equipment required by OSHA, Cal OSHA and other state and local regulatory authorities during construction, and to prepare summary documents for Contractor's use for accomplishing said work including, but not limited to sheeting, shoring, trench plating, excavation protection, falsework, formwork, scaffolding, barricading, pedestrian safety and traffic control.

3. Originals of summary documents, signed and sealed by engineer of record who prepared them, shall be submitted solely as proof this requirement has been fulfilled.

4. Since Contractor has sole responsibility for means, methods and jobsite safety, review of said documents will be limited to verifying preparing engineer's registration is current and that engineer of record has no active complaints filed against them with California Board for Professional Engineers and Land Surveyors.

W. Use of contract drawing reproductions for shop drawings is subject to rejection.

1.10 Samples

A. Furnish samples, finished as specified, and as intended to be used on or in Work. Send samples to Owner's Representative, carriage prepaid.

B. Submit samples at least 21 days before date by which Owner's approval is required. Allow 14 days for review and return of samples.

C. Submit 2 of each sample, except for field samples. Attach completed Contractor's submittal form to sample. List items being transmitted, stating proposed use and location, product, color, trade name, lot, style, and model as appropriate.

D. Resubmit samples until acceptable. One of each sample will be returned to Contractor upon acceptance.

E. Samples of finishes shall be 8" x 10". and shall be of minimum thickness consistent with sample presentation. In lieu thereof, submit actual full-size item.

F. Samples of value may be returned to Contractor for use in Work after review, analysis, comparison, and/or testing as may be required by Owner's Representative.

G. Furnish one sample of accepted products, colors, or textures to Owner's Representative for final record. Show identification previously described including, if finish sample, Manufacturer, mix proportion, name of color, building, Contractor, subcontractor, and surfaces to which applied on back of sample.

1.11 Notification of Affected Residences and Businesses

A. Written notification, with Contractor's 24-hour emergency phone number, shall be provided to residences and businesses fronting project on either side of street. Notify these parties 72 hours in advance of construction which will affect these properties. Door-hangers or other means of notification shall be submitted to and accepted in advance by Owner's Representative.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

(Not Applicable)

END OF SECTION

SHOP DRAWING TRANSMITTAL FORM

FROM:_____ DATE: _____

PROJECT NAME: _____

TO: IMEG PROJECT NO.:

901 VIA PIAMONTE, Suite 400

Ontario, CA 91764 OWNER:

ATTN: _____

Project Manager

SUBMITTAL NO.:___ THIS IS AN ORIGINAL SUBMITTAL_____ THIS IS A REVISION OF SUBMITTAL NO.:_

SUBJECT OF SUBMITTAL: _____

SPECIFICATION SECTION(S): _____

PLAN SHEET NUMBER(S): _____

CONTRACTOR'S CERTIFICATION: Check & Complete either (A) or (B) below:

(A) We have reviewed in detail and certify the material, equipment or construction procedure(s) contained in this submittal meet all requirements specified in or shown on Contract Documents, with no exceptions.

(B) We have reviewed in detail and certify the material, equipment or construction procedure(s) contained in this submittal meet all requirements specified in or shown on Contract Documents, except for the following deviations:

_____

_____

_____

CONTRACTOR'S AUTHORIZED SIGNATURE: _____

MANUFACTURER'S STATEMENT OF RESPONSIBILITY

Project Name:

_____

Specification Section Number: _____

Item:

_____

Serial Numbers:_____

Owner:

_____

Contractor:

_____

Supplier:

_____

1. **We have reviewed applicable sections of the Contract Documents** describing requirements for our product, including Sections entitled "Submittal Procedures," "Quality Requirements," "Product Requirements," "Starting and Adjusting," " Closeout Procedures," "Operating and Maintenance Data," "Demonstration and Training," "Basic Civil Engineering Requirements," and "Painting and Coating."

2. **Before shipping, we promise to review Contractor's submittals from other Manufacturers** who will supply products that interface with our product, and may affect our product's performance. In addition we promise to request and review data concerning quality of water, soils or any other materials which may contact or adversely impact performance of our product.

3. **Should we have cause to believe our product is, for any reason, incompatible** with an interfacing product or material, we will inform Owner of our concern before shipping our product. In such case, we will not ship our product until our concerns have been satisfactorily resolved.

4. **We further understand that Owner reserves right to request a factory-authorized representative's written acceptance of installation, application and/or erection of our product** as described in Section of Contract Documents entitled "Starting and Adjusting", before paying Contractor for our product.

_____

Authorized Factory Representative

SECTION 01 42 16
DEFINITIONS

PART 1 - GENERAL

1.1 Definitions

A. Wherever any of the words or phrases defined below, or a pronoun used in place thereof, is used in any part of the Contract Documents, it shall have the meaning here set forth. In the Contract Documents, the neuter gender includes the feminine and masculine, and the singular number includes the plural.

B. While County of San Bernardino has made an effort to identify all defined terms with initial caps, the following definitions shall apply only to these project specifications and does not apply to the General Provisions section of the General Conditions:

1. **Addenda**: Written or graphic instruments issued prior to the opening of Bids, which clarify, correct, or change the bidding requirements or the Contract Documents. Addenda shall not include the minutes of the Pre-Bid Conference and/or Site Visit.

2. **Contract Agreement**: Agreement is the basic Contract Document that binds the parties to construction Work. Agreement defines relationships and obligations between County of San Bernardino and Contractor and by reference incorporates Conditions of Contract, Drawings, and Specifications and contains Addenda and all Modifications subsequent to execution of Contract Documents.

3. **Add-Alternate**: Work added to or deducted from the base Bid, if accepted by County.

4. **Application for Payment**: Written application for monthly or periodic progress or final payment made by Contractor complying with the Contract Documents.

5. **Approved Equal**: Approved in writing by County of San Bernardino as being of equivalent quality, utility and appearance.

6. **Architect/Engineer**: If used elsewhere in the Contract Documents, "Architect/Engineer" shall mean a person holding a valid California State Architect's or Engineer's license representing the County of San Bernardino in the administration of the Contract Documents. Architect/Engineer may be an employee of or an independent consultant to County of San Bernardino. When Architect/Engineer is referred to within the Contract Documents and no Architect/Engineer shall be construed to include employees of Architect/Engineer and/or employees that Architect/Engineer supervises. When the designated Architect/Engineer is an employee of County of San Bernardino, his or her authorized representatives on the Project will be included under the term Architect/Engineer. If Architect/Engineer is an employee of County of

San Bernardino, Architect/Engineer is the beneficiary of all Contractor obligations to County of San Bernardino, including without limitation, all releases and indemnities.

7. **Asbestos**: Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by OSHA or Cal/OSHA.

8. **Bid**: The offer or proposal of the Bidder submitted on the prescribed form(s) setting forth the prices for the Work to be performed.

9. **Bidder**: One who submits a Bid.

10. **Bidding Documents**: All documents comprising the Project Manual (including all documents and specification sections listed in Document 00 01 10 (Table of Contents), including documents supplied for bidding purposes only, and Contract Documents.

11. **Board**: San Bernardino County Board of Supervisors

12. **Change Order**: A written instrument prepared by County and signed by County and Contractor, stating their agreement upon all of the following:

    a. A change in the Work.

    b. The amount of the adjustment in the Contract Sum, if any; and

    c. The amount of the adjustment in the Contract Time, if any.

13. **Code Inspector**: A local or state agency responsible for the enforcement of applicable codes and regulations.

14. **Construction Change Directive** ("CCD"): A written order prepared and signed by County, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both.

15. **Contract Documents and Contract**: Contract Documents and Contract shall consist of all changes, Addenda, and Modifications thereto.

16. **Contract Modification**: Either:

    a. A written amendment to Contract signed by Contractor and County; or

    b. A Change Order; or

    c. A Construction Change Directive; or

    d. A written directive for a minor change in the Work issued by County.

17. **Contract Sum**: The sum stated in the Agreement and, including authorized adjustments, the total amount payable by County to Contractor for performance of the Work and the Contract Documents. The Contract Sum is also sometimes referred to as the Contract Price or the Contract Amount.

18. **Contract Time**: The number or numbers of Days or the dates stated in the Agreement to achieve Substantial Completion of the Work or designated Milestones; and/or to complete the Work so that it is ready for final payment and is accepted.

19. **Contractor**: The person or entity identified as such in the Agreement and referred to throughout the Contract Documents as if singular in number and neutral in gender. The term "Contractor" means the Contractor or its authorized representative.

20. **Contractor's Employees:** Persons engaged in execution of Work under Contract as direct employees of Contractor, as Subcontractors, or as employees of Subcontractors.

21. **County:** The County of San Bernardino Project & Facilities Management Department

22. **County-Furnished, Contractor- Installed**: Items furnished by the County at its cost for installation by Contractor at its cost under Contract Documents

23. **Day:** One calendar day of 24 hours measured from midnight to the next midnight, unless the word "day" is specifically modified to the contrary.

24. **Defective**: An adjective which, when modifying the word "Work," refers to Work that is unsatisfactory or unsuited for the use intended, faulty, or deficient, that does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents (including but not limited to approval of Samples and "or approved equal" items), or has been damaged prior to final payment. County is the sole judge of whether Work is Defective.

25. **Drawings**: The graphic and pictorial portions of Contract Documents, wherever located and whenever issued, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

26. **Equal**: Equal in opinion of County. Burden of proof of equality is responsibility of Contractor.

27. **Final Acceptance or Final Completion**: County's acceptance of the Work as satisfactorily completed in accordance with Contract Documents. Requirements for Final Acceptance/Final Completion include, but are not limited to:

a. All systems having been tested and accepted as having met requirements of Contract Documents.

b. All required instructions and training sessions having been given by Contractor.

c. All Project Record Documents having been submitted by Contractor, reviewed by County, and accepted by County.

d. All punch list Work, as directed by County, having been completed by Contractor.

e. Generally, all Work, except Contractor maintenance after Final Acceptance/Final Completion, having been completed to satisfaction of County.

28. **Force Account**: Work directed to be performed without prior agreement as to lump sum or unit price cost thereof, and which is to be billed at cost for labor, materials, equipment, taxes, and other costs, plus a specified percentage for overhead and profit.

29. **Home Office Overhead**: Home office overhead shall not be included as part of the cost of the Work, but shall be part of Contractor's profit and shall include, but is not limited to, the following:

    a. Accounting functions of Contractor's main office.

    b. General expenses of Contractor's main office.

    c. Interest on capital.

    d. Salaries of any home office estimators and administration.

30. **Milestone**: A principal event specified in Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all Work.

31. **Modification**: Same as Contract Modification.

32. **Not in Contract**: Work that is outside the scope of Work to be performed by Contractor under Contract Documents.

33. **Notice of Completion**: Shall have the meaning provided in California Civil Code §3093, and any successor statute.

34. **Off Site**: Outside geographical location of the Project.

35. **Overhead**: Shall include by not be limited to the following:

a. All on-site payroll costs, and fringe benefits of same, for supervising, estimating, expediting, drafting and clerical services where directly affecting the cost of the Work.

b. Small tools less than Five Hundred Dollars ($500.00) capital cost per item.

c. Equipment maintenance and repairs.

d. Temporary construction, utilities, and safety requirements, forming, and necessary scaffolding.

e. Transportation of materials other than direct identifiable cost of specific deliveries, or as included in the price of material.

f. Parking fees for workmen.

g. Permit fees.

h. Cost of reproduction

i. General Insurance and Bonds.

36. **Partial Utilization**: Use by County of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all of the Work.

37. **PCBs**: Polychlorinated biphenyls.

38. **Phase**: A specified portion of the Work (if any).

39. **Product Data**: That information (brochures, catalog sheets, manufacturer's cut sheets, etc.) supplied by vendors having technical and commercial characteristics of the supplied equipment or materials and accompanying commercial terms such as warranties, instructions, and manuals.

40. **Progress Report**: A periodic report submitted by Contractor to County with progress payment invoices accompanying progress schedule.

41. **Project**: Total construction of which Work performed under Contract Documents may be whole or part.

42. **Project Manager**: If used elsewhere in the Contract Documents, "Project Manager" shall mean a person representing the County in the administration of the Contract Documents. Project Manager may be an employee of or an independent consultant to the County. When Project Manager is referred to within the Contract Documents and no Project Manager has been designated, the matter shall be referred to County. The term Project Manager shall be construed to include employees of Project Manager and/or employees that Project Manager supervises.

When the designated Project Manager is an employee of the County, his or her authorized representatives on the Project will be included under the term Project Manager. If Project Manager is an employee of the County, the Project Manager is the beneficiary of all Contractor obligations to the County, including without limitation, all releases and indemnities.

43. **Project Manual**: Project Manual consists of Bidding Requirements, Agreement, Bonds, Certificates, Contract Conditions, Drawings, and Specifications.

44. **Project Record Documents**: All Project deliverables required under Sections 01 78 39, including without limitation, As-built drawings; Installation, Operation, and Maintenance Manuals; and Machine Inventory Sheets.

45. **Reference Specifications (RS):** The current edition of the Standard Specifications for Public Works Construction also known as the "Greenbook".

46. **Request for Information ("RFI")**: A document prepared by Contractor requesting information regarding the Project or Contract Documents. The RFI system is also a means for the County to submit Contract Document clarifications or supplements to Contractor.

47. **Request for Proposals ("RFP")**: A document issued by the County to Contractor whereby County may initiate changes in the Work or Contract Time as provided in Contract Documents.

48. **Request for Substitution ("RFS")**: A document prepared by Contractor requesting substitution of materials as permitted and to the extent permitted in Contract Documents.

49. **RFI-Reply**: A document consisting of supplementary details, instructions, or information issued by the County that clarifies or supplements Contract Documents, and with which Contractor shall comply. RFI-Replies do not constitute changes in Contract Sum or Contract Time except as otherwise agreed in writing by the County. RFI-Replies will be issued through the RFI administrative system.

50. **Samples**: Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

51. **Shop Drawings**: All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

52. **Site**: The particular geographical location of Work performed pursuant to Contract Documents.

53. **Specifications**: The written portion of the Contract Documents consisting of requirements for materials, equipment, construction systems, standards, and workmanship for the Work; performance of related services.

54. **Standard Specifications (SS)**: The current edition of the Standard Specifications as issued by the State of California Department of Transportation (Caltrans).

55. **Subcontractor**: A person or entity that has a direct contract with Contractor to perform a portion of the Work at the Site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and neutral in gender and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

56. **Substantial Completion**: The Work (or a specified part thereof) has progressed to the point where, in the opinion of the County as evidenced by a Certificate of Substantial Completion, the Work is sufficiently complete, in accordance with Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended; or if no such certificate is issued, when the Work (or specified part) is complete and ready for final payment as evidenced by written recommendation of the County for final payment. The terms "Substantially Complete" and "Substantially Completed" as applied to all or part of the Work refer to Substantial Completion thereof.

57. **Supplemental Instruction**: A written directive from the County to Contractor ordering alterations or Modifications that do not result in change in Contract Sum or Contract Time, and do not substantially change Drawings or Specifications.

58. **Underground Facilities**: All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities that have been installed underground to furnish any of the following services or materials: Electric County, gases, chemicals, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems, or water.

59. **Unit Price Work**: Shall be the portions of the Work for which a unit price is provided in Document 00 52 00 (Contract Agreement) or 01 11 00 (Summary of Work).

60. **Work**: The entire completed construction, or the various separately identifiable parts thereof, required to be furnished under the Contract Documents within the Contract Time. Work includes and is the result of performing or furnishing labor and furnishing and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the Contract

Documents including everything shown in the Drawings and set forth in the Specifications. Wherever the word "work" is used, rather than the word "Work," it shall be understood to have its ordinary and customary meaning.

61. **Working Day**: Any Day other than Saturday, Sunday, and the following days that have been designated as holidays by County. If a holiday falls on a Saturday, the preceding Friday will be the holiday. If a holiday falls on a Sunday, the following Monday will be the holiday.

    a. New Year's Day, January 1.

    b. Martin Luther King Jr.'s Birthday, third Monday in January.

    c. Lincoln's Birthday, February 12.

    d. Presidents' Day, third Monday in February.

    e. Memorial Day, last Monday in May.

    f. Independence Day, July 4.

    g. Labor Day, first Monday in September.

    h. Veterans' Day, November 11.

    i. Thanksgiving Day, as designated by the President.

    j. The Day following Thanksgiving Day.

    k. Christmas Day, December 25; and

    l. Each day appointed by the Governor of California and formally recognized by the Board as a day of mourning, thanksgiving, or special observance.

C. The following terms are not necessarily identified with initial caps; however, they shall have the meaning set forth below:

1. Wherever words "as directed," "as required," "as permitted," or words of like effect are used, it shall be understood that direction, requirements, or permission of County is intended. Words "sufficient," "necessary," "proper," and the like shall mean sufficient, necessary, or proper in judgment of County. Words "approved," "acceptable," "satisfactory," "favorably reviewed," or words of like import, shall mean approved by, or acceptable to, or satisfactory to, or favorably reviewed by County.

2. Wherever the word "may" or "ought" is used, the action to which it refers is discretionary. Wherever the word "shall" or "will" is used, the action to which it refers is mandatory.

3. **By The County**: Work that will be performed by the County or its agents at the County's expense.

4. **By Others**: Work that is outside scope of Work to be performed by Contractor under this Contract, which will be performed by the County, other contractors, or other means.

5. **Concealed**: Work not exposed to view in the finished Work, including within or behind various construction elements.

6. **Exposed**: Work exposed to view in the finished Work, including behind louvers, grilles, registers and various other construction elements.

7. **Furnish**: Supply only, do not install.

8. **Indicated**: Shown or noted on the Drawings.

9. **Install**: Install or apply only, do not furnish.

10. **Latent**: Not apparent by reasonable inspection, including but not limited to, the inspections and research required as a condition to bidding.

11. **Law**: Unless otherwise limited, all applicable laws including without **limitation** all federal, state, and local laws, statutes, standards, rules, regulations, ordinances, and judicial and administrative decisions.

12. **Material**: This word shall be construed to embrace machinery, manufactured articles, materials of construction (fabricated or otherwise), and any other classes of material to be furnished in connection with Contract, except where a more limited meaning is indicated by context.

13. **Provide**: Furnish and install.

14. **Shown**: As indicated on Drawings.

15. **Specified**: As written in Specifications.

16. **Testing and special inspection agency**: An independent entity engaged by County to inspect and/or test the workmanship, materials, or manner of construction of buildings or portions of buildings, to determine if such construction complies with the Contract Documents and applicable codes.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01 57 23
TEMPORARY STORM WATER POLLUTION CONTROL

PART 1 - GENERAL

1.1 Work Included

A. Storm Water Pollution Prevention Plans and pollution prevention during construction.

1.2 Related Work

A. Section 01 33 00: Submittal Procedures

B. Section 01 74 00: Cleaning and Waste Management

1.3 References

A. California Stormwater Quality Association (CASQA) Stormwater Best Management Practice Handbook for Construction

1.4 Submittals

A. Furnish the following submittals.

SUBMITTAL	DESCRIPTION	
Storm Water Pollution Prevention Plan (SWPPP)	See Paragraph 1.5 below	
Spill Prevention, Control, and Countermeasure Plan (SPCCP)	See Paragraph 1.6 below	

1.5 Pollution Prevention and Storm Water Pollution Prevention Plan (SWPPP)

A. Comply with current California State Water Control Board (SWRCB) General Construction Activity NPDES Stormwater Permit (General Construction Permit**) for all construction disturbing one acre or more of land** (including all staging areas, access routes, material storage yards, etc.) Where more than an acre is disturbed, this permit includes a requirement to develop a Stormwater Pollution Prevention Plan (SWPPP) and Monitoring Plan (MP) which will outline site-specific Best Management Practices (BMPs) to prevent impairment to surface water quality from construction site discharges to surface waters.

B. No SWPPP is available. Contractor shall manage operations so less than 1 acre is disturbed by Contractor's operations.

C. Pay all fines associated with failure to comply with Storm Water Pollution Prevention Plan (SWPPP) requirements of applicable Regional Water Quality

Control Board, except where such fines are assessed due to sole negligence of Owner.

D. Where a SWPPP has been prepared for project, comply fully with all requirements of SWPPP governing Contractor's operations and record keeping requirements.

E. Where no SWPPP is available:

1. Exercise every reasonable precaution to protect channels, gutters, storm drains, and bodies of water from pollution using best management practices (BMPs) listed in California Stormwater Quality Association (CASQA) Stormwater Best Management Practice Handbook for Construction.

2. Water pollution control Work shall consist of Work necessary to construct facilities required to protect Work area from damage from erosion or impounding of water, prevent erosion and discharge of sediments, and control and abate water pollution.

3. Such work shall include, but not be limited to constructing rock bag berms, desilting basins, drains, fiber rolls and mats, and concrete washout areas.

F. Prohibit rain runoff or other water from entering pipe trenches and infiltrating to ground water by redirecting surface flows with berms, temporary drains, or other suitable measures. Pump water out of trenches as necessary to control water in excavations.

G. Construct silt fence around disturbed soil areas. Take all measures necessary to prevent erosion and transport of sediment into waterways in accordance with SWPPP. Stockpile excavated material within construction staging area. Cover stockpiles with plastic sheets to prevent erosion.

H. In absence of published SWPPP where disturbing more than 0.999 acres by construction operations is unavoidable, Contractor shall retain certified SWPPP preparer accepted in writing by Owner's Representative to prepare SWPPP for approval by Owner and applicable local agency and Regional Quality Control Board.

1.6 Watershed Protection

A. Enforce strict on-site handling rules to keep construction and maintenance materials out of receiving waters.

1. Store all reserve fuel supplies only within confines of designated construction staging area.

2. Refuel equipment only within designated construction staging area.

3. Regularly inspect all construction vehicles for leaks.

B. For Work on sewers or sewage equipment outside wastewater plants, prepare Spill Prevention, Control, and Countermeasure Plan (SPCCP). Plan shall include measures to be taken in event of an accidental wastewater spill.

C. Clearly mark and stake construction and staging areas shown on Plans. Do not use heavy equipment outside this area. Design construction staging areas to contain contaminants such as oil, grease, and fuel products, so they do not drain towards receiving waters or storm drain inlets. If heavy-construction equipment is stored overnight adjacent to a potential receiving water, place drip pans beneath machinery engine block and hydraulic systems.

1.7 Unit Prices

A. Cost for compliance with SWPPP requirements shall be included in the various bid items set forth in these documents and no additional compensation will be granted.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

(Not Applicable)

END OF SECTION

SECTION 01 65 00
PRODUCT DELIVERY REQUIREMENTS

PART 1 - GENERAL

1.1 Work Included

A. Transportation and delivery of products.

1.2 Related Work

A. Section 01 33 00: Submittal Procedures

B. Section 01 66 00: Product Storage and Handling Requirements

1.3 Delivery

A. Do not ship any item until Owner has accepted all applicable submittals.

B. Before shipping materials and/or equipment, Contractor shall also be responsible for verifying field dimensions, utility locations and electrical compatibility for items of Work which may require relocation, refitting, or different electrical motors and wiring if field dimensions differ from those shown on Plans.

C. Should Contractor discover a conflict during surveying, staking, verification of field dimensions, verification of utility locations or verification of electrical compatibility, they shall bring this matter to Owner's attention as soon as conflict is discovered and before materials or equipment are shipped. Owner will make adjustments to Contract requirements needed to accommodate field conditions and will pay reasonable costs for upgrades or modifications required to be made at place of manufacture prior to shipping to accommodate conflicts discovered.

D. Owner will not pay costs of shipping and returning items to place of manufacture unless:

1. Owner has acted to prevent Contractor from completing surveys, staking, verification of field dimensions, verification of utility locations or verification of electrical compatibility, and Contractor has notified Owner of this fact in writing before shipping equipment, or

2. Changes required are direct result of buried utility conflicts where said utilities were neither shown on Plans in their approximate location, nor located by Underground Service Alert, nor evident from surface features.

E. Ship and deliver products to jobsite as follows:

1. Do not ship, accept delivery of or store items on site for which applicable submittals have not been accepted.

2. Before shipping, operate valves, motors, pumps, actuators, and mechanical equipment at factory to ensure products are complete and in working condition.

3. Only products of accepted Manufacturers shall be delivered to or stored at site.

4. Deliver products to jobsite in Manufacturer's original, unbroken, unopened, labeled packaging containers or bundles. Tag or label packages containers or bundles as needed to identify contents and name of equipment of which contents form a part.

5. Deliver large multi-component assemblies in sections facilitating field handling and installation.

6. Oil-lubricated gearing, bearings, and other lubricated components shall be shipped with oil soluble protective coating as described in warranty requirements or recommended by Manufacturer. For parts contacting potable water, coating shall be NSF-approved. Coating shall provide protection for one year after final acceptance.

1.4 Unit Prices

A. Payment for Work in this section shall be included as part of lump-sum or unit-price bid amount for which such Work is appurtenant.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.1 Warranty Requirements

A. Manufacturer's instructions and warranty requirements for delivery of products shall be strictly followed.

END OF SECTION

SECTION 01 66 00
PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1.1 Work Included

A. Handling, storage, and protection of products.

1.2 Related Work

A. Section 01 33 00: Submittal Procedures

B. Section 01 65 00: Product Delivery Requirements

1.3 Storage and Handling

A. Store products at jobsite as follows:

1. Contractor shall be responsible for damage or loss to products until Final Acceptance.

2. Store materials per Manufacturer's recommendations, and in protected area at temperature between 35°F and 110°F.

3. Store products so as to preserve their quality and fitness for Work. Locate stored products and equipment to be incorporated in Work to facilitate prompt inspection.

4. Protect products against moisture, weather, temperature extremes, dust, debris, tampering, theft, vandalism, ultraviolet radiation, or damage from improper handling, storage, or exposure.

5. Protect exposed metals from rust and corrosion, even for items which may be sandblasted or otherwise cleaned before painting. Any corrosion in evidence prior to final acceptance shall be removed, or product shall be removed or replaced.

6. Store items not designed for outdoor exposure off-ground and under cover.

7. Store aggregate in well-drained area to minimize change in moisture content. Prevent contamination by other materials.

8. Store cementitious materials in weather-tight spaces. Keep free from moisture.

9. Store fasteners and connectors in original unopened containers until used.

10. Cover stored materials with tarpaulin or other covering to prevent soiling or exposure to weather. Fasten coverings to prevent removal by wind.

11. Cover plastic and similar brittle items to protect from sun exposure and temperature extremes.

12. Store flammable products to conform with City, County, State, and Federal safety codes for storage of flammable materials.

13. Cover, plug, or cap pipe ends, valve ends, and equipment openings with rubber, plastic, or canvas to prevent intrusion or contamination.

14. Stringing of pipe along right of way shall be done in manner that will not interfere with free passage of vehicles.

15. Do not store pipe on roadway or parkway of residential streets for more than 10 days, or on business streets for more than 3 days.

16. Store items in accordance with requirements of project Storm Water Pollution Prevention Plan (SWPPP), if applicable. If a SWPPP has not been prepared for project, store items in accordance with appropriate best management practices (BMP's) listed in California Stormwater Quality Association (CASQA) Stormwater Best Management Practice Handbook for Construction latest edition. Comply with all City, County, State and Federal pollution prevention laws and permits.

17. Notify Owner in writing if delivered or stored product is damaged. Exterior surfaces of delivered items shall be in perfect unblemished condition. Do not repair damaged products without prior written approval.

B. Handle products as follows:

1. Handle products with care, using proper equipment according to Manufacturer's recommendations. Lift large heavy items only at points designated by Manufacturer. Do not drop, drag, bump, bend or handle products in manner that causes abrasions, bruises, cracks, mars, scars, scratches, or other damage. Use padded slings and hooks for lifting as needed to prevent damage. Improper handling shall be cause to reject mishandled products.

2. Coated pipe, valves and other products shall be lifted, lowered or suspended using rubber or canvas belt slings or pneumatic-tired cradles. Sling width shall equal or exceed pipe or product diameter. Do not handle coated products using ropes, hooks, chains, calipers or cables. Store such materials on padded skids.

3. Inspect each product item for damage, defects, completeness and correct operation before installing.

4. Before installation, swab joints and interiors of piping materials to remove foreign matter and contaminants.

5. Clean and protect machined surfaces and shafting from corrosion using proper type and amount of coating as described in Manufacturer's warranty requirements to assure protection to one year after final acceptance.

6. Maintain records for Owner's review of deliveries to show Contractor's order number, purchase order number, and equipment number. Include labeling or shipping tag in records.

1.4 Unit Prices

A. Payment for Work in this section shall be included as part of lump-sum or unit-price bid amount for which such Work is appurtenant.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.1 Warranty Requirements

A. Manufacturer's instructions and warranty requirements for storage and handling of products shall be strictly followed.

END OF SECTION

SECTION 01 73 00
EXECUTION

PART 1 - GENERAL

1.1 Work Included

A. Examination of site before bidding, preparation for construction, and execution of Work

1.2 Related Work

A. Section 01 33 00: Submittal Procedures

B. Section 01 65 00: Product Delivery Requirements

C. Section 01 66 00: Product Storage and Handling Requirements

D. Section 01 74 00: Cleaning and Waste Management

E. Section 01 75 00: Starting and Adjusting

F. Section 01 77 00: Closeout Procedures

G. Section 01 78 36: Product Warranties

H. Section 01 78 39: Project Record Documents

I. Section 31 05 50: Protecting Existing Utilities

1.3 Project/Site Conditions

A. Review existing soils reports to ascertain suitability of native soil for backfill before submitting bid. If native soil is found to be unsuitable, provide suitable material for meeting compaction requirements at no additional cost to Owner.

B. Items furnished shall be designed to fulfill their intended purpose in environment in which they are installed. Allow for local temperature extremes, climactic conditions and corrosive environments where necessary to ensure proper functioning of furnished products.

C. The action of beginning installation, application or erection of any product shall be deemed sufficient evidence that both Contractor and installer accept existing field conditions as acceptable for installation, application or erection of that product, except where written notice is given of Contractor or installer's concerns before starting applicable work.

1.4 Unit Prices

A. Payment for Work in this section shall be included as part of lump-sum or unit-price bid for which such Work is appurtenant. No additional payment will be made for Work in this Section.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.1 Preparation

A. Damage not documented as preexisting before start of construction will be attributed to Contractor's activities in absence of conclusive evidence to contrary.

B. Carefully lay out work in advance to minimize cutting, channeling, chasing or drilling of structural pads or elements. Cuts, channeling, drilling, or welding required to accommodate mechanical or electrical equipment shall be reviewed in advance with Owner's Representative. Do not begin such work until notified by Owner's Representative. Repair damage to structures, piping equipment or finishes using skilled workers of appropriate trades.

C. Relocations or adjustment of existing facilities needed to facilitate construction must be accepted in writing by Owner's Representative and subsequently relocated or adjusted by Contractor as directed. If existing items are lost or damaged during construction, replace with new items of equal or better quality.

D. Trimming of existing tree branches and roots required to accommodate construction activities shall be done under direction of certified arborist.

E. Make field measurements needed to fabricate and install Work before ordering or beginning work. Make minor changes in alignments and dimensions as needed to remedy or avoid utilities and structural conflicts.

F. Material safety data sheets (MSDS) shall be available and maintained at project site.

3.2 Installation / Application / Erection

A. Maintain complete set of Contract Documents including shop drawings at jobsite field office or superintendent's truck at all times.

B. Install products in accordance with shop drawings and submittals.

C. Install products according to Manufacturer's installation and warranty requirements. Manufacturer's requirements for installation, application, connection, erection, maintenance, operating, cleaning, conditioning and startup of products shall be strictly followed.

D. Products shall be installed by Contractor at location shown on Plans and submittals.

E. Install products to tolerances recommended by Manufacturer. Unless otherwise shown, install equipment true and level, using precision gauges and levels.

F. Refer variances between Manufacturer's installation instructions and Contract Documents to Owner's Representative.

G. Construct walls, floors, and flatwork plumb, straight, level, square and true. Acceptable deviations from plumb or level shall not exceed ¼" in any 32" section. Flatwork shall not deviate from plan elevation by more than ¾" at any location.

H. Welds, unless otherwise shown, shall be continuous, watertight, and conforming to Structural Welding Code of American Welding Society. Welds shall be free of sharp points or edges.

I. Before welding, abutting joints shall be free of strain.

J. Exposed surfaces shall be finished in appearance. Grind smooth exposed welds. Round or chamfer corners of exposed structural shapes for personnel protection.

K. Roofing systems shall be leak free, demonstrated by a 1-hour hose test.

L. Prime and paint exposed surfaces of ferrous products, piping, and conduit except for stainless steel or galvanized or sherardized surfaces or unless otherwise shown. Clean painted surfaces and touch up bare or marred spots with finish to match factory finish.

M. Paint and coat in workmanlike manner to produce an even film of uniform thickness. Pay attention to edges, angles, flanges, corners, crevices, and joints to insure they have been thoroughly cleaned and they receive specified thickness of paint or coating. Finished surfaces shall be free from runs, drops, ridges, waves, shiners, laps, brush marks, and variations in color, texture and finish. Hiding shall be so complete that addition of another coat would not increase hiding. Apply coats so as to produce film of uniform thickness.

N. Do not force-fit or spring pipe, conduit or equipment into place. Corrective measures for cases of poor alignment shall be accepted in advance by Owner's Representative.

O. Deflections at joints shall fall within Manufacturers' published tolerance limits.

P. Mitered piping joints are not permitted.

Q. Pipe bends shall conform to ASME B31.3 and be free from wrinkles, creases or corrugations.

R. Water pipe bends shall use accepted AWWA fittings.

S. Cut pipe threads with sharp dies and make up joints with accepted thread sealing compound. Threads to be seal-welded shall be made up dry. Do not use Teflon sealers.

T. Epoxy coated pipe, valves and fittings shall be fabricated and installed without cutting, notching or welding.

U. Install valves and equipment so as to be easy to operate and service. Where geometry of manufactured valves and equipment and field conditions make it difficult or impossible for average worker to operate or service an installed item, notify Owner's Representative of conflict before installing item.

V. Unless otherwise shown, encase buried valves and ductile iron pipe in two layers of 8-mil polyethylene wrap in accordance with AWWA C105.

W. Repair damage to Work that is not cause for rejection.

X. Repair, correct or replace Work failing tests or inspection. Repeat tests until results satisfy specifications. Repair damages resulting from tests.

END OF SECTION

SECTION 01 74 00
CLEANING AND WASTE MANAGEMENT

PART 1 - GENERAL

1.1 Section Includes

A. Progress Cleaning

B. Final Cleaning

1.2 Progress Cleaning

A. Contractor shall perform cleaning to ensure that any streets, areas outside the limit of work, and public properties are maintained free from accumulation of waste materials, dust, mud, and debris.

B. Where required, Contractor shall wet down surfaces to lay dust and prevent the blowing of dust to nearby residences or public properties.

C. Contractor shall keep all paved roads clean and free of dust, mud, and debris resulting from Contractor's operations. Daily cleanup throughout the job will be necessary as Contractor progresses with its Work, but extra attention to cleanup shall be made prior to weekends and holidays. Without limiting the foregoing, Contractor shall remove trench spoil along traveled ways daily; grade and vacuum broom surfaces initially where applicable and later water flush with high-pressure sprays, being careful to avoid downstream contamination.

D. All dust, mud, spoils, and construction debris shall be removed daily from all roadways, ditches, shoulders, and private property (fills or spoils placed on private property at private property owner's written request excepted).

E. Disposal of Materials:

1. All waste materials, debris, and rubbish shall be legally disposed of at sites to be chosen by Contractor in accordance with applicable local, state, and federal regulations.

2. Contractor is cautioned that the County of San Bernardino has regulations governing the disposal of rubble, broken pavement, and similar materials. Refer to the County's Construction Waste Management Plan (CWMP) for more information.

3. Become familiarized with the requirements of the agency having jurisdiction over any contemplated disposal site and shall comply with all such requirements.

F. All excess soil from performance of Work shall be legally disposed at sites to be chosen by Contractor in accordance with applicable local, state, and federal regulations. If Contractor elects to dispose of soil on any private property, prior to any dumping, a letter allowing such dumping shall be obtained from the

property owner and presented to City. Contractor is advised that the property. owner is required to obtain a grading permit from City. In addition, placement of fill in wetland areas is subject to permit procedures of the US Army Corps of Engineers. At the completion of Work, a letter from each affected property owner will be required releasing Contractor, City, and any City consultant from future liability.

G. If Contractor does not properly clean the Site, in the opinion of City, then City shall have the option of using outside equipment to perform the cleanup and such cost will be withheld from the Contract Sum.

1.3 Final Cleaning

A. Contractor shall execute final cleaning prior to final inspection, using only properly skilled workers.

B. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from exposed interior and exterior finished surfaces.

C. Repair, patch, and touch up marred surfaces to match adjacent finishes.

D. Clean interior and exterior surfaces exposed to view: remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

E. Clean equipment and fixtures to a sanitary condition, clean or replace filters of mechanical equipment operated during construction, clean ducts, blowers and coils of units operated without filters during construction.

F. Clean Site

G. Mechanically sweep paved areas.

H. Remove waste and surplus materials, rubbish, and construction facilities from Site.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

(Not Applicable)

END OF SECTION

SECTION 01 75 00
STARTING AND ADJUSTING

PART 1 - GENERAL

1.1 Work Included

A. Testing, adjusting, and balancing of systems, Manufacturers' approvals of installation, and systems demonstrations.

1.2 Related Work

A. Section 01 33 00: Submittal Procedures

B. Section 01 73 00: Execution

C. Section 01 77 00: Closeout Procedures

1.3 Submittals

A. Furnish the following submittals before startup or system demonstration.

SUBMITTAL	DESCRIPTION	
Manufacturer's Written Approval of Installation (where "Manufacturer's Statement of Responsibility" is required)	Written approval of installation of products shall be certified and submitted by Manufacturers factory-authorized representative. This written approval shall affirm factory-authorized representative has inspected installation, alignment, lubrication and operation of furnished equipment and found it to fully comply with specified design and warranty requirements and be ready for safe operation.	

1.4 Unit Prices

A. Payment for startup, including materials, equipment, devices, labor, travel costs, expenses, and maintenance items, required in Contract Documents will be included in price bid for items of work for which systems demonstration and startup is specified.

B. Payment for services of Manufacturer's representatives will be included in price bid for their products or items to which their products are appurtenant. No additional payment will be made for services or expenses needed for testing, startup, or demonstration if duration of services needed to provide complete working system exceeds those expected or exceeds durations stated in writing in correspondence from Manufacturer to Owner, Contractor or other party.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.1 Preparation

A. Pre-startup checkout and functional testing shall be conducted upon completion of Work.

B. Operate and test all mechanical and electrical Work to satisfaction of Owner. Tests shall demonstrate Work has been properly assembled, aligned, adjusted, wired and connected. Any changes, adjustments or replacements of equipment which due to errors or omissions on part of Contractor shall be done at Contractor's sole expense.

C. Test equipment at rated speeds for required performance, instrumentation control, and automatic operation.

D. Water used during tests shall be at Contractor's expense.

E. Clean foreign material from new Work.

F. To extent possible, turn rotating equipment, operate valves and gates, and check for binding or interference.

G. Check incoming electric power for voltage amplitude and voltage balance. Check motor driven equipment for correct rotation. Check power draw of equipment.

H. Verify safety equipment is in place.

I. Debugging, tuneup and adjustments shall be done as needed.

J. Lubricate mechanical equipment per Manufacturer's instructions using oils and greases of type and viscosity recommended by Manufacturer. Furnish lubricants with flushing oils. Following flushing, fill oil lubrication system with "run-in" oil. Run in equipment at no-load condition for 2 hours. Drain and flush equipment again with flushing oil and refill with lubricant. All equipment shall be properly lubricated and furnished with a one-year supply of all necessary lubricants.

K. Manufacturer's factory-authorized representative shall check all equipment for lubrication, alignment, rotation, and vibration, and shall notify Contractor and Owner of anything in installation which might nullify Manufacturer's warranty.

L. Upon request by Owner, during performance test, furnish services of factory-authorized Manufacturer's representative to inspect and approve, in writing, installation and lubrication of mechanical equipment furnished by that Manufacturer, to place it into operation, to assist in necessary adjustments and tests and to instruct operating personnel in equipment operation and maintenance.

END OF SECTION

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 Work Included

A. Specific administrative procedures, closeout submittals, and forms to be used at substantial completion and final completion of Work.

1.2 Related Work

A. Section 01 33 00: Submittal Procedures

B. Section 01 74 00: Cleaning and Waste Management

C. Section 01 75 00: Starting and Adjusting

D. Section 01 78 36: Product Warranties

E. Section 01 78 39: Project Record Documents

1.3 Quality Assurance

A. Upon completion of Contract, Work shall be finished, tested, and ready for operation. Work shall fulfill its intended purpose as described in Contract Documents, in submittals, and in Manufacturer's literature.

B. Where connections or disruptions have been made to existing work, repair, reactivate, refill and recharge components, restoring them to preconstruction conditions. Follow procedures of authorities having Ownership or jurisdiction for Work involving existing utilities and services.

1.4 Submittals

A. Furnish the following submittals.

SUBMITTAL	DESCRIPTION	
Monument Survey	Show record locations of monuments or benchmarks disturbed and reset by Contractor. Monument survey, if required shall be sealed by surveyor licensed to practice in California.	
Record Drawings	See Section 01 78 39.	
Warranties	See Section 01 78 36.	

1.5 Unit Prices

A. Payment for monument survey required in Contract Documents will be included in price bid for items of work for which monument survey is required.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 – EXECUTION

3.1 Field Quality Control

A. Following system demonstration, Contractor shall schedule and attend final inspection and walkthrough with Owner's Representative. At walkthrough, Owner's Representative will review Owner-prepared punch list of items requiring correction with Contractor and present punch list to Contractor within 72 hours of meeting. Contractor shall address punch list items promptly.

B. Should Contractor elect to protest a punch list item rather than address it to Owner's satisfaction, Owner reserves right to withhold payment in an amount sufficient to hire a third party to perform unfinished work until such time as dispute between Owner and Contractor is resolved in Contractor's favor.

C. Eleven month warranty inspection shall be conducted prior to release of bonds. Any work failing to comply with specifications or performance standards stated in Manufacturers submittals or printed promotional literature will at that time be tagged as defective and scheduled for repair. Repair all defective work in strict accordance with Contract Documents and to satisfaction of Owner's Representative.

1. Owner will establish inspection date and will notify Contractor at least 30 days in advance.

2. Warranty Inspection Report will be prepared by Owner's Representative and delivered to Contractor. It will set forth number and type of failures observed and names of persons making inspection.

3. Repairs shall proceed promptly. Upon completion of inspection and receipt of Inspection Report, Owner will establish a date for Contractor to proceed with remedial Work. Delay on part of Contractor to proceed with remedial work on schedule shall constitute breach of this Contract. In such case, Owner may proceed to have defects remedied as outlined in Contract Documents.

4. Costs of warranty inspection and repair shall be borne by Contractor, who shall include an appropriate amount for testing and repair in his bid. No additional allowance will be paid by Owner for Warranty Inspection and repairs.

3.2 Adjusting and Cleaning

A. Valve box cover elevations are not shown on Plans. Determine and set cover elevations in field so finished rim elevations are flush with finished pavement where directed by Owner's Representative.

3.3 Extra Stock/Spare Parts

A. Special tools and Manufacturer's standard spare parts, if required by Contract Documents or for normal operation and maintenance during first year of operation,

shall be supplied with the Work. Tools shall be packaged in a steel case, clearly and indelibly marked on exterior to indicate equipment for which tools are intended.

B. Spare parts shall be delivered in Manufacturer's original containers labeled to completely describe contents and equipment for which it is furnished.

C. Provide to Owner a list of all spare and replacement parts with individual prices and location where they are available. Prices shall remain in effect for not less than one year after final acceptance.

END OF SECTION

SECTION 01 78 36
PRODUCT WARRANTIES

PART 1 - GENERAL

1.1 Work Included

A. Warranties are required for all Work furnished under this contract.

B. Manufacturer's warranties shall not relieve Contractor of liability required under Contract Documents. Such warranties only shall supplement Contractor's responsibility.

1.2 Related Work

A. Section 01 33 00: Submittal Procedures

B. Section 01 75 00: Starting and Adjusting

C. Section 01 77 00: Closeout Procedures

1.3 Submittals

A. Furnish the following submittals.

SUBMITTAL	DESCRIPTION
Warranty	For equipment bearing manufacturer's warranty in excess of one year, furnish copy of warranty to Owner with Owner named as beneficiary.

1.4 One-Year Product Warranties

A. Warranties shall cover improper assembly or erection, defective workmanship and products, and incorrect or inadequate operation.

B. One-year warranty shall be furnished for all Work and manufactured items unless otherwise stated. Warranty shall cover parts, labor, and prompt service for repair of defects, performance failure or damage due to normal wear and tear or due to any cause other than acts of God, or intentional or active and extreme abuse of product. Warranty period shall extend one year beyond final acceptance of completed contract by Owner.

C. In addition to Manufacturer's standard warranty, furnish services of factory-authorized and factory-trained service technician to promptly provide repair service for mechanical equipment for specified warranty period. This service shall be provided at no cost to Owner and shall include cost of all replacement parts and labor required during that period.

1.5 Inspection of Installation by Manufacturer

A. Should Manufacturer or supplier of any product have reason to suspect said

Manufacturer's product has not been installed in accordance with Manufacturer's warranty requirements, Manufacturer shall have right to send their factory authorized representative to inspect facility.

B. Should Manufacturer's factory-authorized representative elect to inspect installation, said Manufacturer shall promptly notify Owner in writing of any observed deficiencies in installation procedures which might affect required warranty.

C. Should Manufacturer elect to forego inspection of installation of their products, said Manufacturer shall be precluded from claiming faulty installation by others as relief from honoring furnished warranties.

1.6 Eleven-Month Anniversary Warranty Inspection

A. Warranty inspection shall be conducted during 11th month following completion of Work.

B. Locations found in warranty inspection where paving, coating, or paint has peeled, bubbled, or cracked, and locations where rusting is evident will be considered a system failure. Repair defective work identified during warranty inspection by removing deteriorating paving, coating or paint system, cleaning surface, and repaving, recoating, or repainting with same system. Electrically test repaired painted areas. If area of failure exceeds 25% of total paved, coated or painted surface for pavement, coating or paint system on any structure or surface, remove and recoat entire paving, coating or paint system per original specification.

C. Other failed products found in warranty inspection shall be repaired per warranty requirements.

D. Owner shall establish date for warranty inspection and shall notify Contractor at least 30 days in advance. If notification of inspection date does not occur within 12 months after final acceptance, the first anniversary inspection shall be considered to be waived.

1.7 Three-Year Product Warranties and Other Extended Warranties

A. Three-year minimum warranty shall be furnished for:

1. Manhole linings
2. Pumps
3. Other motorized equipment using motors 2-hp or larger
4. Tanks
5. Seismic valve controllers
6. Air-conditioning and refrigeration systems

B. Three-year warranty shall be 3-year parts-and-labor non-prorated warranty extending from date of Owner's final acceptance. Warranty need not exceed 5 years from date of shipping.

C. Where System Integrators or unit manufacturers are required to furnish skid-mount or packaged, air conditioning or refrigeration systems requiring 3-year or extended warranties, every component of system furnished shall be covered under extended warranty, not withstanding clauses in other sections which may stipulate a lesser warranty for certain components.

D. Ten-year minimum warranty shall be furnished for:

1. Reservoir coatings and liners

2. Roofing

E. Ten-year warranty shall be 10-year parts-and-labor non-prorated warranty extending from date of Owner's final acceptance. Warranty need not exceed 12 years from date of shipping.Extended warranty shall cover parts, labor and prompt service for repair of defects, performance failure or damage due to normal wear and tear, or due to any cause other than acts of God, Owner's failure to perform minimum maintenance as set forth in O&M instructions furnished with warranty, or intentional or active and extreme abuse of product. Warranty period shall extend the stipulated number of years beyond final acceptance of completed contract by Owner.

F. Extended warranties shall cover Owner's full cost of restoring non-functional components to their full function as described in Contract Documents and in Manufacturer's published literature. Prorated warranties will not be accepted. Replacement of damaged parts with old or recycled parts will not be accepted.

G. Should Manufacturer refuse to provide full extended warranty, Contractor may be required to purchase extended warranty or negotiate with Owner a fair value for a shorter warranty period.

1.8 General Warranty Clauses

A. Where sections of specifications stipulate longer warranty period than stipulated in this section, the longest and most stringent warranty requirement shall apply.

B. Warranty period shall begin on the earliest of the following 2 milestones:

1. Date of formal notification of completion or

2. 30 calendar days after both substantial completion and Owner taking over beneficial use of project.

C. Warranties shall cover:

1. Parts
2. Labor
3. Diagnostics
4. Servicing
5. Removal or Installation Charges
6. Setup and Reconfiguration of System with Replacement Parts
7. Shipping

D. Where a part is replaced during warranty period, warranty for replaced part and shipping shall be extended to not less than one year following date of replacement. Warranty for labor shall be unchanged.

E. Following notification of Contractor of a warranty issue, Contractor or their agent shall have 2 weeks to inspect and 30 days to remedy defective work. Failure to perform within this stipulated period will result in damages being assessed against Contractor and responsible parties retroactive to date of discovery.

1.9 Unit Prices

A. Payment for warranties required in Contract Documents will be included in price bid for items of work for which warranties are required.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 – EXECUTION

(Not Applicable)

END OF SECTION

SECTION 01 78 39
PROJECT RECORD DOCUMENTS

PART 1 - SCOPE

1.1 General Requirements

A. Contractor shall keep one accurate, legible set of Record Drawings at site and available for review by Owner's Representative in Contractor's field office or in superintendent's truck throughout project.

1.2 Related Work

A. Section 01 33 00: Submittal Procedures

1.3 Submittals

A. Furnish the following submittals.

SUBMITTAL	DESCRIPTION	
Record Drawings	Required as described below	
PLC Programming CD Rom Discs	Required as described below	
Programmers for Instruments and Devices	Required as described below	

1.4 Detailed Requirements

A. Record drawings shall be on one set of full-size project blackline prints of Contract Drawings and other drawings forming part of contract, showing installed locations of improvements and all changes made during construction.

B. Record drawings shall show locations by key dimensions, depths, elevations of all underground piping, conduit, sensor lines, valves, capped ends, branch fittings, pull boxes, and Work.

C. Show all Record Drawing changes in contrasting color to original.

D. In showing changes in Work, or added Work, use same legends used on Contract Drawings. Show locations and elevations to same level of accuracy as original Contract Documents. Tie dimensions to permanent point with 2-point tie-down system.

E. Report changes and deviations promptly to Owner's Representative.

F. Record drawings shall incorporate addenda, supplementary drawings, working drawings, change orders and clarifications.

G. Record drawings shall incorporate survey notes, field notes and system demonstration logs.

H. Maintain Record Drawings on an up-to-date basis with all entries reviewed by Owner's Representative. Bring record drawings to all progress meetings.

I. Protect Record Drawings from damage or loss.

J. Record Drawings shall clearly show all discrepancies between Contract Documents and installed Work.

K. Record information on how to maintain and/or service concealed Work.

L. Concealed shall mean construction installed underground or in area which cannot be readily inspected by use of access panels, inspection plates or other removable features.

M. Record finalized hydraulic and electrical equipment control settings in appropriate tables and spaces provided on Record Drawings.

N. In addition to paper record drawings, provide PDF copy of record drawings on CD ROM disc or flash drive delivered to Owner in labeled plastic case.

O. Provide 2 copies of PLC programming CD ROM discs delivered to Owner in labeled plastic jewel cases.

1.5 Unit Prices

A. Payment for record drawings required in Contract Documents will be included in price bid for items of work for which record drawings are required.

B. Progress payment requests may be withheld if daily logs, schedule updates or Record Drawings are damaged, lost or not kept current to satisfaction of Owner's Representative.

PART 2 – PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.1 General

A. During progress payment request meetings, present current record drawing documents for review prior to submittal of progress payment request.

B. Deliver marked record set of Record Drawings to Owner prior to final acceptance of Work. Owner will use these Record Drawings to modify original mylars to create reproducible Record Drawings.

END OF SECTION

SECTION 02 00 01
BASIC SITE MATERIALS AND METHODS

PART 1 GENERAL

1.1 Work Included

A. BASIC SITE MATERIALS AND METHODS consists of furnishing transportation, labor, materials, and equipment to locate, protect, repair, remove, replace, and dispose of existing surface and subsurface conditions and improvements at the Project site, including existing utilities, structures, and substructures. This Section also covers basic materials and methods common to new site construction.

1.2 Related Work

A. CLEANING Section 01 74 00

B. ASPHALT PAVING Section 32 12 16

1.3 Measurement And Payment

A. Water Pollution Control

1. The contract lump sum price paid for bid item "Water Pollution Control Program" shall include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidentals, and for doing all work involved in Water Pollution Control Program. Work includes, but not limited to, submitting water pollution control plan for County's review and approval prior to project construction, participation in stormwater construction inspections, use of best management practices during construction to prevent construction related pollutants from entering the storm drain system, maintenance of storm water pollution prevention measures, and removal and disposal of measures after completion of work. All work shall be complete in place as accordance specifications, permits, and as directed by the Engineer.

B. Traffic and Pedestrian Control

2. The contract lump sum price paid for bid item "Traffic and Pedestrian Control" shall include full compensation for furnishing transportation, labor, materials, temporary traffic control signs, tools, equipment, and incidentals, and for doing all the work involved in Traffic and Pedestrian Control and as described. Work includes, but not limited to, coordinating with various agencies and businesses; preparing traffic and pedestrian control plans for the County's review and approval prior to project construction; placing, removing, storing, and maintaining No-Parking signs, temporary signs, Construction Area signs at project limits and all cross streets, and other traffic control devices, including flagging; loading, hauling, removing, covering, and uncovering construction signs; removing any temporary striping as may

be required; and maintaining street and sidewalk to provide safe passage for pedestrians and vehicles. All work shall be complete in place as accordance with temporary traffic control plans, specifications, permits, and as directed by the Engineer.

C. Public Notification

1. The contract lump sum price paid for bid item "Public Notification" shall include full compensation for furnishing transportation, labor, materials, (including SMS signs on collectors and arterials), tools, equipment and incidentals, and for doing all the work involved in notifying the public and impacted residents/businesses of the project 7 calendar days in advance and during the construction, as accordance with project plans, specifications, permits, and as directed by the Engineer.

D. Remove Existing Pavement Markings, Striping, and Raised Markers

1. The contract lump sum price paid for bid item "Remove Existing Pavement Markings, Striping, and Raised Markers" shall consist of furnishing transportation, labor, materials, tools, equipment, and incidental work involved to remove existing striping, conflicting striping, pavement words, numbers, arrows, etc, and raised pavement markers. All work be complete and in place as accordance with project plans, specifications, permits, and as directed by the Engineer.

1.4 References

A. State of California Department of Transportation Standard Specifications (SS):

1. Section 10 General

a. Subsection 10-1.02D Traffic Stripes, Pavement Markings, and Pavement Markers

2. Section 12 Temporary Traffic Control

3. Section 13 Water Pollution Control

4. Section 15 Existing Facilities

a. Subsection 15-1.03B Removing concrete

5. Section 19 Earthwork Subsection 19-1.03B Unsuitable Material

6. Section 26 Aggregate Bases

a. Subsection 26-1.02B Class 2 Aggregate Base

b. Subsection 26-1.03D Spreading

c. Subsection 26-1.03E Compacting

7. Section 94 Asphalt Emulsions

B. Standard Specifications for Public Works Construction (RS):

1. Subsection 306-5 Abandonment of conduits and structures

1.5 Existing Subsurface Conditions

A. Keep existing services and facilities in operation except when shutdown is approved by the Engineer in writing, and only after temporary services have been provided.

PART 2 PRODUCTS

NOT APPLICABLE

PART 3 EXECUTION

3.1 Verification Of Site Conditions

A. Notify Underground Service Alert (USA) 72 hours prior to commencing demolition, excavation, trenching, drilling, or similar underground work.

B. Contact owners of existing lines and substructures that may interfere with he work.

C. Determine and mark locations of substructures not marked by owners. Maps and reference drawings showing record locations of substructures are available for review in the office of the Engineer.

3.2 Protection Of Existing Facilities

A. Protect existing facilities adjacent to the Work to avoid damage. Repair or replace existing structures and improvements located above or below ground which are damaged or removed as a result of the Contractor's operations wherever such existing improvements are not specifically designated to be permanently removed. Structures to protect and repair include, but are not limited to, pipelines, wires, cables, electrical pullboxes, conduits, vaults, property fences, and maintenance holes. Repairs and replacements shall be made at Contractor's expense and shall be equal to existing improvements and shall match existing in finish and dimension.

1. Replacement pavement shall be 1 inch greater in thickness than the existing pavement that was removed.

2. Damaged pipelines:

a. Notify owner(s) of the damaged utility pipelines.

b. Obtain approval from the owner(s) of the damaged utility pipelines prior to replacement of damaged pipeline section(s) up to and including the joints at the end of the damaged section(s). Replacement shall include damaged joint materials.

B. Place barricades and install warning lights around excavations.

C. Exercise extreme caution when working in the vicinity of existing power poles and light poles designated to remain. Support utilities' poles and guy wires adjacent to excavations in conformance with the requirements of the utility owners.

D. When excavation is proposed within 10 feet of a high priority subsurface installation, the operator of the high priority subsurface installation shall notify the excavator of the existence of the high priority subsurface installation prior to the legal excavation start date and time, as such date and time are authorized pursuant to paragraph (1) of subdivision (a) of Government Code Section 4216.2. The excavator and operator or its representative shall conduct an onsite meeting at a mutually-agreed-on time to determine actions or activities required to verify the location of the high priority subsurface installations prior to start time. High priority subsurface installations are high pressure natural gas pipelines with normal operating pressures greater than 415 kPA gauge (60 p.s.i.g.), petroleum pipelines, pressurized sewage pipelines, conductors or cables that have a potential to ground of 60,000 volts or more, or hazardous materials pipelines that are potentially hazardous to employees, or the public, if damaged.

3.3 Unsuitable Material

A. Unsuitable Material shall conform to SS Section 19, "Earthwork". Unsuitable Material, for the purposes of this project, shall be any material directly beneath excavations including base repairs.

B. The Engineer may direct the Contractor to perform additional roadway excavation for base repair areas in which unsuitable soft and yielding material is encountered. The depth and limits of the additional excavation shall be determined by the Engineer and any excavation beyond the limits determined by the Engineer shall be at the Contractor's expense. The unsuitable material resulting from the additional roadway excavation shall become the property of the Contractor and shall be removed from the Right of Way. Excavated areas shall be backfilled with Class 2 aggregate base and shall be included in the unit price paid for Unsuitable Material and no additional compensation will be made therefor.

C. Class 2 aggregate base shall conform to the provisions in SS Section 26, "Aggregate Bases".

D. Aggregate base shall be spread and compacted in conformance to SS Section 26-1.03D and 26-1.03E. Spreading and compacting shall be performed by methods that will produce a uniform base, firmly compacted and free from pockets of coarse or fine material. No spreading operation shall begin until the

physical characteristics of aggregate base material and the condition of the subgrade have been approved by the Engineer.

E. Aggregate base exceeding a workable moisture content will be rejected by the Engineer and shall be immediately removed from the project site by the Contractor.

F. The grading of the material shall conform to the ¾ inch, maximum, specified in SS Section 26-1.02B, "Class 2 Aggregate Base".

3.4 Basic Pavement Removal Methods

A. Perform asphalt concrete pavement removal in conformance with SS Subsection 15-1.03B except that, where the removal line will be a join line, the line shall be saw cut to a 3 inch minimum depth to provide a butt joint.

B. Upon demolishing the existing pavement or excavating to the specified elevations, the areas exposed by excavation on which the subgrade preparations are to be performed shall be:

1. Scarified to minimum depth of 8 inches.

2. Moisture-conditioned to at least 2 percent above-optimum moisture content.

3. Compacted to minimum of 95 percent relative compaction. Soils with significant high moisture content may be dried or blended with dry soils to achieve the required relative compaction.

C. Removal work performed beyond the lines and grades shown on Contract Drawings or Standard Details, or beyond limits described in excavation and demolition submittal approved by the Engineer, will be considered to be unauthorized and at the expense of the Contractor. Engineer may request Contractor to restore such removals in conformance with the "Protection of Existing Facilities" Article of this Section.

3.5 Basic Backfill And Compaction Methods

A. Earth soils compaction shall be 95 percent relative compaction for top 12-inches and 90 percent relative compaction below that unless indicated otherwise on Drawings or Specifications.

B. Jetting and flooding is not permitted for compaction of trench backfill. Mechanical compaction of soils is required.

C. Removal areas 5 feet by 5 feet or less and surrounded by pavement to remain in place on 3 or 4 sides shall be backfilled with cement sand slurry up to the bottom of proposed pavement.

3.6 Basic Traffic Stripes And Pavement Markings And Markers Removal Methods

A. Perform traffic stripes and pavement markings removal in conformance with SS Section 10-1.02D.

B. Perform pavement markers removal in conformance with SS Section 10-1.02D.

C. All removed pavement markings and markers and excess material shall become the property of the Contractor and shall be removed and disposed of in a legal and proper manner in accordance with SS Section 15, Existing Facilities.

D. Where sand blasting is used for removal, the sand residue including dust shall be removed immediately after contact between the sand and the surface being treated. Such removal shall be by a vacuum attachment operating concurrently with the blast cleaning operation. When removal is done by grinding or sandblasting methods, the affected pavement shall be completely covered by applying asphaltic emulsion conforming to SS Section 94, Asphaltic Emulsions. All temporary striping or markings shall be removed by Contractor after placement of permanent striping or markings.

3.7 Interfering Substructures

A. Consult the Engineer immediately for directions whenever substructures interfere with or affect Work. Contractor shall propose means and methods to the Engineer resolve the interferences. The Engineer will make the final decision on method of correction or protection to be used.

1. If interfering substructures must be removed, the following procedures must be adopted before removing or cutting the substructures:

   a. Coordinate with the utility owner to determine if the line contains any kind of liquid or gaseous material.

   b. If storm drain or sewer lines are empty or filled with concrete or mud slurry, lines may be cut, removed, and capped or plugged, in conformance with RS Subsection 306-5.

   c. Test conductors in conduits appearing to be abandoned and verify that conductors are de-energized. Remove de-energized conductors. Report energized conductors to the Engineer and cease removal work until Engineer authorizes work to resume.

   d. Consult the Engineer for methods of handling other substructures.

   e. Notify the Engineer to identify contents of unknown line if it is found to contain liquid or gaseous material. Coordinate with the utility owner to remove contents and dispose in conformance with applicable regulations. Such work will be considered a Change in the Work and payment will be determined in conformance with the GENERALCONDITIONS Section.

2. Evacuated lines or remaining portions of abandoned lines shall be capped or removed as described in this Article for empty lines.

3.8 Ownership And Disposal

A. Asphalt concrete and other bituminous pavement, concrete rubble, unreinforced concrete, rocks, concrete masonry, and reinforced concrete demolished at the site shall become property of Contractor.

B. Refer to the CLEANING Section, Subsection 1.2 E, Disposal of Materials.

3.9 Maintenance And Repair

A. Maintain continuity and integrity of permanent fences and temporary construction fences. Immediately replace fence sections damaged or missing during construction prior to close of the regular working day upon which damage occurred.

END OF SECTION

SECTION 02 41 13
SELECTIVE DEMOLITION

PART 1 GENERAL

1.1 Work Included

A. SELECTIVE SITE DEMOLITION consists of furnishing transportation, labor, materials, and equipment to perform site demolition and removal work required to accommodate the new construction. Work includes but is not limited to the following:

1. Concrete removals

2. Asphalt concrete pavement removals

B. Dispose removed materials in conformance with the CLEANING Section.

C. Refer also to BASIC SITE MATERIALS AND METHODS Section for asphalt concrete pavement removal.

1.2 Related Requirements

A. CLEANING Section 01 74 00

B. BASIC SITE MATERIALS AND METHODS Section 02 00 01

1.3 References

A. American Society for Testing and Materials (ASTM International)

1. ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

B. American National Standards Institute

1. ANSI Z 535.5 Safety Signs and Barricade Tapes (for Temporary Hazards)

C. Code of Federal Regulations (CFR)

1. 29 CFR 1926.200 Accident Prevention Signs and Tags

D. State of California Department of Transportation Standard Specifications (SS):

1. Section 10 Dust Control

2. Section 15 Existing Facilities

Section 15-1.03B Removing Concrete

3. Section 73 Concrete Curbs and Sidewalks

Subsection 73-1.03 Existing Curbs and Sidewalks

E. Standard Specifications for Public Works Construction (RS):

1. Section 300 Earthwork

1.4 Submittals

A. Procedures, equipment to be used, and operational sequences.

B. Submit prior to start of Work photographs of existing damage to structures adjacent to but not a part of the Work, where such damage could be misconstrued as caused by Contractor.

1.5 Traffic Control

A. Refer to TEMPORARY FACILITIES AND CONTROLS Section.

1.6 Salvage

A. No on-site sale of salvage will be allowed. No removals shall be made from the site by any person other than the Contractor or employees of the Contractor.

B. Referrals to CLEANING Section

1.7 Environmental Requirements

A. Refer to REGULATORY REQUIREMENTS Section.

PART 2 - PRODUCTS

2.1 Backfill Materials

A. Imported fill, where required for backfill of voids, shall conform to RS Subsection 300-5, except for 300-5.4.

1. Fill shall consist of soils classified as SW, SM, SC, or SP in conformance with ASTM D2487. Soils shall have a minimum sand equivalent value of 20 percent in conformance with ASTM D2419.

B. Excavated materials may be re-used for backfill of voids left after removals in conformance with RS Subsection 300-4 exclusive of Subsection 300-4.9. Material shall not contain vegetation or other organics, rocks, broken concrete, debris, or other solid materials larger than 4 inches, or any other deleterious material.

PART 3 - EXECUTION

3.1 Removals

A. Concrete Removals:

1. Remove concrete pavement, curb, walks, access ramps, and driveway in conformance with SS Subsection 15-3.3 and SS Subsection 73-1.03.

2. The Contractor shall remove and dispose of all curb an gutter, sidewalk, or driveway approach to the limits marked in the field by the Engineer. Removal work shall not exceed the limits as agreed with the Engineer. Limits of removal shall be along straight lines and may be along existing cold joints or expansion joint, score line, or control line or as otherwise marked by the Engineer in the field.

3. Where the limit of removal is along a location other than an existing cold joint or expansion joint concrete shall be neatly cut to provide a straight and uniform edge. Where necessary to meet the dimensions for new subgrade for standard curb and gutter, sidewalk, driveway or curb ramp, additional material shall be excavated and removed to provide an even and uniform plane.

4. Where the plans for reconstruction of existing curb and/or sidewalk, and the limits of the new work specified do not fall on a scoring line, the entire section shall be removed, and the new work shall be joined the existing at the first scoring line beyond said specified limit. The Contractor shall notify the Engineer when tree roots are exposes during concrete removal. County may inspect the tree roots to determine the limits of the root cutting or pruning. The Contractor shall perform all necessary root pruning or removal to complete the work.

5. Refer to BASIC SITE MATERIALS AND METHODS Section for additional requirements.

B. Control dust in conformance with SS Section 10.

C. Items not shown on Drawings or mentioned in the Specifications, which are encountered during the Contractor's operations shall be brought to the attention of the Engineer. The Engineer will determine the disposition of the items.

D. Perform removals under County's inspection in conformance with applicable safety standards and requirements.

E. No debris shall be allowed to enter storm drains.

F. Perform asphalt concrete pavement removals in conformance with BASIC SITE MATERIALS AND METHODS Section.

G. Repair or replace surface and subsurface improvements removed or damaged as a result of the Contractor's operations in conformance with BASIC SITE MATERIALS AND METHODS Section.

3.2 Safety And Protection

A. Protect existing buildings, substructures, and other improvements within and adjacent to Project site in conformance with BASIC SITE MATERIALS AND METHODS Section.

B. Provide, erect, and maintain barriers, barricades, lighting, and guard rails as required to protect the general public, workers, and adjoining properties.

C. Cease operation and notify Engineer immediately if demolition appears to be a threat to human health, facilities, or property. Do not resume operations until safe conditions have been restored.

D. Post hazard warning signage compliant with requirements of 29 CFR 1926.200, "Accident Prevention Signs and Tags", and recommendations of ANSI Z535.5 at perimeter of construction zone. Promptly remove signage after Engineer verifies that demolition hazards no longer exist.

E. Refer to TEMPORARY SITE SECURITY AND SAFETY Section for additional requirements.

3.3 Ownership And Disposal

A. Refer to BASIC SITE MATERIALS AND METHODS Section for requirements concerning ownership and disposal criteria for demolished materials.

3.4 Backfill Excavations

A. Mechanically backfill voids in subgrade areas in conformance with the BASIC SITE MATERIALS AND METHODS Section.

3.5 Power Poles

A. Refer to BASIC SITE MATERIALS AND METHODS Section for work around existing power poles and light poles.

END OF SECTION

SECTION 10 14 00
SIGNAGE

PART 1 - GENERAL

1.1 Work Included

A. SIGNAGE consists of furnishing transportation, labor, materials, and equipment to furnish, fabricate, and install signage at locations indicated on Drawings.

1.2 Related Requirements

A. BASIC SITE MATERIALS AND METHODS Section 02 00 01

B. PAVEMENT MARKINGS Section 32 17 23

1.3 Measurement And Payment

A. Roadside Sign on Post, Reflective Diamond Grade

Payment for the installation of roadside sign on steel post will be payable under "Roadside Sign on Post, Reflective Diamond Grade" unit price bid item. Payment shall be measured and paid for at contract price by the unit from actual count. One or more sign panels mounted on a single post installation will be counted as one roadside sign on post. Contract price and payment includes, but not limited to, full compensation for furnishing transportation, labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing roadside signs, complete in place, including the installation of sign panels, as accordance with project plans, specifications, permits, and as directed by the Engineer.

1.4 References

A. State of California Department of Transportation Standard Specifications (SS):

1. Section 15 Existing Facilities
2. Section 82 Signs and Markers
   a. Subsection 82-3 Roadside Sign
   b. Subsection 82-3.02B Metal Posts
   c. Subsection 82-3.02E Sign Panel Fastening and Mounting Hardware

B. California Manual on Uniform Traffic Control Devices (current edition)

1.5 QUALITY ASSURANCE

A. The Engineer reserves the right to inspect the manufacture or fabrication. The Engineer's inspection of the work does not relieve the Contractor of the responsibility for the work. Errors or faults that are discovered during fabrication shall be corrected by the Contractor prior to installation.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Metal Posts:

1. Conform to SS Subsection 82-3.02B

B. Sign Panel Fastening Hardware:

1. Conform to SS Subsection 82-3.02E

2.2 FABRICATION

A. Signage shall be complete for proper installation as shown on project plans.

B. Finished work shall be firm, well anchored, in true alignment, properly squared, with smooth clean uniform appearance, without holes, cracks, discoloration, distortion, stains, or marks.

C. Construct work to eliminate burrs, dents, cutting edges, and sharp corners.

D. Welding shall be in conformance with AWS requirements. Finish welds on exposed surfaces to be imperceptible in the finished work.

E. Except as indicated or directed otherwise, finish all surfaces smooth.

F. Surfaces which are intended to be flat shall be without dents, bulges, oil canning, gaps, or other physical deformities.

G. Surfaces which are intended to be curved shall be smoothly free flowing to required shapes.

H. Conceal all fasteners.

I. Make access panels tight-fitting, light proof, and flush with adjacent surfaces.

J. Obtain identification labels and labels shall form to Underwriters Laboratories requirements. Conceal all labels on underside or back of sign elements.

K. Carefully follow manufacturer's recommended fabricating procedures regarding expansion or contraction, fastening, and restraining of acrylic plastic

L. Exercise care to ensure that painted, polished, and plated surfaces are unblemished in the finished work.

M. Isolate dissimilar materials. Exercise particular care to isolate nonferrous metals from ferrous metals.

N. All illumination shall be even and without hot spots.

O. Ease all exposed metal edges.

P. Provide miscellaneous metal items required for completion of the work even though not shown or specified.

Q. Aluminum cabinets and panels shall have sufficient internal structure to prevent oil-canning.

PART 3 - EXECUTION

3.1 Installation

A. Guard against damaging existing pavements and planting where signage is to be installed.

3.2 Clean Up

A. Keep areas of work clean, neat and orderly at all times. Clean surfaces, inside and out. Use approved cleaners if necessary to remove dirt.

B. Protective coverings and strippable films shall be removed at a time that will afford the greatest protection of the signage. Surfaces shall be cleaned to remove excess glazing and sealant compounds, dirt, and other substances.

C. Upon completion of work and before final acceptance, remove tools, surplus materials, apparatus, and debris from the site. Leave the site in a neat, and clean condition. Wash, clean, and leave paved areas without stains.

3.3 Final Inspection And Acceptance

A. Upon completion of work, a final inspection for acceptance will be performed by the Engineer.

END OF SECTION

SECTION 31 05 50
PROTECTING EXISTING UTILITIES

PART 1 - GENERAL

1.1 Work Included

A. Materials and procedures to protect existing underground utilities.

B. Materials and procedures to connect to existing underground utilities.

1.2 Related Work

A. Section 01 33 00: Submittal Procedures

B. Section 01 73 00: Execution

1.3 References

A. ASCE 38 Standard Guidelines for the Collection and Depiction of Existing Subsurface Data

B. ASTM C143 Slump of Hydraulic Cement Concrete

C. ASTM C425 Compression Joints for Vitrified Clay Pipe and Fittings

D. ASTM C700 Vitrified Clay Pipe, Extra Strength, Standard Strength and Perforated

E. California Administrative Code Title 22 Section 64572

F. California Government Code Section 4215-4216

1.4 Submittals

A. Furnish the following submittals.

SUBMITTAL	DESCRIPTION
Shop Drawings for Supporting Pipe and Utilities Crossings Trenches	Required when utilities to be supported exceed 16" diameter or any transverse dimension Required when requested in writing by Owner's Representative
Engineering Calculations	Submit for pipe supports for existing utilities greater than 24" in any dimension. If concrete beams are used as supports, calculations shall take into account concrete strength based on days elapsing between placing concrete and trenching beneath concrete beams. Do not

	use 28-day strength unless concrete will be at least 28 daysold when beam is placed in service.

B. Refer to Section 01 33 00 for definition of requirements for shop drawings and engineering calculations.

1.5 Project Conditions

A. Design Engineer has attempted to show approximate location of buried utilities on Plans pursuant to Utility Quality Level D (QLD) as defined in ASCE 38. These approximate locations are based on:

1. Record maps requested and received during design from utilities identified through an inquiry to Underground Service Alert and utilities.

2. Comments received from Utilities after their review of preliminary plans showing record drawing information.

3. Field reconnaissance and plotting of approximate locations of readily visible surface features including manhole covers, valve covers, utility boxes, marking posts, pavement repair strips, and culvert end sections which might indicate presence of buried utilities.

4. Design Engineer's professional judgment in correlating record map information to observed surface features

or

B. Design Engineer has attempted to show approximate location of buried utilities on drawings pursuant to Utility Quality Level C (QLC) as defined in ASCE 38. These approximate locations are based on:

1. Record maps requested and received during design from utilities identified through an inquiry to Underground Service Alert and utilities.

2. Comments received from Utilities after their review of preliminary plans showing record drawing information.

3. Field surveying and plotting of locations of readily visible surface features including manhole covers, valve covers, utility boxes, marking posts, pavement repair strips, and culvert end sections which might indicate presence of buried utilities.

4. Design Engineer's professional judgment in correlating record map information to surveyed surface features

or

C. Design Engineer has attempted to show approximate location of buried utilities on drawings pursuant to Utility Quality Level B (QLC) as defined in ASCE 38. These approximate locations are based on:

   1. Record maps requested and received during design from utilities identified through an inquiry to Underground Service Alert and utilities.

   2. Comments received from Utilities after their review of preliminary plans showing record drawing information.

   3. Field surveying and plotting of locations of readily visible surface features including manhole covers, valve covers, utility boxes, marking posts, pavement repair strips, and culvert end sections which might indicate presence of buried utilities.

   4. Field surveying and plotting of locations of utilities and buried structures marked on the ground using ground penetrating radar and/or electromagnetic induction methods.

   5. Design Engineer's professional judgment in correlating record map information to surveyed surface features

D. Where potholing has been done at spot locations to measure utility depths at those locations, pothole location and elevation is expressly noted on Plans, and shall be construed as accurate to within ±0.5' at point of potholing.

E. Utility locations on Plans are based solely on the above. Plotted locations may not accurately reflect subsurface conditions.

F. Prior to excavation, and prior to submittal of cut sheets for pre-engineered pipe, Contractor shall pothole and determine precise locations of all utilities which are:

   1. Shown on plans

   2. Identified by Underground Service Alert

   3. Evident from readily visible surface features including manhole covers, valve covers, utility boxes, marking posts, pavement repair strips, and culvert end sections which might indicate presence of buried utilities.

   4. Identified by Contractor by walking alignment using a reliable electronic pipe finder.

G. When performing Work within Caltrans or railroad right-of-way, Contractor is advised neither Caltrans, Burlington Northern Santa Fe (BNSF), Union Pacific Railroad, nor other railroads subscribe to Underground Service Alert. Contractor shall directly contact and make appropriate arrangements with Underground Service Alert nonmember agencies to field-locate utilities prior to excavation.

H. Power trench excavating equipment may only be used when and where <u>all</u> the following conditions exist.

1. Contractor has notified Underground Service Alert and all known Utility Owners at least 2 working days before excavating.

2. Contractor has thoroughly searched entire excavation route using a reliable electronic pipe finder and has pre-marked horizontal locations of conflicts.

3. Utilities shown on Plans have been potholed 1,300' in advance of excavation as needed to verify locations.

4. No pipelines carrying gas, petroleum, explosives, hazardous materials, or other regulated contaminants are believed to be within 5' of area to be excavated.

5. Owner's Representative is continuously present during excavation.

I. Pursuant to 49 CFR Part 192, Contractor shall coordinate with operators of high-pressure gas lines who are required by law to have a representative on-site at all times during excavation in the vicinity of their pipelines.

J. Power equipment specifically designed and manufactured for potholing existing utilities is exempt from the above restrictions.

K. Hand excavation shall be used

1. In areas where buried gas, petroleum, explosives or hazardous material piping is known to be present

2. In areas where electrical, fiber optic or communications conduit is known to be present.

3. In first 5' below existing grade where drilling or auguring equipment is used.

L. Pursuant to Section 4215 of California Government Code,

1. Owner will be responsible *"for timely removal, relocation, or protection of existing main or trunk line utility facilities located on the site"* if such utilities are not identified by Owner in Contract Documents.

2. Owner will compensate Contractor for documented "costs of locating, repairing damage not due to the failure of the Contractor to exercise reasonable care, and removing or relocating such utility facilities not indicated in the plans and specifications with reasonable accuracy, and for equipment on the project necessarily idled during such work."

3. "Contractor shall not be assessed liquidated damages for delay in completion of the project when such dlay was caused by the failure of the public agency or the owner of the utility to provide for removal or relocation of such utility facilities."

M. Pursuant to Section 4216 of California Government Code, Owner's liability shall be limited to reimbursement of costs due to utility facilities either not shown on Contract Documents, or shown on Contract Documents at locations more than 2' vertically or 5' horizontally in error from field locations, except where location of said utilities are evident from surface features or staked correctly by Underground Service Alert.

N. Owner will not indicate presence of existing service laterals or appurtenances when presence of utilities on Project site can be inferred from presence of other visible facilities, such as buildings, meters and junction boxes, on or adjacent to Work site. Owner will identify main or trunk lines in Contract Documents. Contractor shall make their own investigations, including exploratory investigations, to determine or verify locations and type of existing service laterals or appurtenances when their presence can be inferred from presence of other visible facilities.

O. Immediately notify Owner and Utility in writing if Contractor discovers:

1. Utility facilities not shown on Plans.

2. Utility facilities in field locations different than shown on plans.

P. Pursuant to California Administrative Code Title 22 Section 64572 and intent of Plans, separations shall be maintained between new and existing utilities as follows:

REQUIRED WALL-TO-WALL SEPARATIONS FOR PARALLEL PIPELINES			
NEW UTILITY	**SEPARATION FROM EXISTING**	**HORIZONTAL SEPARATION**	**VERTICAL SEPARATION (not required if horizontal separation** > 10')
Water Mains	Sewers	≥ 10' horizontal	New invert 12" above top of sewer
	Fuel and Oil Lines	≥ 10' horizontal	New invert 12" above top of pipe
	Recycled Water Mains (Secondary Treatment + Disinfection)	≥ 10' horizontal	New invert 12" above top of pipe
	Recycled Water Mains (Tertiary Treatment + Disinfection)	≥ 4' horizontal	New invert 12" above top of pipe
	Raw Water Lines	≥ 4' horizontal	New invert 12" above top of pipe
	Storm Drains	≥ 4' horizontal	New invert 12" above top of pipe
	Cesspools, Septic Tanks, Sewage Leach Fields, Seepage Pits or Groundwater Recharge Sites	≥ 25' horizontal	
	Sanitary Landfills, Wastewater Disposal Ponds, or Hazardous Waste Disposal Sites	≥ 100' horizontal	

Sewers or Nonpotable Pipelines	Potable or Raw Water Mains at pressures < 5 psi	≥ 25' horizontal	New soffit 12" below pipe invert
	Potable or Raw Water Mains	≥ 10' horizontal	New soffit 12" below pipe invert
	Recycled Water Mains (Secondary Treatment + Disinfection)	≥ 10' horizontal	New soffit 12" below pipe invert
	Recycled Water Mains (Tertiary Treatment + Disinfection)	≥ 4' horizontal	New soffit 12" below pipe invert
	Storm Drains	≥ 4' horizontal	New soffit 12" below pipe invert
REQUIRED WALL-TO-WALL SEPARATIONS FOR WATER MAINS CROSSING BELOW PIPES			
Water Mains	Sewers	No joints on 8' either side	≥ 12" vertical separation
	Fuel and Oil Lines	No joints on 8' either side	≥ 12" vertical separation
	Recycled Water Mains (Secondary Treatment + Disinfection)	No joints on 8' either side	≥ 12" vertical separation
	Recycled Water Mains (Tertiary Treatment + Disinfection)	No joints on 8' either side	≥ 12" vertical separation
	Raw Water Lines	No joints on 8' either side	≥ 12" vertical separation
	Storm Drains	No joints on 8' either side	≥ 12" vertical separation
Sewers or Nonpotable Pipelines	Potable Water Mains	No joints on 8' either side	≥ 12" vertical separation
REQUIRED WALL-TO-WALL SEPARATIONS FOR WATER MAINS CROSSING ABOVE PIPES			
Water Mains	Sewers	No joints on 8' either side	≥ 12" vertical separation
	Fuel and Oil Lines	No joints on 8' either side	≥ 12" vertical separation
	Recycled Water Mains (Secondary Treatment + Disinfection)	No joints on 8' either side	≥ 12" vertical separation
	Recycled Water Mains (Tertiary Treatment + Disinfection)	No joints on 8' either side	≥ 12" vertical separation
	Raw Water Lines	No joints on 8' either side	≥ 12" vertical separation
	Storm Drains	No joints on 8' either side	≥ 12" vertical separation
Sewers or Nonpotable Pipelines	Potable Water Mains	No joints on 8' either side	≥ 12" vertical separation

Q. Lesser separations may be used under California Administrative Code Title 22 Section 64551(c) when Separations required under Section 64572 are not feasible, when inverts of potable water mains are above soffits of parallel sewers and nonpotable pipelines, and when:

1. Sewers or storm drains are not under pressure or used as force mains, and are constructed of:

    a. ASTM F894 spirally-reinforced HDPE pipe with gasketed joints,

    b. ASTM C700 VCP sewer with compression joints

    c. ASTM C428 ACP sewer pipe Class 4000 Type II with rubber gasket joints

    d. ASTM D3064 PVC sewer pipe with rubber gasket joints

    e. AWWA C151 DIP pipe with compression joints

    f. AWWA C302 RCP pipe with compression joints or

    g. AWWA C906 fusion-bonded HDPE pipe with fusion-welded joints,

or

2. Fuel and oil lines are constructed of:

    a. AWWA C151 DIP pipe with compression joints or

    b. AWWA C200 ¼"-wall welded steel water pipe dipped and wrapped

or

3. Water, raw water, or recycled water mains operate at pressures >5 psi and are constructed of:

    a. AWWA C151 DIP water pipe with compression joints and hot-dip bituminous coating

    b. AWWA C200 ¼"-wall welded steel water pipe dipped and wrapped

    c. AWWA C300, C302, or C303 reinforced concrete pressure pipe

    d. AWWA C400 Class 200 ACP Type II water pipe

    e. AWWA C900 or C905 PVC DR14 water pipe with compression joints or

    f. AWWA C906 fusion-bonded HDPE water pipe with fusion-welded joints,

4. In which case separations shall be maintained between constructed and existing utilities as follows:

REQUIRED WALL-TO-WALL SEPARATIONS FOR PARALLEL PIPELINES			
NEW UTILITY	**SEPARATION FROM EXISTING**	**HORIZONTAL SEPARATION**	**VERTICAL SEPARATION**

Water Mains	Sewers	≥ 4' horizontal	New invert 12" above top of sewer
	Fuel and Oil Lines	≥ 4' horizontal	New invert 12" above top of pipe
	Recycled Water Mains (Secondary Treatment + Disinfection)	≥ 4' horizontal	New invert 12" above top of pipe
Sewers or Nonpotable Pipelines	Potable or Raw Water Mains	≥ 4' horizontal	New soffit 12" below pipe invert
	Recycled Water Mains (Secondary Treatment + Disinfection)	≥ 4' horizontal	New soffit 12" below pipe invert
REQUIRED WALL-TO-WALL SEPARATIONS FOR WATER MAINS CROSSING BELOW PIPES			
Water Mains	Sewers	No joints on 10' either side	≥ 4" vertical separation
	Fuel and Oil Lines	No joints on 10' either side	≥ 4" vertical separation
	Recycled Water Mains (Secondary Treatment + Disinfection)	No joints on 10' either side	≥ 4" vertical separation
	Recycled Water Mains (Tertiary Treatment + Disinfection)	No joints on 10' either side	≥ 4" vertical separation
	Raw Water Lines	No joints on 10' either side	≥ 4" vertical separation
	Storm Drains	No joints on 10' either side	≥ 4" vertical separation
Sewers or Nonpotable Pipelines	Potable Water Mains, Raw Water Mains, or Recycled Water Mains	No joints on 10' either side	≥ 4" vertical separation
REQUIRED WALL-TO-WALL SEPARATIONS FOR WATER MAINS CROSSING ABOVE PIPES			
Water Mains	Sewers	No joints on 8' either side	≥ 4" vertical separation
	Fuel and Oil Lines	No joints on 8' either side	≥ 4" vertical separation
	Recycled Water Mains (Secondary Treatment + Disinfection)	No joints on 8' either side	≥ 4" vertical separation
	Recycled Water Mains (Tertiary Treatment + Disinfection)	No joints on 8' either side	≥ 4" vertical separation
	Raw Water Lines	No joints on 8' either side	≥ 4" vertical separation
	Storm Drains	No joints on 8' either side	≥ 4" vertical separation
Sewers or Nonpotable Pipelines	Potable Water Mains, Raw Water Mains, or Recycled Water Mains	No joints on 8' either side	≥ 4" vertical separation

R. Costs, and Work to be done by Contractor in locating, removing, relocating, protecting or temporarily maintaining such utility facilities shall be covered by written change order conforming to provisions herein pertaining to changes in Work. Owner may make changes in alignment and grade of Work to obviate need to remove, relocate, protect or temporarily maintain utility facilities or to reduce costs of Work involved in removing, relocating, protecting or temporarily maintaining such utility facilities. Changes in alignment and grade will be ordered in accordance with provisions pertaining to changes in Work.

S. Damage to underground utilities, pipelines or other facilities shown on Plans or identified by field staking or markings shall be immediately brought to attention of Owner's Representative and affected Utility, and repaired at Contractor's expense. Exact determination of location of these utilities, pipelines or other facilities shall be Contractor's responsibility. Contractor shall be solely and directly responsible for damage, injury, expense, loss, inconvenience, delay, suits, actions or damage that may result from Contractor's failure to verify or locate utilities whose existence is indicated. Costs incurred for protection of these lines or costs incurred due to presence of lines, whether or not they lie within trench prism, shall be borne in full by Contractor.

T. When it is necessary to remove, relocate, protect or temporarily maintain a utility other than

1. Existing mains or trunk-line facilities not originally shown on Plans with sufficient accuracy to allow Work to proceed according to Contract Documents or;

2. Existing service laterals or appurtenances whose presence cannot be inferred from presence of other visible facilities, such as buildings, meters and junction boxes, on or adjacent to Work site;

3. Contractor shall bear all expenses incidental to Work on utility or damage thereto. Work on utility shall be done in manner satisfactory to Utility Owner. Utility Owner will have option of doing such Work with their own forces or permitting Work to be done by Contractor.

U. No representations are made that obligations to remove, relocate, protect or temporarily maintain a utility and to pay cost thereof is not required to be borne by utility. Contractor shall investigate, to find out whether or not said cost is required to be borne by Utility Owner.

V. Liquidated damages will not be assessed for damages in delay in completion of Work, when such delay was caused by failure of Owner, Owner's Representative, Design Engineer and Utility Owner to provide for removal or relocation of utility facilities. Right is reserved to governmental agencies and to Utility Owners to enter at any time upon any street, alley, right of way or easement for purpose of making changes in their property made necessary by Work and to maintain and make repairs to their property.

1.6 Unit Prices

A. Payment for locating, potholing, exposing, and protecting existing utilities will be included in price bid for Work items for which such Work is appurtenant.

B. Payment for abandoning or removing existing utilities will be included in the price bid for Work items for which such Work is appurtenant.

PART 2 - PRODUCTS

2.1 Replacement Materials

A. Unless otherwise shown or specifically authorized in writing by Owner's Representative, reconstruct damaged utilities with new materials of same size, type and quality as that removed.

B. Vitrified clay pipe sewer crossings 8" in diameter and under shall be constructed of the following materials:

ITEM	MATERIAL	SPECIFICATION
Replacement of Vitrified Clay Sewer Pipe 8" Diameter or Less	Plain-End VCP	ASTM C700 (At least two lengths of sewer pipe shall be used to cross trench section.)

Replacement of Vitrified Clay Sewer Pipe Couplings 8" Diameter or Less	Compression Coupling	ASTM C425; Band seal couplings or accepted equal

PART 3 – EXECUTION

3.1 Preparation

A. Section 4216 of California Government Code states Contractors "planning to conduct any excavation shall contact the appropriate regional notification center at least two working days but not more than 14 calendar days, prior to commencing excavation."

B. In Southern California, the appropriate regional notification center is Underground Service Alert of Southern California (DigAlert) (1-800-422-4133) or 811.

C. In Northern and Central California, the appropriate regional notification center is Underground Service Alert North (1-800-227-2600) or 811.

D. In South Lake Tahoe, the appropriate regional notification center is South Shore Utility Coordinating Council (530) 541-3447.

E. Contractor shall be responsible for damage done to public or private property shown on Plans or marked or staked in field.

F. Construction Plans will be provided to Utilities by Owner.

G. Construction schedule shall be provided to Utilities by Contractor. Coordinate construction schedule with Utility Owner's requirements.

H. Notify Utility Owner 2 working days in advance of utility crossing construction. Coordinate construction schedule with utility service requirements.

I. Expose all utilities 1,300' ahead of pipe and conduit laying operations to allow for adjustment in alignment or grade line, to verify pipe and utility location and depths, types materials, conditions and sizes for ordering proper transition and/or tie-in fittings, and so Owner's Representative may verify that no buried utilities interfere with proposed construction. Identify true location and depth, type, material, condition and size of utilities and service connections. Where potholing or exposure is not done, repair or replacement of damaged utilities and necessary horizontal and vertical realignments shall be paid for entirely by Contractor.

J. Electrical utilities may maintain energized underground electrical power lines in immediate vicinity of Work. These power lines represent an extreme hazard from electrical shock to construction personnel or equipment coming in contact with them. State law requires parties planning excavations in public right of way to contact Utilities for locations of their underground facilities. Contractors, their employees, and other personnel working near underground power lines must be warned to take adequate protective measures. (See: OSHA Std. 1926-651(A)). Notify electrical Utility to arrange, if possible, to have these lines de-energized

when Work reaches their immediate vicinity. Cost of such temporary arrangements shall be borne by Contractor.

K. Electrical utility companies may maintain energized aerial electrical power lines in immediate vicinity of Work. Do not consider these lines to be insulated. Construction personnel working near these lines are exposed to an extreme hazard from electrical shock. Contractors, their employees and construction personnel working on this project must be warned of the danger and instructed to take adequate protective measures, including maintaining a minimum of 10' clearance between lines and construction equipment and personnel. (See OSHA Std. 1926.550(A)15). As an additional safety precaution, call electrical utility company to arrange, if possible, to have these lines de-energized or relocated when Work reaches their immediate vicinity. Cost of such temporary arrangements shall be borne by Contractor.

L. It shall not be the responsibility of either Owner or their Representative to verify need for electrical Utility shutdowns, nor to verify shutdowns have taken place.

M. Before hot-tapping asbestos-cement pipe, the following items shall be on-hand:

1. Hot-tapping equipment of appropriate size
2. Water source and means of application sufficient to maintain continuously wetted cutting area
3. Waste disposal bags
4. OSHA-required safety equipment including, but not limited to disposable coveralls, full-face air-supplied respirators, rubber boots, hard hats, eye protection, and gloves.

3.2 Protection

A. Protect existing active services and utilities in place against damage from construction.

B. Maintain existing services and utilities in service. Do not shut down active services or utilities except where previous written authorization has been obtained from Owner's Representative and Utility.

C. Use pipe and duct supports as needed to protect utilities.

D. Notify Utilities in writing at least 3 working days before authorized shutdown.

E. Unauthorized shutdowns shall only be made where necessary, as an emergency measure, to protect property or human life until proper authorization can be obtained.

3.3 Removal and Reconstruction

A. Utilities relocated or rebuilt for Contractor's convenience, shall be relocated or rebuilt at Contractor's expense. Repair, replacement or relocation of buried utilities shall be completed at Contractor's expense by either Utility's forces, or by a contractor accepted by Utility in writing and properly licensed to perform Work.

B. Utility relocation or reconstruction shall conform to applicable Standard Details and Specifications. Provide temporary service for disconnected Utility.

C. Replace damaged or removed utilities in kind, except as otherwise shown or authorized by Owner's Representative. Reconstruct utilities with new material of same size, type and quality as that removed.

3.4 Backfill and Compaction

A. Backfill and compact under and around utilities so no voids are left.

B. Before replacing a utility, backfill trench and compact to elevation 1 foot above top of ends of utility. Excavate cross trench of proper width for utility.

C. Sand-cement slurry may be used as backfill to ease compaction. Sand-cement slurry shall consist of one sack (94 pounds) Portland cement per cubic yard of slurry. Add sufficient moisture for workability without exceeding 6" slump. Submit specific methods and procedures to Owner's Representative prior to construction.

3.5 Servicing Electrical Utilities

A. Protect and interface with servicing Electrical Utility per Section 26 05 10.

3.6 Connecting to Existing Water Mains

A. Contact Water Utility Owner 72-hours before connecting to existing mains.

B. Comply with all Utility requirements for tapping existing lines, including field directives from Utility inspectors.

C. Wet connections (hot taps) shall be made as follows:

D. Tap existing lines while under pressure.

E. Schedule tapping procedure with Water Utility so as not to interfere with normal operation of existing pipe line.

F. Cut tapped pipe in presence of Water-Utility-designated inspector to full nominal diameter of tapping valve.

G. Wet connections (hot-taps) to asbestos cement pipe shall proceed as follows:

1. Tap existing lines while under pressure.

2. Schedule tapping procedure with Water Utility so as not to interfere with normal operation of existing pipe line.

3. Excavate around asbestos-cement pipe sufficient distance to assure adequate tool clearance in area to be tapped. Take care to avoid abrading or chipping pipe.

4. Clean and wash pipe surface with water in area to be cut.

5. Attach tapping equipment around asbestos-cement pipe.

6. Apply water to area being cut until tapping is complete.

7. Cut tapped pipe in presence of Water-Utility-designated inspector to full nominal diameter of tapping valve.

8. Tap pipe, keeping entire exposed area of pipe in vicinity of tap wet during operation so no friable asbestos cement dust is created.

9. Detach tapping equipment and move to next location, repeating above procedure.

10. Upon completion of final tap, thoroughly wash tapping equipment with clean water to remove all asbestos-cement debris. Drain was wash water into trench bottom. Remove washed tapping equipment from trench.

11. Install other pipe and fittings as needed to complete Work taking care to avoid abrasion or chipping of asbestos-cement pipe.

12. When all pipe Work is complete, thoroughly wash hands, boots, and any small tools with clean water to remove all asbestos-cement debris. Drain wash water to trench bottom.

13. Remove disposable protective clothing, HEPA filters, tapping coupons, and other asbestos-contaminated materials, debris or containers and legally dispose of them in sealed impermeable bags or other closed impermeable containers delivered to a landfill accepting encapsulated asbestos.

14. Exit ditch in manner that no asbestos-cement debris will contaminate clothing, boots, tools or other clothing.

15. Backfill trench.

H. Dry connections shall be made as follows:

1. Schedule tapping procedure with Water Utility so as not to interfere with normal operation of existing pipe line.

2. Coordinate with Water Utility to minimize downtime.

3. Arrange for presence of Water Utility inspector.

4. Water Utility shall operate valves to isolate main.

5. Verify Water Utility pipeline is isolated and relieved of pressure before cutting main.

6. Cut tapped pipe in presence of Water-Utility-designated inspector to full nominal diameter of tapping valve.

7. Place 2 ounces of HTH in pipe at each point where existing main is cut.

8. Swab new pipe and fittings internally with an accepted chlorine solution.

I. Make perpendicular connections to asbestos-cement pipe by making wet connection (hot tap). Make longitudinal connections to asbestos-cement pipe by removing entire pipe piece or snap-cutting per Section 02 41 15. Replace removed segment with AWWA C900 Class 200 PVC pipe, AWWA C151 Class 350 ductile iron pipe, or other material accepted by Water Utility in presence of Water-Utility-designated inspector. Swab new pipe and fittings internally with an accepted chlorine solution.

3.7 Field Quality Control

A. Field testing shall include:

ITEM	TEST FOR	TEST STANDARD (ASTM OR OTHER TEST STANDARD)	FREQUENCY	FIRST TEST PAID FOR BY	RETESTS PAID FOR BY
Cement-Sand Slurry Backfill	Slump (6" Maximum)	ASTM C143	1 each batch	Owner	Contractor
Connection to Existing Water Line	Verification of Proper Connection	Make cut in presence of Owner's Representative and present coupon to Owner's Representative Coupon shall match full valve nominal size.	1 each connection	Contractor	Contractor

END OF SECTION

SECTION 31 11 00
CLEARING AND GRUBBING

PART 1 GENERAL

1.1 Work Included

A. CLEARING AND GRUBBING consists of furnishing transportation, labor, materials, and equipment to:

1. Removal and disposal of all rubbish, debris, and other objectionable material from within the limits of the project as specified.

2. Stripping the entire area within the limits of work of trees, shrubs, weeds, and other vegetative growth of any nature, and disposal of same

3. Grubbing the entire area within the limits of work of all roots and vegetative material to the full depth of the root system, and disposal of same

4. Removal of existing pavement markers, pavement markings, traffic lines and pavement legends and weeds along cracks, joints, and gutter lip.

5. Dust alleviation and control during the course of the work

6. Any required abandonment of system facilities, including cutting, capping and slurry filling of abandoned pipelines.

7. Provision of all materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are obviously necessary to complete the work specified.

8. Any required salvage of existing facilities

1.2 Related Requirements

A. BASIC SITE MATERIAL AND METHODS Section 02 00 01

1.3 References

A. State of California Department of Transportation Standard Specifications (SS):

1. Section 4 Scope of Work
   Subsection 4-1.13 Cleaning Up

2. Section 15 Existing Highway Facilities

3. Section 17 GENERAL
   Subsection 17-2 Clearing and Grubbing

PART 2 - PRODUCTS

(NOT USED)

PART 3 - EXECUTION

3.1 Performance

A. Clearing and grubbing shall be in accordance with applicable requirements of SS Section 17-2, "Clearing and Grubbing," as amended below.

1. Ground cover of every nature, including trees, shrubs, weeds, and vegetation of any nature, shall be removed to the full depth of the root system.

2. Weed removal shall be accomplished by method(s) that result in complete removal of the weed. Method used must be approved by the Engineer. Surface and crack cleaning shall be accomplished by sweeping, and not by air blowers.

3. Prior to any cutting or filling, the site shall be stripped to a sufficient depth to remove all vegetation and other deleterious materials. The minimum stripping depth shall be six inches (6"). The site shall be stripped to such greater depth, as the Engineer or the project geotechnical engineer may consider necessary to remove materials that, in their opinion, are unsatisfactory. The stripping material shall either be removed from the site or stockpiled for reuse later as topsoil where approved by the Engineer, but none of this stripped material may be used for engineered fill.

4. Contractor shall trim overhanging limbs that may be in conflict with paving and other construction activities. Tree, roots, and bush pruning shall be performed by a certified arborist and in accordance with "Pruning Standards," published by the Western Chapter of the International Society of Arboriculture. The certified arborist shall be approved in advance by the Engineer, and all pruning shall be done as directed by the Engineer and in the presence of the Engineer. Tree limbs damaged by Contractor activities shall be trimmed by certified arborist as described above.

5. Where trees are removed, the soils loosened by the roots shall be over- excavated at least to the bottom of the disturbed zone and to the width of the equipment.

6. Spoil resulting from clearing, grubbing, and stripping operations shall be removed from the entire limits of work and properly disposed of by the Contractor.

7. Materials resulting from clearing, grubbing, and stripping operations shall become the property of the Contractor, to be properly removed from the worksite and disposed of from the project site in a lawful manner, at no additional expense to the contract.

END OF SECTION

SECTION 31 22 00
GRADING

PART 1 – GENERAL

1.1 Work Included

A. Rough and finish grading of site.

B. Dust alleviation and control.

C. Cleanup and disposal of excess material.

D. Provision of all material, equipment, and apparatus not specifically mentioned herein or noted on the plans, but which are obviously necessary to complete the work specified.

E. The Contractor shall be familiar with the soil conditions on the site, whether covered in the Soils Report or not, and shall thoroughly understand all recommendations associated with the grading.

F. The Contractor shall obtain a permit from the State Department of Industrial Relations, Division of Occupational Safety and Health (DOSH), "Cal/OSHA", for trenches or excavations five feet (5') deep or deeper. The Contractor shall submit a copy of the permit to the Engineer prior to initiating any work requiring such permit.

G. The Contractor shall comply with erosion control measures to prevent run-off of sediment and other unsuitable materials to the storm drain system.

1.2 Related Requirements

A. Section 00 31 32 Geotechnical Data

B. Section 31 23 13 Subgrade Preparation.

C. Section 32 12 16 Asphalt Paving

1.3 Reference Standards

A. State Specifications.

B. American Society for Testing and Materials (ASTM).

1.4 Quality Assurance

A. All work under this section will be subject to the inspection and approval of both the Engineer and an approved geotechnical engineer registered in California. Compaction testing either shall be performed by the geotechnical engineer or by a County approved independent testing laboratory under the supervision of a California registered geotechnical engineer.

B. The geotechnical engineer shall make enough visits to the site to insure ongoing familiarity with the progress and quality of the work. The geotechnical engineer shall make a sufficient number of field observations and tests to allow the forming of an opinion regarding the adequacy of the site preparation, the acceptability of the native or import fill material, and the extent to which the degree of compaction meets the specification requirements and the project needs.

C. Any fill where the site preparation, type of material, or compaction is not approved by the geotechnical engineer shall be removed and/or recompacted until the requirements are satisfied and approved by said geotechnical engineer. As required, fill material shall be tested for pollutants and certified for suitability by the geotechnical engineer.

D. On County-funded Projects, services of the geotechnical engineer and/or testing laboratory shall be retained by, paid for by the County. On all other projects, the geotechnical engineer and/or testing laboratory shall be retained by, paid for by the developer. For County-funded Projects, testing will be paid for by the County; however, testing or retesting caused by unsatisfactory contract operations shall be paid for by the Contractor.

E. The geotechnical engineer shall provide quality assurance reports as required and accepted by the Engineer.

F. Finish surface of the site shall not vary more than one tenth of a foot (0.10') from that called for on the plans or detail drawings.

G. Percentage of compaction specified shall be the minimum acceptable. Unless otherwise specified, 90% will 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 Designation D 1557.

1.5 Measurement And Payment

A. Except as otherwise provided, site grading shall be paid for in accordance with Sections 19, *"Earthwork,"* of the *State Specifications*. Earthwork/site grading shall be paid for as bid, either in a lump sum or based on cubic yardage measured in place by the approved surveying methods.

B. Contractors intending to use County water shall make arrangements with the County's Finance Department for metered connections and shall pay for all water at County rates, plus the required meter deposit.

1.6 Soils Report

A. A soil investigation report has been prepared for the project. Unless otherwise specified, it is intended that all earthworks be performed in accordance with the provisions of the report.

1.7 Soils Borings

A. Subsurface soil investigations have been made at the site and logs of the test holes are available with the Soils Report. Such investigations have been made for the purposes of design only and neither the Engineer nor the geotechnical engineer guarantee adequacy or accuracy of the data, or that data are representative of all conditions to be encountered. Such information is made available for general information only and shall not relieve the Contractor of the responsibility for making his own investigations.

1.8 Project Conditions

A. Protect excavations by shoring, bracing, sheeting, underpinning, or other methods as required, to prevent cave-ins or loose dirt from entering excavations. Barricade open excavations and post warning lights at work adjacent to public streets and walks.

B. Underpin adjacent structure(s), including utility service lines, which may be damaged by excavation operations.

C. Promptly repair damage to adjacent facilities caused by earthwork operations. Cost of repair shall be at the Contractor's expense.

D. Promptly notify the Engineer of unexpected subsurface conditions.

1.9 Existing Conditions

A. If a topographic survey of the property has been included in the drawings, it is for reference only. Upon beginning the earthwork, the Contractor represents that he has inspected the site and has satisfied himself as to actual grades and levels and the true conditions under which the work is to be performed.

PART 2 – PRODUCTS

2.1 Requirements For General Engineered Fill

A. All fill material shall be approved by the Engineer. All work shall conform with the applicable requirements of *"Earthwork,"* of the *State Specifications*.

PART 3 – EXECUTION

3.1 Preparation

A. Verify existing subgrades as shown on the drawings. Designate and identify datum elevation and project engineering reference points. Set required lines, levels, and elevations.

B. Do not cover or enclose work before obtaining required inspections, tests, approvals, and location recording.

3.2 Existing Utilities

A. Before starting grading and excavation, establish the location and extent of underground utilities in the work area. Exercise care to protect existing utilities during earthwork operations. Perform excavation work near utilities by hand and provide necessary shoring, sheeting, and supports as the work progresses.

B. The existing utility lines to remain passing through the work area shall be maintained, protected, relocated or extended, as required.

C. Protect active utility services uncovered by excavation.

D. Remove abandoned utility service lines from areas of excavation. Cap, plug, or seal abandoned lines and identify termination points at grade level with markers.

E. Accurately locate and record abandoned and active utility lines rerouted or extended on project record documents.

3.3 Site Grading

A. Perform grading within contract limits, including adjacent transition areas, to new elevations, levels, profiles, and contours indicated. Provide uniform levels and slopes between new elevations and existing grades.

B. Grade surfaces to assure areas drain away from structures and to prevent ponding and pockets of surface drainage. Provide subgrade surfaces free from irregular surface changes and as follows:

1. Rough Grading: Plus or minus one tenth of a foot (0.10') subgrade tolerance. Finish required will be that ordinarily obtained from either blade- grader or scraper operations.

2. Subgrade: Provide subgrade surface free of exposed boulders or stones exceeding four inches (4") in greatest dimension in paved areas; two inches (2") in planting areas; one inch (1") in lawn areas.

3. Paved Areas: Shape surface of subgrade areas to line, grade, and cross- section indicated. Provide compacted subgrade suitable to receive paving base materials. Subgrade tolerance plus zero inches (+ 0"), minus one-half inch (- 1/2").

4. Granular Base: Grade subgrade surface smooth and even, free of voids to the required subgrade elevation. Provide compacted subgrade suitable to receive granular base materials. Tolerance one-half inch (1/2") in ten feet (10').

5. Drainage Swales: Grade to profiles indicated.

3.4 Excavating

A. Excavate to elevations and dimensions shown. Remove loose, soft materials, and all organic matter. Existing concrete walks shall bear on approved undisturbed bearing soil.

B. Earth excavation shall include the satisfactory removal and disposal of all materials encountered, regardless of the nature of the materials, the condition of the materials at the time they are excavated, or the manner in which they were excavated, except materials classified as rock excavation.

C. Excavate unsatisfactory soil materials extending below required elevations to depth as directed. Such extra excavation will be paid for as a change in work. Obtain Engineer's written authorization before performing extra excavation work.

D. Shore, sheet, or brace excavations as required to maintain securely. Remove shoring and bracing as backfilling progresses when banks are safe against caving.

E. Do not excavate footings or slabs to the full depth when freezing temperature may be expected unless footings or slabs are placed immediately after the excavation has been completed. Protect excavation bottoms from freezing when the placing of concrete is delayed.

3.5 Drainage

A. Provide necessary pumps and drainage lines and maintain excavations, including footings and pits, free from water during excavating and subsequent work operations.

B. Provide drainage of the working area at all times.

3.6 Filling, Backfilling, And Compacting

A. All work shall conform to Section 19, "Earthwork," of the State Specifications.

B. Obtain Engineer's inspection and approval of subgrade surfaces prior to filling operations. Scarify, dry, and compact soft and wet areas; remove and replace unsuitable subgrade materials with an approved compacted fill material. Take correct measures before placing fill materials.

3.7 Testing

A. Testing and inspection shall be performed by a qualified independent testing laboratory, under the supervision of a registered professional engineer specializing in geotechnical engineering. The County or the Developer shall provide and pay for testing and inspection during earthwork operations, except as noted in the Special Provisions of these specifications.

3.8 Field Quality Control

A. Provide field quality control soils testing and inspection during earthwork operations.

B. Contractor shall provide adequate notice, cooperate with, provide access to the work, obtain samples, and assist testing agency and their representatives in execution of their function.

C. Test proposed fill materials to verify suitability for use, gradation of material, moisture-density relation, design bearing value, and percent of organic materials.

D. When, during progress of work, field tests indicate that installed compacted materials do not meet specified requirements, provide additional compaction until specified density is achieved, or remove and replace defective materials with new materials as directed by the Engineer. Cost of additional labor, materials, and testing to attain specified density shall be at the Contractor's expense.

3.9 PROTECTION

A. Furnish, place, and maintain all supports, shoring, and sheet piling which may be required for the sides of the excavation or for protection of adjacent existing improvements.

B. Maintain all benchmarks, monuments, and other reference points. If disturbed or destroyed, replace as directed.

3.10 DISPOSAL OF WASTE MATERIAL

A. Stockpile, haul from site, and legally dispose of waste materials, including excess excavated materials, rock, trash, and debris.

3.11 MAINTENANCE

A. Protect graded areas from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded, and damaged areas.

B. Where completed areas are disturbed by construction operations or adverse weather, scarify, reshape, and compact to required density.

END OF SECTION

SECTION 31 23 13
SUBGRADE PREPARATION

PART 1 – GENERAL

1.1 Work Included

A. Finish grading of roadway subgrade and subgrade preparation.

B. Dust alleviation and control

C. Cleanup and disposal

D. Provision of all materials, equipment, and apparatus not specifically mentioned herein or noted on the plans, but which are obviously necessary to complete the work specified.

1.2 Related Requirements

Project Specifications:

A. Section 31 22 00 Grading

1.3 Measurement And Payment

A. Except as provided, roadway subgrade preparation shall be paid for under other items of work and no additional compensation shall be made therefor.

1.4 Reference Standards

A. State of California Department of Transportation Standard Specifications (SS)

1. Section 19 Earthwork
   a. Subsection 19-2 Roadway Excavation
2. Section 39 Asphalt Pavement
   a. Subsection 39-2.01C(3) Surface Preparation
3. Section 40 Concrete Pavement
   a. Subsection 40-1.03F Placing Concrete

B. American Society for Testing and Materials (ASTM)

1. ASTM D 1557 Standard Test Methods for Laboratory Compaction

1.5 Quality Assurance

A. All work under this section will be subject to the inspection and approval of both the Engineer and an approved geotechnical engineer registered in California.

Compaction testing either shall be performed by the geotechnical engineer or by a County approved independent testing laboratory under the supervision of a California registered geotechnical engineer.

B. The geotechnical engineer shall make enough visits to the site to insure ongoing familiarity with the progress and quality of the work. The geotechnical engineer shall make a sufficient number of field observations and tests to allow the forming of an opinion regarding the adequacy of the site preparation, the acceptability of the native or import fill material, and the extent to which the degree of compaction meets the specification requirements and the project needs.

C. Any fill where the site preparation, type of material, or compaction is not approved by the geotechnical engineer, shall be removed and/or recompacted until the requirements are satisfied and approved by said geotechnical engineer. As required, fill material shall be tested for pollutants and certified for suitability by the geotechnical engineer.

D. On the County-funded Projects, services of the geotechnical engineer and/or testing laboratory shall be retained by and paid for by the County. On all other projects, the geotechnical engineer and/or testing laboratory shall be retained by and paid for by the developer. For the County-funded projects, testing will be paid for by the County; however, testing or retesting caused by unsatisfactory contract operations shall be paid for by the Contractor.

E. The geotechnical engineer shall provide quality assurance reports as required and accepted by the Engineer.

F. Finish surface of the prepared subgrade shall not vary more than one-tenth foot (0.10') from that called for on the plans or detail drawings.

G. Percentage of compaction specified shall be the minimum acceptable. Unless otherwise specified, 90% will 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 Designation D 1557.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 – EXECUTION

3.1 <u>Subgrade Preparation</u>

A. The Contractor shall accurately grade and prepare the subgrade section to the lines and grades called for on the plans and detail drawings, with due provision for future surface improvements and in accordance with SS Subsection 19-2, "Roadway Excavation", 39-2.01C(3), “Surface Preparation”, and 40-1.03F, “Placing Concrete”.

B. Upon completion of roadway earthwork operations, the entire work area shall

be scarified to a minimum depth of six inches (6"), or as called for on the plans and detail drawings, wetted or dried to an appropriate moisture content, and compacted to the lines and grades called for on the plans and detail drawings, at a density of not less than ninety-five percent (95%), unless otherwise noted on the plans, of maximum dry density as determined by the procedure set forth in ASTM D 1557.

C. The Contractor shall, at all times, maintain the subgrade surface in such condition as to readily drain effectively. Vehicular and equipment traffic shall be distributed across the prepared surface in such a manner as to prevent continual operation in one path. The Contractor shall repair any damage to the prepared subgrade to the satisfaction of the Engineer, at no additional expense to the contract.

D. Storage or stockpiling of heavy loads on the roadway subgrade will not be permitted. Storage within the right-of-way shall be only upon the approval of the Engineer.

E. The Contractor shall be responsible for any failure of the underlying native soils during the course of the work and shall repair any damage to the satisfaction of the Engineer, at no additional expense to the Contract.

F. Finished subgrade shall be subject to the approval of the Engineer, and no subsequent material or improvement shall be placed thereon until approval for it has been obtained from the Engineer.

END OF SECTION

SECTION 31 25 00
EROSION AND SEDIMENTATION CONTROLS

PART 1 – GENERAL

1.1 Work Included

A. Erosion and sediment control through the use of the following:

1. Dikes
2. Swales
3. Grade stabilization structures
4. Sediment basins
5. Sediment traps
6. Silt fences
7. Straw and bales
8. Planting and ground coverage
9. Maintenance of erosion control improvements
10. Cleanup and removal of silt from roadways on-site and off-site

B. Dust alleviation and control by watering, matting, planting, etc.

C. Provision of all materials, equipment, and apparatus not specifically mentioned herein or noted on the plans, but which are obviously necessary to complete the dust and erosion control.

1.2 Related Requirements

Not used

1.3 Measurement And Payment

A. Water Pollution Control The contract lump sum price paid for bid item "Water Pollution Control Program" shall include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidentals, and for doing all work involved in Water Pollution Control Program. Work includes, but not limited to, submitting water pollution control plan for the County's review and approval prior to project construction, participation in stormwater construction inspections, use of best management practices during construction to prevent construction related pollutants from entering the storm drain system, maintenance of storm water pollution prevention measures, and removal and disposal of measures after completion of work. All work shall be complete in

place as accordance specifications, permits, and as directed by the Engineer.

1.4 Reference Standards

A. San Bernardino County Land Use Services Department Building & Safety Division, "Guidelines for Erosion and Sediment Control Plans"

B. State of California Department of Transportation Standard Specifications (SS) Section 21 Erosion Control

C. American Association of State Highway and Transportation Officials (AASHTO)

1.5 Quality Assurance

A. All work shall be done to the satisfaction of the designated representative of the geotechnical consultant and shall meet the approval of the Engineer.

PART 2 - PRODUCTS

2.1 General

A. All materials shall conform to applicable requirements of SS Section 21, "Erosion Control", listed as follows and meeting the requirements of San Bernardino County Land Use Services Department Building & Safety Division, "Guidelines for Erosion and Sediment Control Plans"

2.2 Topsoil

The soil on the site shall meet the following criteria:

A. The soil shall contain no more than seventy percent (70%) sand (as defined by USDA, Soil Conservation Service). This is to provide enough available water- holding capacity to support plant growth.

B. The soil shall have sufficient porous base (greater than thirty percent (30%)) to permit adequate root penetration and provide for exchange of gases and water.

C. The soil shall be free from any material harmful to plant growth. Topsoil that has been graded from the site shall be stockpiled, whenever possible, for reapplication on exposed graded slopes during the final grading stage. The soil shall be disked into the existing soil to provide for a good bond.

2.3 Seed

A. A seed mix similar to the native plants and grasses or the following seed mix shall be applied at above the minimum rate specified below:

Seed Type	Minimum Application Rate (Pounds per Acre)
Blando Brome	30
Annual Ryegrass	20

B. All seed shall be certified live and delivered to the site tagged and labeled in accordance with the California Agricultural Code and shall be acceptable to the County Agricultural Commissioner.

2.4 Fertilizer

A. Fertilizer shall contain a minimum of sixteen percent (16%) nitrogen, twenty percent (20%) available phosphoric acid, zero percent (0%) water soluble potash, and fifteen percent (15%) sulfur. It shall be uniform in composition, dry and free flowing, pellet or granular.

B. All fertilizer shall be delivered in unbroken or unopened containers, labeled in accordance with the applicable State regulations, and bearing the warranty of the producer for the grade furnished.

2.5 Straw Mulch

A. Straw mulch shall be of un-rotted small grain straw and shall be applied at the rate of four thousand pounds (4,000#) per acre. Mulch materials shall be relatively free of all noxious weeds. If the straw is applied with a blower, it shall be chopped in lengths not shorter than six inches (6").

2.6 Straw Bales

A. Straw shall be derived from wheat, oats, or barley. The Contractor shall furnish evidence that clearance has been obtained from the County Agricultural Commissioner, as required by law, before straw obtained from outside the County in which it is to be used is delivered to the site of the work. Straw that has been used for stable bedding shall not be used.

2.7 Silt Fence

A. Filter fabric shall be a pervious sheet of synthetic polymer composed of at least eighty-five percent (85%) by weight ethylene, propylene, amide, ester, or vinylidene yarn, woven or non-woven, and shall contain stabilizers and/or inhibitors to resist deterioration by heat, water and ultra-violet light. The fabric shall conform to the following criteria:

1. The equivalent opening size (U.S. Standard Sieve) shall be within the range 70-100.

2. The tensile strength (ASTM D 1682 G "Test Method for Breaking Load and Elongation of Textile Fabric") shall be at least one hundred twenty pounds (120#). The strength of fabric required depends on the wire support fence. The strength given is the minimum for a six-inch (6") square mesh wire support fence. If extra strength fabric is used without a support fence, the strength required shall be two hundred pounds (200#) minimum with posts spaced on six foot (6') centers.

B. Posts for silt fences shall be either four-inch (4") square wood or 1.33 pounds per linear-foot steel with a minimum length of five feet (5'). Steel posts shall have projections for fastening wire to them.

C. Wire fence reinforcement for silt fences shall be a minimum of forty-two inches (42") in height, shall be a minimum of 14 gauge, and shall have a maximum mesh spacing of six inches (6").

2.8 Lumber

A. Lumber shall be construction grade redwood rough finished, or approved equal.

2.9 Pipes

A. Pipes and conduits shall conform to applicable sections of these specifications.

PART 3 - EXECUTION

3.1 Job Conditions

A. Equipment and materials shall be stored as to ensure the preservation of its quality and fitness for the work. Equipment and materials shall be located on the construction site so it can be used on short notice.

B. Erosion and sediment control measures shall be in place during the rainy season (October 1st through April 30th) and shall be frequently serviced to maintain their full function. However, for projects having the potential to cause water pollution, the Storm water Pollution Prevention Plan (SWPPP) must beavailable on site and at all times and must be implemented year-round throughout the duration of the construction project. For the foregoing type of projects, no construction activity shall be performed until the SWPPP has been certified and appropriate Best Management Practices (BMPs) have been implemented in accordance with Section 2 of the California Storm water BMP Handbook for Construction as developed by the California Storm water Quality Association (CASQA), and such other storm water pollution regulatory agency implementing guidelines.

C. Dust control measures shall be implemented at all times during the construction period until no longer required. Contractor shall pay for the removal of all silt from the storm drain system and the inspection thereof.

3.2 Temporary And Permanent Planting Of Exposed Soils

A. Before seeding, necessary drainage controls such as dikes at tops of slopes and swales on slope benches shall be installed to prevent runoff from eroding slopes before grass is established. Temporary drainage controls shall remain in place until permanent drainage facilities are installed or until slopes are stabilized and temporary controls are no longer necessary for continued slope stability.

B. The area to be seeded shall have a firm seed bed that has previously been roughened by scarifying, disking, harrowing, chiseling, or track-walking, or otherwise worked to a depth of two inches (2") to four inches (4") unless a roughed condition already exists. No implement shall be used that will create an excessive amount of downward movement of soil or clods on sloping areas. The seedbeds may be prepared at the time of completion of earth-moving work.

C. Seeding, fertilizing, and mulching shall be done by October 1st of any year.

D. Slopes above critical areas, such as a water supply reservoir or an existing residence, shall be stabilized by October 1st of any year. Irrigation shall be used if rainfall is insufficient to establish protection by this date.

E. Seed shall be distributed uniformly over the seedbed by hand broadcasting, hydro-seeding or other approved method. Seed shall be covered to a depth of one-quarter to one-half inch (1/4"-1/2"), except when seed is hydraulically applied with a mulch. Seed shall not have a soil cover greater than one inch (1").

F. Fertilizer shall be distributed uniformly over the seedbed at a rate of not less than five hundred pounds (500#) per acre. Fertilizer shall be applied in any way that will result in uniform distribution. Fertilizer shall be incorporated into the soil if possible. Incorporation may be as part of the seedbed preparation or as part of the seeding operation. Fertilizer may also be applied as a mix with seed and fiber in a slurry (see Paragraph H below).

G. A mulch cover shall be distributed uniformly over the surface of the seeded area. Mulching shall follow immediately after the seeding.

    1. For slopes flatter than 2:1 and within a fifty-foot (50') access of a straw blower, the following procedure shall be used: Straw mulch shall be applied at the rate of four thousand pounds (4,000#) per acre. The mulch shall be applied by hand, blower or other suitable equipment. The mulch shall be anchored in place using hand tools, mulching rollers, disks, nets, chemical tackifiers or other suitable means.

    2. For slopes steeper than two to one (2:1), mulch shall be applied hydraulically as specified in Item H, below.

H. Hydro-seeding is defined as the simultaneous application of seed, fertilizer, and mulch in a slurry.

1. The hydro-seeder shall be equipped with a built-in continuous agitation system of sufficient operating capaCountyto produce a homogeneous slurry and with a discharge system that applies the slurry to the slopes at a continuous and uniform rate. Seed shall not remain in the slurry longer than thirty (30) minutes. The slurry shall contain the required fertilizer (see preceding Item F) and shall also contain wood fiber to be applied at the rate of one thousand five hundred pounds (1,500#) of wood fiber per acre.

2. The water used shall be potable water or Class 1 or 2 agricultural irrigation water.

3. The slurry shall be continuously mixed and shall be mixed for at least five(5) minutes after the last addition before application starts. The slurry shall be applied at a rate that is non-erosive and minimizes runoff. The slurry must have fibrous and/or chemical adhesives to ensure retention of seed mix on soil slopes.

I. Irrigation is optional, except on critical areas (see Paragraph D above).

1. If irrigation is required or desired, the following procedure shall be used. The top one-inch (1") of soil of all seeded areas shall be kept moist for the first twenty-one (21) days after seeding. Moisture needs will be determined by visual observation. After twenty-one (21) days, the top six inches (6") of soil shall be kept moist until the first major rainstorm (minimum 1.0-inch per 24- hour period). The moisture level shall not be allowed to drop below fifty percent (50%) available moisture capacity.

2. Irrigation shall not exceed one-half inch (0.5") of water applied per acre per irrigation on sandy soils, and one-inch (1.0") of water applied per acre per irrigation on loam- and clay-type soils.

3. Irrigation water shall be potable or Class 1 or 2 agricultural irrigation water. Water shall be applied by sprinklers or similar devices at a non-erosive rate using the above criteria as a guide.Seeded areas shall be inspected no more than thirty (30) days after planting and no more than thirty (30) days after the first rain. Follow-up inspections shall be done between sixty (60) and ninety (90) days after the first inspection and again in the spring. The spring inspection shall establish any corrective measures necessary before the next rainy season. If, at the sixty (60) day inspections, the vegetation is not established and/or erosion is expected to continue, slopes shall be reseeded and/or repaired. Eroded slopes shall be smoothed over, including the filling of rills and/or gullies, before reseeding starts. The reseeding operation shall follow the specifications given above.

3.3 Temporary Dikes

A. The top width shall be a minimum of two feet (2').

B. The height of compacted earth fill dike shall be a minimum of eighteen inches (18") measured from the existing ground at the upslope toe to the top of the

dike and at least twelve inches (12") above any outlet pipe. The maximum allowable water depth in the diked areas shall not exceed thirty inches (30").

C. The side slopes shall be 2:1 or flatter.

D. The grade along the face of the dike (flow area) shall be dependent on topography, but shall be a minimum of one percent (1%) (sufficient grade to drain) to an adequate outlet. Drainage must be positive. The "flow area" of the dike is defined as the upslope portion of the dike face and adjacent ground surface over which diverted runoff water flows.

E. The flow area shall be stabilized:

1. Where the slope of the flow area exceeds five percent (5%); or

2. Where the slope of the flow area is one percent (1%) to five percent (5%) and the maximum flow veloCountyfrom the ten (10) year frequency storm is exceeded as specified below:

Flow Area Surface	**Maximum VeloCounty(Feet per second)**
Sand and Sandy Loam	2.5
Silt Loam	3.0
Sandy Clay Loam	3.5
Clay Loam	4.0
Clay, Fine Gravel, Graded Loam to Gravel	5.0
Graded Silt to Cobbles	5.5
Shale, Hardpan, and Course Gravel	6.0

F. Stabilization, when required by Paragraph E above, shall be:

1. In accordance with the San Bernardino County Land Use Services Department Building & Safety Division, "Guidelines for Erosion and Sediment Control Plans", when the dike intercepts runoff from a protected or stabilized area; or

2. By lining the flow area with stone that meets AASHTO M43 size No. 2 or 24 in a layer at least three inches (3") thick and pressed into the soil. The lining shall extend up the upslope side of the dike to a height of at least

eight inches (8") measured vertically from the upslope toe and shall extend upslope from the upslope toe a distance sufficient to include the flow area.

G. Diverted runoff from a protected or stabilized area shall flow directly to a grade stabilization structure and/or receiving water channel. Diverted water from a disturbed or exposed upland area shall flow to a sediment trap or a sediment basin or to an area protected by these practices.

H. All dikes shall be machine-compacted with the tires or tracks going over at least ninety percent (90%) of the surface. There shall be a maximum of six inches (6") of lift between each compaction.

I. The dike shall be inspected periodically and maintained as required.

3.4 Temporary Swale

A. The bottom width shall be a minimum of seven feet (7') and the bottom shall be level.

B. The depth shall be a minimum of one foot (1').

C. The side slope shall be two to one (2:1) or flatter (flat enough to allow construction traffic to cross if desired).

D. The grade shall be dependent on topography, but shall be a minimum of one percent (1%) (sufficient grade to drain) to an adequate outlet. Drainage must be positive.

E. The swale shall be stabilized:

1. Where the slope of the swale bottom exceeds five percent (5%), or

2. Where the slope of the swale bottom is one percent (1%) to five percent (5%) and the maximum flow veloCountyfrom the 10-year frequency storm is exceeded as specified below:

Swale Surface	Maximum VeloCounty(Feet per Second)
Sand and Sandy Loam	2.5
Silt Loam	3.0
Sandy Clay Loam	3.5
Clay Loam	4.0

Clay, Fine Gravel, Graded Loam to Gravel	5.0
Graded Silt to Cobbles	5.5
Shale, Hardpan, and Coarse Gravels	6.0

F. Stabilization, when required by Paragraph E above, shall be:

1. With grass protection when the swale receives runoff from a stabilized area; or

2. By lining the flow area with stone that meets AASHTO M43 size No. 2 or 24 in a layer at least three inches (3") thick and pressed into the soil. The lining shall extend across the bottom and up both sides of the channel to a height at least eight inches (8") vertically above the bottom.

G. At all points where the swale will be crossed by vehicles several times a day, the swale shall be stabilized according to preceding Paragraph 3.04 (F) 2, above, except that the stone lining shall be at least six inches (6") thick for the whole width of the traffic crossing.

H. The swale shall be located to take advantage of the most suitable outlet. The swale shall discharge without causing erosion at its outlet.

I. All trees, brush, stumps, obstructions and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the swale.

J. The swale shall be excavated and/or shaped to line, grade, and cross-section as required to meet the criteria specified herein, and be free of bank projections or other irregularities that will impede normal flow.

K. Fills shall be compacted as needed to prevent unequal settlement that would cause damage in the completed swale.

L. All earth removed and not needed in construction shall be spread or disposed of so it will not interfere with the functioning of the swale.

M. The swale shall be inspected periodically and maintained as required.

3.5 Temporary Grade Stabilization Structure

A. Rigid Pipe Slope Drain

1. The inlet pipe shall have a slope of three percent (3%) or steeper.

2. The top of the earth dike over the inlet pipe, and those dikes carrying water to the pipe, shall be at least one foot (1') higher at all points than the top of the inlet pipe.

3. The pipe shall be corrugated metal pipe with watertight connecting bands.

4. A riprap apron shall be provided at the outlet. This shall consist of six-inch (6") diameter rocks placed as shown on the plans.

5. The soil around and under the inlet pipe and entrance section shall be hand tamped in four-inch (4") lifts to the top of the earth dike.

6. Follow-up inspection and any needed maintenance shall be performed after each store.

B. Flexible Pipe Slope Drain

1. The inlet pipe shall have a slope of three percent (3%) or steeper.

2. The top of the earth dike over the inlet pipe, and those dikes carrying water to the pipe, shall be at least one foot (1') higher at all points than the top of the inlet pipe.

3. The inlet pipe shall be corrugated metal pipe with watertight connecting bands.

4. The flexible tubing shall be the same diameter as the inlet pipe and shall be constructed of durable material with hold-down grommets spaced no more than ten feet (10') on centers.

5. The flexible tubing shall be securely fastened to the corrugated metal pipe with metal strapping or watertight collars.

6. The flexible tubing shall be securely anchored to the slope by staking at grommets provided.

7. A riprap apron shall be provided at the outlet. This shall consist of six-inch (6") diameter rocks placed as shown on the plans.

8. The soil around and under the inlet pipe and entrance section shall be hand tamped in four-inch (4") lifts to the top of the earth dike.

9. Follow-up inspection and any needed maintenance shall be performed after each storm.

C. Paved Chute or Flume

1. The structure shall be placed on undisturbed soil or on well-compacted fill.

2. The cut or fill slope shall not be steeper than two-to-one (2:1) and shall not be flatter than twenty-to-one (20:1).

3. The top of the earth dike at the entrance, and those dikes carrying water to it, shall not be lower at any point than the top of the lining at the entrance of the structure.

4. The lining at the entrance to the structure shall extend above the crest as shown on the plans.

5. The lining shall be placed beginning at the lower end and proceeding up the slope to the upper end. The lining shall be well compacted and free of voids. The lining surface shall be reasonably smooth.

6. The entrance floor at the upper end of the structure shall have a slope toward the outlet of one-quarter to one-half inch (1/4" - 1/2") per foot.

7. The cut-off walls at the entrance and at the end of the discharge aprons shall be continuous with the lining.

8. The lining shall consist of Type 2 Portland cement concrete (3,000 psi), bituminous concrete or comparable non-erodible material.

9. An energy dissipater of adequate design shall be used to prevent erosion at the outlet.

3.6 Sediment Basins

A. Areas under the embankment and any structural works shall be cleared, grubbed, and stripped of any vegetation and root mat. In order to facilitate cleanup and restoration, the basin area shall be cleared also.

B. A cut-off trench shall be excavated along the centerline of earth-fill embankments. The minimum depth shall be two feet (2'). The cut-off trench shall extend up both abutments to the riser crest elevation. The bottom width shall be wide enough to permit operation of excavation and compaction equipment and a minimum of four feet (4') in width. The side slopes shall be no steeper than one to one (1:1). Compaction requirements shall be the same as those for the embankment. The trench shall be dewatered during the backfilling and compacting operations.

C. Fill material for the embankment shall be taken from approved fill areas. It shall be clean material soil free of roots, woody vegetation, oversized stones, rocks or other objectionable material. Relatively pervious materials such as sand or gravel (*Unified Soil Classes GW, GP, SW, and SP*) shall not be placed in the embankment. Areas on which fill is to be placed shall be scarified prior to placement of fill. The fill material shall contain sufficient moisture so that it can be formed by hand into a ball without crumbling. If water can be squeezed out of the ball, it is too wet for proper compaction. Fill material shall be placed in six to eight inch (6" - 8") thick continuous layers over the entire length of the fill. Compaction shall be obtained by routing the hauling equipment over the fill so that the entire surface of each layer of the fill is traversed by at least one wheel or tread track of the equipment, or by the use of a compactor. The embankment shall be constructed to an elevation ten percent (10%) higher than the design height to allow for settlement if compaction is obtained with hauling equipment. If compactors are used for compaction, the overbuild may be reduced to not less than five percent (5%).

D. The principal spillway riser shall be securely attached to the discharge pipe by welding all around and all connections shall be watertight. The pipe and riser shall be placed on a firm, smooth soil foundation. The connection between the riser and the riser base shall be watertight. Pervious materials such as sand, gravel or crushed stone shall not be used as backfill around the pipe of anti- seep collars. The fill material around the pipe spillway shall be placed in four inch (4") layers and compacted under the shoulders and around the pipe to at least the same density as the adjacent embankment. A minimum of two feet (2') of hand-compacted backfill shall be placed over the pipe spillway before crossing it with construction equipment. Steel base plates shall have at least two and one-half feet (2-1/2') of compacted earth, stone or gravel placed over them to prevent flotation.

E. The emergency spillway shall not be installed in fill. Elevations, design width, and entrance and exit channel slopes are critical to the successful operation of the emergency spillway.

F. Baffles shall be constructed of four-inch by four-inch (4" x 4") posts and four- feet by eight-feet (4' x 8') by one-half inch (1/2") exterior plywood. The posts shall be set at least three feet (3') into the ground, no further apart than eight feet (8') center to center and shall reach a height six inches (6") below the riser crest elevation. The plywood shall be securely fastened to the upstream side of the posts.

G. The embankment and emergency spillway shall be stabilized with vegetation immediately following construction.

H. Construction operations shall be carried out in such a manner that erosion and water pollution will be minimized. State and local laws concerning pollution abatement shall be complied with.

I. State and local requirements shall be met concerning fencing and signs warning the public of hazards of soft sediment and floodwater.

J. Maintenance and repairs shall be carried out as follows:

1. All damages caused by soil erosion or construction equipment shall be repaired before the end of each working day.

2. Sediment shall be removed from the basin when it reaches the specified distance below the top of the riser. This sediment shall be placed in such a manner that it will not erode from the site. The sediment shall not be deposited downstream from the embankment or in or adjacent to a stream or floodplain.

K. When temporary structures have served their intended purpose and the contributing drainage area has been properly stabilized, the embankment and resulting sediment deposits shall be leveled or otherwise disposed of in accordance with the approved erosion and sediment control plan.

3.7 Sediment Traps

A. The area under the embankment shall be cleared, grubbed, and stripped of any vegetation and root mat. The pool area shall be cleared.

B. The fill material for the embankment shall be free of roots or other woody vegetation, as well, as oversized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.

C. Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to within one foot (1') of the outlet elevation. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.

D. The structure shall be inspected after each rain and repairs made as needed.

E. Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.

F. The structure shall be removed and the area stabilized when the remaining drainage area has been properly stabilized.

G. All cut-and-fill slopes shall be two-to-one (2:1) or flatter.

H. When a riser is used, all pipe joints shall be watertight.

I. When a riser is used, at least the top two-thirds of the riser shall be perforated with one-half inch (1/2") diameter holes spaced eight inches (8") vertically and ten to twelve inches (10"-12") horizontally.

J. When a pipe outlet is used, fill material around the pipe spillway shall be hand compacted in four-inch (4") layers. A minimum of one and one half feet (1.5') of hand-compacted backfill shall be placed over the pipe spillway. At least two feet (2') of backfill shall be placed if construction equipment will cross over the pipe spillway.

K. When an earth or stone outlet is used, outlet crest elevation shall be at least one foot (1') below the top of the embankment. Pipe outlets shall be at least one-and one-half feet (1.5') below the top of the embankment.

L. When a crushed stone outlet is used, the crushed stone used in the outlet shall meet AASHTO M43, size No. 2, 24, or its equivalent such as MSHA NO.2. Gravel meeting the above gradation may be used if crushed stone is not available. Crusher run is not acceptable.

3.8 Temporary Straw Bale Dikes

A. Bales shall be placed in a row with ends tightly abutting as shown on the Plan.

B. Each bale shall be embedded in the soil a minimum of four inches (4").

C. Bales shall be securely anchored in place by two (2) wood stakes driven through the bales. The first stake in each bale shall be driven toward the previously laid bale to force bale together.

D. The dike shall be inspected after each storm, and repair or replacement shall be made promptly as needed.

E. Bales shall be removed when they have served their purpose so as not to block or impede storm flow or drainage.

3.9 Temporary Silt Fence

A. The height of silt fence shall not exceed thirty-six inches (36"). On slopes, the fence line shall follow the contour as closely as possible. In small swales, the fence line shall be curved upstream at the sides to direct the flow toward the middle of the fence.

B. If possible, the filter fabric shall be cut from a continuous roll to avoid the use of joints. When joints are necessary, filter cloth shall be spliced only at a support post, with a minimum six-inch (6") overlap and both ends securely fastened to the post.

C. Posts shall be spaced a maximum of ten feet (10') apart and driven securely into the ground, a minimum of twelve inches (12"). When extra strength fabric is used without the wire support fence, post spacing shall not exceed six feet (6').

D. A trench shall be excavated approximately four inches (4") wide and four inches (4") deep along the line of posts and upslope from the barrier.

E. When standard strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least one inch (1") long, tie wires or hog rings. The wire shall extend into the trench a minimum of two inches (2") and shall not extend more than thirty-six inches (36") inches above the original ground surface.

F. The standard strength filter fabric shall be stapled or wired to the fence, and eight inches (8") of the fabric shall extend into the trench. The fabric shall not extend more than thirty-six inches (36") above the original ground surface. Filter fabric shall not be stapled to existing trees.

G. When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such a case, the filter fabric is stapled or wired directly to the posts with all other provisions of Subparagraph F, above, applying.

H. The trench shall be backfilled and the soil compacted over the toe of the filter fabric.

I. Silt fences shall be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized.

J. Silt fences and filter barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.

K. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the barriers expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.

L. Sediment deposits should be removed when deposits reach approximately one-half (1/2) the height of the barrier.

M. Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared and seeded.

3.10 Special Requirements

A. All basins and check dams shall have been pumped dry, and all debris and silt removed within twenty-four (24) hours after each storm.

B. Hydro-seed all fill and cut slopes as approved by the Engineer, with a vertical height of five feet (5') or more.

C. Changes to the erosion and sediment control plans to meet field conditions will be made only with the approval of, or at the direction of, the Engineer.

D. During the rainy season, all paved areas will be kept clear of earth material and debris. The site will be maintained so that a minimum of sediment-laden runoff enters the storm drainage system.

3.11 CONTROL OF GROUND WATER

A. The Contractor shall be solely responsible for dewatering excavations and subsequent control of ground water. The Contractor shall provide and maintain such pumps or other equipment as may be necessary to control ground water and seepage, to the satisfaction of the Engineer, until backfilling is completed.

END OF SECTION

SECTION 32 12 16
ASPHALT PAVING

PART 1 – GENERAL

1.1 Work Included

A. Work under this Section shall consist of furnishing all labor, material, equipment, tools, and services required for the placing and compacting of asphalt concrete pavement for roadways, parking lots, and walkways to the lines, grades, and dimensions shown on the drawings and as specified herein.

B. Also included shall be the repair and resurfacing of existing roadway and area paving damaged or removed during construction.

1.2 Related Requirements

Not Used.

1.3 Reference Standards

A. California Department of Transportation Standard Specifications, "State Specifications" (SS), latest edition.

B. The Contractor shall comply with the requirements of the Bay Area Air Quality Management District concerning cutback asphalt paving materials and application.

1.4 Quality Assurance

A. To validate that specified final elevations have been provided, the contractor shall provide to the County applicable grade certificates. No separate payment will be made for providing such certification. All cost therefore shall be included in the various work item(s) requiring certification.

1.5 Measurement And Payment

A. Unless otherwise specified in the Special Provisions, measurement and payment for paving and surfacing items of work will be as specified herein.

B. Aggregate Base. Measurement and payment will be on a ton basis with the truck load slip for each delivery presented to the inspector before unloading.

1. All slips shall show the supplier, net weight, identification mark of carrying vehicle and time of loading.

2. The contract price per ton of aggregate base shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all work involved in the delivery spreading, and compaction of the base aggregate, complete in place, as shown on the plans and specified in these specifications and directed by the Engineer.

C. Heating and Scarifying

1. Payment for this work will be included in the cost for asphalt concrete unless separately itemized in the bid schedule.

2. If separately itemized in the bid schedule, the quantity to be paid for will be the actual surface area to be heated and scarified. Payment then will be made by the square foot or square yard and shall include full compensation for furnishing all labor, equipment, tools, material, traffic control, and cleanup, for heating and scarifying as shown on the plans and as specified in these specifications and the Special Provisions.

D. Asphalt Concrete

1. Measurement and payment will be on a ton basis with the truck load slip for each delivery presented to the inspector before unloading. All slips shall show the supplier, net weight, identification mark of carrying vehicle and time of loading.

2. The contract price per ton shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all work involved in constructing asphalt concrete, complete in place, as shown on the plans and as specified in these specifications, and as directed by the Engineer.

3. Contractor shall control the asphalt concrete quantity so that it is to the thickness as specified on the plan. Any extra asphalt concrete placed that exceeds ten percent (10%) of the calculated quantity shall be paid by the contractor.

E. Street Cleaning

1. Payment for this item will be included in the various bid items for asphalt paving.

1.6 Submittals

A. Submit the following under the Product (Information) category.

1. The Contractor shall cooperate with the Engineer and furnish necessary facilities for sampling and testing of all materials and workmanship. All materials furnished and all work performed shall be subject to the City's inspection, and no materials shall be used in the construction work until it has been approved by the Engineer.

2. The Contractor shall submit a signed verification from each source of supply for each construction material employed on the project, indicating that the materials meet the Specification requirements.

3. Mix design for asphalt concrete.

PART 2 – PRODUCTS

2.1 Aggregate Base

A. Aggregate bases shall consist entirely of Class 2 material, as set forth in Section 26-1.02B, *"Class 2 Aggregate Base,"* of the *State Specifications*.

B. Maximum aggregate size shall be three-fourths inches (3/4").

C. Contractor shall provide supplier certifications concerning the gradation and durability of the aggregate base. Compaction and other tests will be done by others.

2.2 Asphalt Concrete

A. Material for asphalt concrete or plant mix shall be furnished and placed in strict conformance with Section 39, *"Asphalt Concrete,"* of the *State Specifications*. Asphalt binder shall conform to the requirements of Section 92, *"Asphalts,"* of the *State Specifications*. Asphalt concrete shall be Type A HMA per Section 39-2, "Hot Mix Asphalt," of the State Specifications. However, maximum aggregate size shall be three-quarter inch (3/4"), unless otherwise specified. For lifts of one inch (1") or less compacted thickness, and when material is placed by extrusion, maximum aggregate size shall be three-eighths of an inch (3/8").

PART 3 – EXECUTION

3.1 General

A. These specifications shall cover newly paved areas, as well as existing pavement restoration.

B. Where trenching or other construction activity has resulted in damage to a localized area of pavement, the damaged pavement surface shall be cut back six inches (6") beyond the damaged area.

C. Where the damaged area extends over more than fifty percent (50%) of the road width or paved area, as determined by the Engineer, the full pavement width or area shall be saw cut, excavated, removed, and repaired.

D. All structures such as valve boxes, manhole frames and covers and monuments within the resurfaced areas shall be adjusted to the new grade, as necessary. Spraying of liquid asphalts and coatings will not be permitted on windy days (in excess of fifteen miles per hour [15 mph]).

3.2 Maintaining Traffic And Public Safety

A. During the paving operations, the Contractor shall furnish and place sufficient barricades at all cross streets to protect new surfacing from traffic until sufficiently cooled, as well as "DETOUR" signs one (1) block away from all impassable intersections. At least one (1) lane of through traffic shall remain open, and sufficient traffic cones placed between the through lane and the freshly surfaced

lane to prevent traffic from using the freshly surfaced lane until sufficiently compacted and cooled.

B. Spreader and other equipment shall be moved only on truck or trailer with pneumatic tires.

C. In all cases, the Contractor shall be responsible for the complete protection of new surfacing from traffic until sufficiently compacted and cooled.

3.3 Pavement Cutting

A. After backfilling and prior to paving, proper tools and equipment shall be used in marking and breaking so that the pavement shall be cut on neat straight lines parallel to the trench or roadway centerline. The asphalt pavement shall be saw cut using a concrete saw to a minimum depth of two inches (2") or one-half (1/2) the thickness thereof, whichever is greater. The pavement shall be cut back twelve inches (12") on each side of the trench or excavation wall. Any pavement damaged outside these lines shall be re-cut and restored at the expense of the Contractor. Should voids develop under existing pavements during construction, the affected pavement shall be neatly saw cut in straight lines and replaced after the voids have been filled.

B. All water generated from pavement cutting shall be contained and treated for sediment removal (through filtration or sedimentation) prior to discharge to the County storm drain.

3.4 Placement Of Aggregate Base

A. Aggregate bases shall be placed and compacted in accordance with Section 26, *"Aggregate Bases,"* of the *State Specifications*.

3.5 Street Cleaning

A. Contractor shall clean the streets to be resurfaced prior to planning of six-foot (6') wide strips adjacent to gutters and twenty-foot (20') wide transverse conform strips. Extensive cracking, potholes, and local depressions not indicated in the drawing to be repaired by Contractor will be repaired by County forces prior to resurfacing.

B. The Contractor shall inspect the streets prior to his work and shall not proceed until they are cleaned to the City's satisfaction.

3.6 Placement Of Asphalt Concrete

A. Spreading and compacting of asphalt concrete shall be in accordance with Section 39, "Asphalt Concrete," of the State Specifications.

B. Pavement width and location for Collector Streets (44 feet curb to curb) and Highway and Arterial Streets (greater than 44 feet curb to curb). To assure that the pavement seam is not placed in the vehicle tire path, the pavement curb to curb shall be as follows:

1. Collector Streets – Pavement seam shall be on centerline of street. Pavement width shall be a minimum of 12 feet wide either side of centerline, i.e., four (4) pavement widths are required to pave a collector street.

2. Highway and Arterial Street – Pavement seam shall be on centerline of street. Pavement width shall be a minimum of 12 feet wide either side of centerline. For divided streets, pavement seams shall match the new lane markings.

3.11 Adjusting Manhole, Valve And Survey Monument Covers To Grade

A. The location of these structures, if shown on the plans, is approximate only. It shall be the Contractor's responsibility to suitably locate them prior to resurfacing.

B. The Contractor shall identify all utilities covered during resurfacing by dimples and curb markings.

C. All manholes, valve covers, monument box covers, traffic signal covers, and other County service access covers shall be raised within ten (10) calendar days after resurfacing is completed. Water valves and specially designated items must be raised within five (5) working days after paving. The Contractor Kinder Morgan, Southern California Edison, Southern California Gas Company, Frontier Communications, and other utilities affected by the resurfacing in writing within twenty-four (24) hours after each street section (block) is paved and provide copies of the same to the Engineer.

D. The monuments themselves shall not be disturbed.

E. If the Contractor elects to raise the manhole cover castings by bricks and mortar, the casting shall be placed to new grade in compliance with these specifications, as outlined for a new casting. Special care shall be exercised not to spill mortar or grout. The inside surface of the raised manhole shall have a mortar finish.

F. Manholes shall be adjusted to grade using three inch (3") thick and six inch (6") thick reinforced concrete grade rings or a combination thereof, from Jensen Precast or approved equivalent. If the required adjustment to grade is less than three inches (3"), brick and mortar shall be used. If the required adjustment to grade is more than three inches (3") but less than six inches (6"), a three inch (3") thick reinforced concrete grade rings complemented by bricks and mortar shall be used.

END OF SECTION

SECTION 32 13 13
CONCRETE PAVING

PART 1 GENERAL

1.1 Work Included

A. CONCRETE PAVING consists of furnishing transportation, labor, materials, and equipment to perform construction of portland cement concrete (PCC) pavement, curbs, sidewalks, walkways, gutter, curb ramps (wheelchair ramps), and driveways.

1.2 Related Requirements

A. Project Specifications:

Section 02 00 01 Basic Site Materials and Methods

B. County Standard Detail Drawings:

1. 109 Sidewalk
2. 129B Commercial Driveway with Curb Returns

1.3 Measurement and Payment

A. Construct 4" PCC Sidewalk

Quantities of "Construct 4" PCC Sidewalk" will be measured and paid for by square feet of concrete sidewalk constructed as directed by the Engineer. See. Quantities of "Construct 4" PCC Sidewalk" will be paid for at the contract price per measured quantity, and shall include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidental costs. All work be completed and in place as accordance with project plans, specifications, and permits.

B. Construct Modified Driveway with Curb Returns (6-inches thick)

Quantities of "Construct Modified Driveway with Curb Returns (6-inches thick)" will be measured and paid for by square feet of concrete pavement constructed as directed by the Engineer. Quantities of "Construct Modified Driveway with Curb Returns (6-inches thick)" will be paid for at the contract price per measured quantity, and shall include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidental costs. All work be completed and in place as accordance with project plans, specifications, and permits.

C. Construct 6" PCC Curb

Quantities of "Construct 6" PCC Curb" will be measured and paid for by linear feet of concrete curb constructed. Quantities of "Construct 6" PCC Concrete Curb" will be paid for at the contract price per measured quantity, and shall

include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidental costs. All work be completed and in place as accordance with project plans, specifications, and permits.

D. Construct Curb Ramp

Quantities of "Construct Curb Ramp" will be measured and paid for by each Curb Ramp installed as directed by the Engineer. Each curb ramp is estimated to be 150 square feet. Quantities of "Construct Curb Ramp" will be paid for each curb ramp installed, and shall include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidental costs. Payment for installed curb ramp exceeding the estimated square footage shall be prorated based on item unit price for 150 square feet. See All work be completed and in place as accordance with project plans, specifications, and permits.

E. Construct 6-1/2" PCC Pavement

Quantities of "Construct 6-1/2" PCC Pavement" will be measured and paid for by square feet of concrete pavement constructed as directed by the Engineer. Quantities of "Construct 6-1/2" PCC Pavement" will be paid for at the contract price per measured quantity, and shall include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidental costs. All work be completed and in place as accordance with project plans, specifications, and permits

1.4 References

A. American Concrete Institute (ACI)

1. ACI 318 Building Code Requirements for Structural Concrete.

B. American Society for Testing and Materials (ASTM International):

1. ASTM A615 Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
2. ASTM C33 Standard Specification for Concrete Aggregates
3. ASTM C150 Standard Specification for portland Cement

C. State of California Department of Transportation Standard Specifications (SS):

1. Section 52 Reinforcement
2. Section 73 Concrete Curbs and Sidewalks
3. Section 90 Concrete

Subsection 90-1.03B	Curing Concrete
Subsection 90-2	Minor Concrete

D. County of San Bernardino Standard Detail Drawings

E. State of California Department of Transportation (Caltrans) Standard Plans:

1. A87A Curbs and Driveways

2. A88A Curb Ramp Details

1.5 Submittals

A. Submit concrete mix design to Engineer for approval.

PART 2 PRODUCTS

2.1 Materials

A. Class B Concrete: Conform to SS Section 73 and Subsection 73-1.3 unless shown otherwise on Drawings.

B. Minor Concrete: Conform to SS Section 90 and Subsection 90-2 unless shown otherwise on Drawings. Portland cement Type II Modified shall be in conformance with ASTM C150.

C. Mortar and grout shall conform to SS Subsection 51-1.02F and 1.02G respectively.

D. Concrete curing compound shall be Type I Class A, nonpigmented, and in conformance with SS Subsection 90-1.103B(3).

E. Reinforcing bars shall be Grade 60 in conformance with ASTM A615, SS Section 52, and ACI 318

F. Aggregate in construction of concrete curbs, sidewalks, gutter depressions, island paving, curb ramps (wheelchair ramps) and driveways shall be in conformance with SS Section 26.

G. Forms shall be in conformance with ACI 318

H. Expansion joints shall consist of pre-molded joint filler strip ½ inch think and shall be in conformance with SS Section 73.

PART 3 - EXECUTION

3.1 Inspection

A. All work shall be inspected and approved by the County's inspector.

B. General:

1. Construct portland cement concrete pavement, curb, walk, gutters, access ramps, and driveway in conformance with SS Subsection 40-1.03, 73-1.02A, and 90-2.03.

2. Subgrade preparation shall be in conformance to SS Subsection 73-1.03B.

3. Concrete sidewalk shall, unless otherwise provided, be 4 inches in thickness, and shall conform to the details on the appropriate Standard Drawing, or as shown on the plans. Sidewalks adjacent to the driveway approach shall be 6 inches thick.

4. All concrete shall be a minimum of 3,250 psi for curbs and gutters and 4,000 psi for drive areas and structures. Aggregate shall be 1", typical.

C. Formwork:

1. Construct form work per SS Subsection 73-1.03, 73-2.03, and 73-3.03.

2. Construct forms that can be removed without hammering or prying against the concrete.

3. Provide plywood sheathing for all exposed concrete.

4. Form exposed angles in concrete with neat 3/4 inch chamfers and fillets. Remove forms in accordance with SS Section 73.

D. Placing Concrete:

1. Place concrete curbs, walks, gutters, cross gutters, alley intersections, and access ramps, and driveway in conformance with SS Subsection 40-1.03F, 73-1.04 and 73-3.03.

2. Construct weakened plane (contraction) joints in conformance with SS Subsection 40-1.03B(3) and Subection 73-1.03A, 73-2.03A and 73-3.03 unless otherwise directed by Engineer.

3. Construct expansion joints against existing concrete in conformance with SS Subsection 73-1.03A, 73-2.03A and 73-3.03 only as directed by Engineer.

E. Placing Reinforcement:

1. Place reinforcing bars in conformance with SS Section 53 and ACI 318.

3.2 Protection

A. Protect finish concrete surfaces from stains, abrasions, and other damages.

END OF SECTION

SECTION 32 17 23
PAVEMENT MARKING

PART 1 GENERAL

1.1 Work Included

A. PAVEMENT MARKINGS consists of furnishing transportation, labor, materials, and equipment to layout and install markings, striping, lettering, and informational and directional markings on pavement and curbs; and installing pavement markers, including hydrant markers. Work further consists of covering or removing existing markings on pavements prior to installing new markings.

1.2 Related Work

A. BASIC SITE MATERIALS AND METHODS Section 02 00 01

1.3 Measurement and Payment

A. Paint Yellow Centerline, Caltrans Detail 1

Payment for the installation of traffic stripe, Caltrans Detail 1, will be payable under "Paint Yellow Centerline, Caltrans Detail 1" unit price bid item. Payment shall be measured and paid for at contract price per linear foot of thermoplastic pavement stripe installed without deductions for gaps in broken traffic stripes in accordance with Caltrans Standard Plans A20A Detail 1, including establishment of cat-tracks; and shall include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidental costs. All work be completed and in place as accordance with project plans, specifications, permits, and as directed by the Engineer.

B. Paint White Lane Line, Caltrans Detail 8

Payment for the installation of traffic stripe, Caltrans Detail 8, will be payable under "Paint White Lane Line, Caltrans Detail 8" unit price bid item. Payment shall be measured and paid for at contract price per linear foot of thermoplastic pavement stripe installed without deductions for gaps in broken traffic stripes in accordance with Caltrans Standard Plans A20A Detail 8, including establishment of cat-tracks; and shall include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidental costs. All work be completed and in place as accordance with project plans, specifications, permits, and as directed by the Engineer.

C. Paint Double Yellow Centerline, Caltrans Detail 21

Payment for the installation of traffic stripe, Caltrans Detail 21, will be payable under "Install Double Yellow Centerline, Caltrans Detail 21" unit price bid item. Payment shall be measured and paid for at contract price per linear foot of double thermoplastic pavement stripe installed in accordance with Caltrans Standard Plans A20A Detail 21, including establishment of cat-tracks and shall include full

compensation for furnishing transportation, labor, materials, tools, equipment, and incidental costs. Double traffic stripe will be measured as a single traffic stripe. All work be completed and in place as accordance with project plans, specifications, permits, and as directed by the Engineer.

D. Install Two-Way Yellow Retroreflective Pavement Marker, Caltrans Detail 25A

Payment for the installation pavement marker per Caltrans Detail 25A, will be payable under "Install Two-Way Yellow Retroreflective Pavement Marker, Caltrans Detail 25A" unit price bid item. Payment shall be measured and paid for at contract price per reflective pavement marker and establishment of cat-tracks; and shall include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidental costs. All work be completed and in place as accordance with project plans, specifications, permits, and as directed by the Engineer.

E. Paint White Edgelines, Caltrans Detail 27B

Payment for the installation of traffic stripe, Caltrans Detail 27B, will be payable under "Paint White Edgelines, Caltrans Detail 27B" unit price bid item. Payment shall be measured and paid for at contract price per linear foot of thermoplastic pavement stripe installed in accordance with Caltrans Standard Plans A20B, Detail 27B, including establishment of cat-tracks; and shall include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidental costs. All work be completed and in place as accordance with project plans, specifications, permits, and as directed by the Engineer.

F. Install Pavement Markings – Words, Numbers, Arrows

Payment for the installation of pavement words, numbers, and arrows will be payable under "Install Pavement Marking – Words, Numbers, Arrows" unit price bid item. Payment shall be measured and paid for at contract price per square foot for the actual area of thermoplastic pavement markings installed in accordance with Caltrans Standard Plans A24B, A24C, and A24D. Contract price and payment includes, but not limited to, establishment of cat-tracks and layout work, and shall include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidental costs. All work be completed and in place as accordance with project plans, specifications, permits, and as directed by the Engineer.

G. Paint 4" Wide Solid White Line

Payment for the installation of 4-inch white traffic stripe will be payable under "Paint 4" Wide Solid White Line" unit price bid item. Payment shall be measured and paid for at contract price per linear foot of thermoplastic line. Contract price and payment includes, but not limited to, establishment of cat-tracks and layout work, and shall include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidental costs. All work be completed and in place as accordance with project plans, specifications, permits, and as directed by the Engineer.

H. Paint 6" Wide Solid White Line

Payment for the installation of 6-inch white traffic stripe will be payable under "Paint 6" Wide Solid White Line" unit price bid item. Payment shall be measured and paid for at contract price per linear foot of thermoplastic line. Contract price and payment includes, but not limited to, establishment of cat-tracks and layout work, and shall include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidental costs. All work be completed and in place as accordance with project plans, specifications, permits, and as directed by the Engineer.

I. Paint 6" Wide Solid Yellow Line

Payment for the installation of 6-inch yellow traffic stripe will be payable under "Paint 4" Wide Solid White Line" unit price bid item. Payment shall be measured and paid for at contract price per linear foot of thermoplastic line. Contract price and payment includes, but not limited to, establishment of cat-tracks and layout work, and shall include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidental costs. All work be completed and in place as accordance with project plans, specifications, permits, and as directed by the Engineer.

J. Paint 12" Wide White Limit Line and Crosswalk Pavement Marking

Payment for the installation of 12" wide white pavement markings will be payable under "Install 12" Wide White Line and Crosswalk Pavement Marking" unit price bid item. Payment shall be measured and paid for at contract price per linear foot of white thermoplastic line and thermoplastic crosswalk line installed (10 feet apart) in accordance with Caltrans Standard Plans A24G and A24F respectively. Contract price and payment includes, but not limited to, establishment of cat-tracks and layout work, and shall include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidental costs. All work be completed and in place as accordance with project plans, specifications, permits, and as directed by the Engineer.

K. Paint Solid Yellow and Broken Yellow Centerline, Caltrans Detail 15

Payment for the installation of traffic stripe, Caltrans Detail 15, will be payable under "Paint Solid Yellow and Broken Yellow Centerline, Caltrans Detail 15" unit price bid item. Payment shall be measured and paid for at contract price per linear foot of double thermoplastic pavement stripe installed in accordance with Caltrans Standard Plans A20A Detail 15, including establishment of cat-tracks and shall include full compensation for furnishing transportation, labor, materials, tools, equipment, and incidental costs. Double traffic stripe will be measured as a single traffic stripe. All work be completed and in place as accordance with project plans, specifications, permits, and as directed by the Engineer.

1.4 References

A. State of California Department of Transportation Standard Specifications (SS):

1. Section 10 General

    a. Subsection 10-1.02D Traffic Stripes, Pavement Markings, and Pavement Markers

2. Section 15 Existing Facilities

3. Section 37 Seals Coats

4. Section 81 Miscellaneous Traffic Control Devices

    a. Subsection 81-3 Pavement Markers

5. Section 84 Markings

    a. Subsection 84-2 Traffic Stripes Pavement Markings

B. Standard Specifications for Public Works Construction (RS):

1. Section 214 Pavement Markers

C. California Department of Transportation (Caltrans) Standard Details:

1. A20A – Detail 1, 8 15, and 21 Pavement Markers and Traffic Lines Typical Details

2. A20B – Detail 25A and 27B Pavement Markers and Traffic Lines Typical Details

3. A24B Pavement Markings Arrows and Symbols

4. A24C Pavement Markings Arrows and Symbols

5. A24D Pavement Markings Words

6. A24F Pavement Markings Crosswalks

7. A24G Pavement Markings Yield Lines, Limit Lines, and Wrong Way Details

8. A90A Accessible Parking Off-Street

1.5 Traffic and Pedestrian Control Plan

A. Perform Traffic Control in conformance with TEMPORARY FACILITIES AND CONTROLS Section

1.6 Submittals

A. Submit the following prior to purchasing material:

1. Equipment to be used for pavement markings.

2. Complete list of materials to be used including reflective media.

3. Materials test reports and certifications in conformance with SS Subsection 84-2

4. For marker quantity less than 10,000, Contractor may submit manufacturer's certification that markers and adhesive conform to RS Section 214

B. Submit method to remove existing striping and thermoplastic striping material (thermoplastic paint). Include method to recover grindings, paint residue, blast media, and wastewater.

PART 2 PRODUCTS

2.1 Materials

A. Thermoplastic Paint:

1. Conform to SS Subsection 84-2.03(B)2

B. Reflective Pavement Markers:

1. Conform to SS Subsection 81-3.02C

C. Blue Reflective Hydrant Pavement Makers

1. Conform to RS Subsection 214

PART 3 EXECUTION

3.1 Layout of Markings

A. Perform and establish cat-tracks and dribble lines on the pavement to be approved by the County prior to placing the stripes and markings. No thermoplastic stripes and pavement markings shall be installed until the surface and the striping layout has been approved by the Engineer.

B. Layout the markings at the locations and to the dimensions indicated on Drawings.

C. Apply letters, numerals, and symbols using stencils and templates.

D. Layout crosswalk at one-ramp corner in conformance with Caltrans Standard Plans A88A, Curb Ramp Details

3.2 Preparation

A. Surfaces which are to receive thermoplastic traffic stripes or pavement markings shall be thoroughly clean, free from loose materials and dry; and such areas shall be thus prepared by the Contractor to the satisfactions of and with methods approved by the Engineer.

B. Removal of existing traffic striping, pavement markings, and pavement markers:

1. Removal of existing traffic striping, pavement markings, and pavement markers in conformance with the provisions in SS Subsection 10-1.02D, traffic Stripes, Pavement Markings, and Pavement Markers and Section 15, Existing Facilities.

2. Conflicting striping and pavement markings shall be removed before the installation of new striping and pavement markings. All traffic striping and pavement markings shall be removed in a rectangular shape.

3. Remove existing thermoplastic paint in areas of new striping and prior to applying slurry seal in areas where slurry seal is required on Drawings.

   a. Remove thermoplastic paint by a method that minimizes damage to existing pavement.

4. If grinding or sandblasting is used for the removal of existing traffic striping and pavement markings, and such removal operation is being performed within 10 feet of a lane occupied by public traffic, the residue including dust shall be removed immediately after contact between the grinding or sand- blasting material and the surface being treated. Such removal shall be by a vacuum attachment operating concurrently with the grinding or sand-blasting operation. After the removal of existing traffic striping and pavement markings on the asphalt concrete pavement, a fog seal shall be applied to the surface of grinding or sand-sand-blasting areas in accordance with the provisions in SS Section 37, Seal Coats.

5. New striping and pavement markings shall be installed within 24 hours of removal of existing striping and pavement markings.

6. Existing pavement markers to be removed, shall be done so in a manner as to leave the existing asphalt concrete pavement undamaged. Damage to the asphalt concrete resulting from the removal of pavement markers shall be considered as any depression more than one-fourth inch (1/4") deep and shall be patched using type A, No. 4 maximum asphalt concrete.

7. Recover and dispose of grindings, paint residue, blast media, and wastewater from areas undergoing marking removals

C. The Engineer will inspect surfaces to be painted after Contractor has laid out pavement markings, and prior to application of paint materials. Correct deficiencies in layout and surface preparation prior to application of paint.

D. Thermoplastic traffic stripes and pavement markings shall be placed in accordance with SS Subsection 84-2

E. Protect existing, adjacent facilities from overspray and spillage.

F. Permanent striping and markings shall be installed no sooner than ten (10) calendar days and no later than fifteen (15) calendar days after final lift of overlay or slurry seal is placed. Temporary markings shall be installed the same day that the original markings are removed or destroyed and shall be maintained until permanent striping is placed.

G. Thermoplastic and paint shall be placed as close as possible to existing utility structures and frames and covers without covering them.

H. Contractor shall protect the newly installed pavement markers, pavement markings, traffic lines and signs from damage until the materials have cured. Any markers, markings, stripes or signs broken, misaligned or otherwise disturbed shall be repaired by Contractor prior to opening the roadway to traffic.

I. Any damage to the new stripes or markings due to the failure of the Contractor to protect his work shall be repaired by him at no additional cost.

J. Walk-behind striping machine is not allowed.

K. Any overlap, dripping or tracking of thermoplastic or paint onto adjacent surfacing shall be removed to the satisfaction of the Engineer.

3.3 Weather Limitation

A. Thermoplastic material shall be applied only to dry pavement surfaces and only when the pavement surface temperature is above 50°F and when the weather is not excessively windy, dusty, foggy, or humid. Verify suitability of the weather with the Engineer in the field.

3.4 Application

A. Apply thermoplastic paint in conformance with SS Subsection 84-2.03B(2)

B. Install pavement markers in conformance with SS Subsection 81-3.03

3.5 Tolerances

A. Width of stripes shall not vary more than 1/4 inch, plus or minus, from the width shown on Drawings. The alignment and straightness of stripes shall not deviate more than 1/2 inch in 50 feet. Deviations in excess of the tolerances specified shall be erased by wet sandblasting, and the painting reapplied.

3.6 Cleanup

A. Remove paint overspray, drips, and spills from adjacent surfaces by means, which will not damage the surfaces.

END OF SECTION