

May 12, 2021

Tuolumne Utilities District

NOTICE TO PLANHOLDERS
ADDENDUM NO.1

PROJECT: Matelot Pipeline Project
TO: All Planholders
FROM: Tuolumne Utilities District
PROPOSAL DATE: **Friday, May 28, 2021**

Notice is hereby given to prospective bidders that the Contract Documents for the Matelot Pipeline Project have been modified as hereinafter set forth. This Addendum No.1 shall form a part of the Contract Documents and takes precedence over the original Contract Documents.

The following revisions, additions, replacements, clarifications, or deletions shall be made to the Contract Documents:

CLARIFICATION: Bid Due Date


Bids are due **Friday, May 28, 2021 @ 2:00 pm local time.**

ADDITION: Technical Specifications

Please insert the attached Technical Specifications sections after Section 01010-Summary of Work and Contract Considerations:

1. 01140-Environmental Protection
2. 01300-Submittals
3. 01500-Construction Facilities and Temporary Controls
4. 01700-Contract Closeout
5. 02203-Trench Excavation and Backfill
6. 02370-Slope Protection and Erosion Control

Bidders shall acknowledge receipt of Addendum No.1 in the space below and include this page with the bid. Failure to do so may subject bidder to disqualification.



Erik D. Johnson, P.E.
District Engineer

I acknowledge receipt of Addendum No.1, consisting of thirty-two (32) pages, including this page.

Company Name: _____

Authorized Signature: _____

SECTION 01140

ENVIRONMENTAL PROTECTION

1.01 SCOPE

- A. During the progress of the work, keep the work areas occupied by the Contractor in a neat and clean condition and protect the environment both onsite and offsite, throughout and upon completion of the construction project.

1.02 NOT USED

1.03 MITIGATION OF CONSTRUCTION IMPACTS

- A. Requirements: All operations shall comply with all federal, state and local regulations pertaining to water, air, solid waste and noise pollution, as well as, protection of cultural resources.
- B. Definitions of Contaminants:
 - 1. Sediment: Soil and other debris that have been eroded and transported by runoff water.
 - 2. Solid Waste: Rubbish, debris, garbage and other discarded solid materials resulting from construction activities, including a variety of combustible and non-combustible wastes, such as ashes, waste materials that result from construction or maintenance and repair work, leaves and tree trimmings.
 - 3. Chemical Waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, disinfectants, organic chemicals and inorganic wastes. Some of the above may be classified as "hazardous."
 - 4. Sanitary Wastes:
 - a. Sewage: That which is considered as domestic sanitary sewage.
 - b. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing and consumption of food.
 - 5. Hazardous Materials: As defined by applicable laws and regulations. Undisclosed hazardous material contamination, if encountered will constitute a changed site condition. The Owner may retain a separate contractor to dispose of undisclosed hazardous material encountered.
- C. Protection of Natural Resources:
 - 1. General: It is intended that the natural resources within the project boundaries and outside the limits of permanent work performed under this Contract be preserved in their existing condition or be restored to an equivalent or improved condition upon completion of the work. Confine construction activities to areas defined by the public roads, easements, and work area limits. Return construction areas to their pre-construction elevations except where surface elevations are otherwise noted to be changed. Maintain natural drainage patterns. Conduct construction activities to avoid ponding stagnant water conducive to mosquito breeding.

2. Land Resources: Do not remove, cut, deface, injure or destroy trees or shrubs, except as shown on the Drawings or staked, without permission from the Engineer.
 - a. Protection: Protect trees that are located near the limits of the Contractor's work areas which may possibly be defaced, bruised or injured or otherwise damaged by the Contractor's operations. No ropes, cables or guys shall be fastened to or attached to any existing nearby trees or shrubs for anchorages unless specifically authorized. Where such special emergency use is permitted, the Contractor shall be responsible for any damage resulting from such use.
 - b. Trimming: Trim and seal tree limbs overhanging the line of the work and in danger of being damaged by the Contractor's operations in accordance with recognized standards for such work. Remove other tree limbs under the direction of the Engineer, so that the tree will present a balanced appearance.
 - c. Treatment of Roots: Do not cut roots unnecessarily during excavating or trenching operations. Expose major roots encountered in the course of excavation and do not sever. Wrap them in burlap as a protective measure while exposed. Neatly trim all other roots larger than 1 inch in diameter that are severed in the course of excavation at the edge of the excavation or trench and paint them with a heavy coat of an approved tree seal.
 - d. Repair or Restoration: Repair or replace any trees or other landscape features scarred or damaged by equipment or construction operations as specified below. The repair and/or restoration plan shall be favorably reviewed prior to its initiation.
 - e. Temporary Construction: Obliterate all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other vestiges of construction as directed by the Engineer. Level all temporary roads, parking areas and any other areas that have become compacted or shaped. Any unpaved areas where vehicles are operated shall receive a suitable surface treatment or shall be periodically wetted down to prevent construction operations from producing dust damage and nuisance to persons and property, at no additional cost to the Owner. Keep haul roads clear at all times of any object that creates an unsafe condition. Promptly remove any contaminants or construction material dropped from construction vehicles. Do not drop mud and debris from construction equipment on public streets. Sweep clean turning areas and pavement entrances as necessary.
3. Water Resources: Investigate and comply with all applicable federal, state and local regulations concerning the discharge (directly or indirectly) of pollutants to the underground and natural waters. Perform all work under this Contract in such a manner that any adverse environmental impacts are reduced to a level that is acceptable to the Engineer and regulatory agencies.
 - a. Oily Substances: At all times, special measures shall be taken to prevent oily or other hazardous substances from entering the

- ground, drainage areas or local bodies of water in such quantities as to affect normal use, aesthetics or produce a measurable impact upon the area. Any soil or water that is contaminated with oily substances due to the Contractor's operations shall be disposed of in accordance with applicable regulations.
- b. If the measures being taken by the Contractor are inadequate to control water pollution effectively, the Engineer may direct the Contractor to revise his operations. Such directions will be in writing and will specify the items of work for which the Contractor's water pollution control measures are inadequate. No further work shall be performed on said items until the water pollution control measures are adequate.
 - c. Where erosion which will cause water pollution is probable due to the nature of the material or the season of the year, the Contractor's operations shall be so scheduled that permanent erosion control features will be installed concurrently with or immediately following grading operations.
 - d. Nothing in the terms of the Contract nor in the provisions in this Section shall relieve the Contractor of the responsibility for compliance with Sections 5650 and 12015 of the California Fish and Game Code, or other applicable statutes relating to prevention or abatement of water pollution.
4. Fish and Wildlife Resources: Perform all work and take such steps required to prevent any interference or disturbance to fish and wildlife. The Contractor will not be permitted to alter water flows or otherwise significantly disturb native habitat adjacent to the project area which are critical to fish and wildlife except as may be indicated or specified.
 5. Cultural Resources: Unrecorded archaeological sites could be discovered during the construction. In the event that artifacts, human remains, or other cultural resources are discovered during excavations at locations of the Work, the Contractor shall protect the discovered items and comply with Supplementary Conditions SC-22. An archeological monitor will be employed by the District for a portion of the project. The contractor will be instructed as to the approximate location of known artifacts and will be directed to avoid disturbing recorded archeological resources.
 6. Revegetation of Disturbed Areas:
 - a. Tree and Shrubs Replacement: Replace trees and shrubs damaged by the construction or as noted on the Drawings after completion of earthwork in the area. Plant nursery stock of the same species and variety, in 5-gallon cans on a one-for-one basis. Plant in the early fall. If planting is not feasible in early fall, the Engineer will reschedule the tree planting operations.
 - b. Planting of Trees and Shrubs:
 - 1) Selection: Deliver trees and shrubs to the site in the nursery containers, with the nursery tags identifying the species and variety. The trees and shrubs should be selected for shape and symmetrical branching habit, which at maturity will produce strong, full foliated specimens. The specimens shall have grown in the designated size of container for a sufficient length of time for the root system to hold the earth when taken from the container, but not

long enough to become rootbound or cause a "hardening off" of the root system. Specimens which are loose in the root ball will be rejected. Remove all rejected specimens from the site and replace with specimens as specified. Specimens shall be sound, healthy, vigorous and free from insects, pests, plant diseases and injuries.

- 2) Protection: Specimens which cannot be planted within one day of delivery shall be properly protected and kept moist to prevent drying.
 - 3) Planting Procedure: Planting hole shall be twice the width of the root ball and at least one and one-half times the height of the root ball. Fill the planting hole with water and let drain away. Mix excavated soil with a planting mix appropriate for the type and condition of the soil and the species of tree or shrub and place the mixed soil in the planting hole to the depth necessary to bring the root ball slightly higher than the surrounding soil. Remove the specimen from the container carefully so that the root ball remains unbroken. Place in planting hole and fill with mixed soil to one-half the height of the root ball, tamp thoroughly, then water. Set specimens at such a level that after settlement the top of the root ball is level with the surrounding finish grade. Add mixed soil to form watering basin, fill basin twice with water immediately after planting. Water as frequently as required to keep the specimens adequately moist until well established. The Contractor will be responsible for maintaining specimens for a minimum of one year after final acceptance or planting, whichever is later.
 - 4) Staking: Use 2-inch x 2-inch redwood or cedar stakes of length adequate to support each tree. Drive a stake on each side of each specimen outside of the root ball, to a depth of 3 feet. Support tree to stakes using twisted galvanized wire covered with reinforced rubber hose where in contact with the specimen.
 - 5) Mulching: Fill all watering basins of trees and shrubs with a layer of mulch not less than 2 inches thick.
7. Noise Control: The following noise control procedures shall be employed:
- a. Maximum Noise Levels within 1,000 Feet of any Residence, Business, or Other Populated Area: Noise levels for trenchers, pavers, graders and trucks shall not exceed 90 dBA at 50 feet as measured under the noisiest operating conditions. For all other equipment, noise levels shall not exceed 85 dBA at 50 feet.
 - b. Equipment: Jack hammers shall be equipped with exhaust mufflers and steel muffling sleeves. Air compressors should be of a quiet type such as a "whisperized" compressor.
 - c. Operations: Keep noisy equipment as far as possible from noise-sensitive site boundaries. Machines should not be left idling. Use electric power in lieu of internal combustion engine power wherever possible. Maintain equipment properly to reduce noise

- from excessive vibration, faulty mufflers, or other sources. All engines shall have mufflers.
- d. Scheduling: Schedule noisy operations so as to minimize their duration at any given location.
 - e. Monitoring: To determine whether the above noise limits are being met and whether noise barriers are needed, the Contractor shall use a portable sound level meter meeting the requirements of American National Standards Institute Specification S1.4 for Type 2 sound level meters. If non-complying noise levels are found, the Contractor shall be responsible for monitoring and correction of excessive noise levels.
8. Dust Control, Air Pollution and Odor Control: Employ measures to prevent the creation of dust, air pollution and odors.
- a. Unpaved areas where vehicles are operated shall be periodically wetted down or given an equivalent form of treatment, to eliminate dust formation.
 - b. Store all volatile liquids, including fuels or solvents in closed containers.
 - c. No open burning of debris, lumber or other scrap will be permitted.
 - d. Properly maintain equipment to reduce gaseous pollutant emissions.
9. Erosion and Sediment Transport Control:
- a. Discharge construction runoff into small drainages at frequent intervals to avoid buildup of large potentially erosive flows.
 - b. Prevent runoff from flowing over unprotected slopes.
 - c. Keep disturbed areas to the minimum necessary for construction.
 - d. Keep runoff away from disturbed areas during construction.
 - e. Direct flows over vegetated areas prior to discharge into public storm drainage systems.
 - f. Trap sediment before it leaves the site, using such techniques as check dams, sediment ponds, or siltation fences.
 - g. Remove and dispose of all project construction-generated siltation that occurs in offsite retention ponds.
 - h. Confine construction to the dry season, whenever possible. If construction needs to be scheduled for the wet season, ensure that erosion and sediment transport control measures are ready for implementation prior to the onset of the first major storm of the season.
 - i. Stabilize disturbed areas as quickly as possible.

1.04 DISPOSAL OPERATIONS

- A. Solid Waste Management:
- 1. Supply solid waste transfer containers. Daily remove all debris such as spent air filters, oil cartridges, cans, bottles, combustibles and litter. Take care to prevent trash and papers from blowing onto adjacent property. Encourage personnel to use refuse containers. Convey contents to a sanitary landfill.

2. Washing of concrete containers where wastewater may reach adjacent property or natural water courses will not be permitted. Remove any excess concrete to the sanitary landfill.
- B. Chemical Waste and Hazardous Materials Management: Furnish containers for storage of spent chemicals used during construction operations. Dispose of chemicals and hazardous materials in accordance with applicable regulations.
 - C. Garbage: Store garbage in covered containers, pick up daily and dispose of in a sanitary landfill.
 - D. Dispose of trees, vegetation, weeds, rubble, and other materials removed by the clearing, stripping and grubbing operations off site at a suitable disposal site in accordance with applicable regulations.
 - E. Excavated Materials:
 1. Native soil complying with the requirements of Section 02301 may be used for backfill, fill and embankments as allowed by that section.
 2. Spoil Material:
 - a. Remove all material which is excavated in excess of that required for backfill, and such excavated material which is unsuitable for backfill, from the site and dispose of off site in accordance with applicable regulations.
 - F. No additional compensation will be paid to the Contractor for disposal. Include all such costs in the prices bid for the project.

END OF SECTION

SECTION 01300

SUBMITTALS

1.01 SUBMITTAL PROCEDURES

- A. Accompany each submittal with a Submittal form, which contains the following information:
 - 1. Contractor's name and the name of Subcontractor or supplier who prepared the submittal.
 - 2. The project name and identifying number.
 - 3. Description of the submittal and reference to the Contract requirement or technical specification section and paragraph number being addressed.
- B. Submit the number and type of copies for each submittal and follow the procedures described below or in other paragraphs in this Section. Submit a PDF electronically unless otherwise specified.
 - 1. Designation of Superintendent: Include name, address, home telephone number and a brief resume.
 - 2. List of Subcontractors and Major Suppliers: Include address, telephone number and name of responsible party.
 - 3. Schedule of Values, in a form acceptable to the Engineer: See Supplementary Conditions SC-27.
 - 4. Subcontractors'/Suppliers'/Manufacturers' Affidavits. Submit a PDF electronically for items specified in the Technical Specifications.

1.02 SCHEDULE OF SUBMITTALS

- A. Within fifteen (15) days after the Notice to Proceed, submit a Schedule of Submittals showing the date by which each submittal required for Product Review or Product Information will be made. Identify the items that will be included in each submittal (see paragraph 1.05 of this Section) by listing the item or group of items and the Specification Section and paragraph number under which they are specified. Indicate whether the submittal is required for Product Review of Proposed Equivalents, Shop Drawings, Product Data or Samples or required for Product Information only.

1.03 NOT USED

1.04 CONSTRUCTION SCHEDULE

- A. The form of Construction Schedule may be selected by the Contractor, but the Schedule shall meet the minimum requirements of Section 01040, Part 1.01.
- B. If the Construction Schedule does not reflect the format requirements, the specified work, or the Contract Time, it will be returned to the Contractor for modification.
- C. Revise the Construction Schedule and resubmit within seven (7) days following any Progress Meeting to review Contractor's Application for Payment when Contractor's work is fifteen (15) days or more behind schedule.

1.05 SHOP DRAWING, PRODUCT DATA AND SAMPLES SUBMITTED FOR PRODUCT REVIEW

- A. This paragraph covers submittal of Shop Drawings, Product Data and Samples required for the Engineer's review referred to as Product Review submittals in the Technical Specifications (Division 2 through 17). Submittals required for information only are referred to as Product Information submittals in the Technical Specifications and are covered in paragraph 1.07 of this Section.
- B. Number and type of submittals:
1. Shop Drawings: Submit clear, sharp high contrast submittals one of which will be marked, stamped and returned to the Contractor. The Contractor shall make and distribute the required number of additional copies to its superintendent, subcontractors and suppliers.
 2. Product Data: One copy will be marked, stamped and returned. The Contractor shall make and distribute the required number of additional copies to its superintendent, subcontractors and suppliers.
 3. Samples: Submit three labeled samples or three sets of samples of manufacturers full range of colors and finishes. Comply with requirements in Technical Specification Sections. One sample will be returned to Contractor.
- C. The Contractor shall make all Product Review submittals early enough to allow adequate time for the Engineer's review, for manufacture and for delivery at the construction site without causing delay to the Work. Submittals shall be made early enough to allow for unforeseen delays such as:
1. Failure to obtain Favorable Review because of inadequate or incomplete submittal or because the item submitted does not meet the requirements of the Contract Documents.
 2. Delays in manufacture.
 3. Delays in delivery.
- D. Content of Submittals:
1. Each submittal shall include all of the items and material required for a complete assembly, system or Specification Section.
 2. Submittals shall contain all of the physical, technical and performance data required by the specifications or necessary to demonstrate conclusively that the items comply with the requirements of the Contract Documents.
 3. Include information on characteristics of electrical or utility service required and verification that requirements have been coordinated with services provided by the Work and by other interconnected elements of the Work.
 4. Provide verification that the physical characteristics of items submitted, including size, configuration, clearances, mounting points, utility connection points and service access points, are suitable for the space provided and are compatible with other interrelated items that are existing or have or will be submitted.
 5. Label each Product Data Submittal, Shop Drawing and Sample with the information required in paragraph 1.01A of this Section. Highlight or mark

- every page of every copy of all Product Data submittals to show the specific items being submitted and all options included or choices offered.
6. Additional requirements for Product Review submittals are contained in the Technical Specification sections.
 7. Designation of work as "NIC" or "by others," shown on Shop Drawings, shall mean that the work will be the responsibility of the Contractor rather than the subcontractor or supplier who has prepared the Shop Drawings.
- E. Verify that items contained in the same or in different submittals meet the requirements in Section 01040, Part 1.10, especially the subparagraphs titled "Compatibility of Material and Equipment."
 - F. Requirements for Contractor Designed Items are covered in Section 01040, Part 1.09.
 - G. Requirements for the Contractor's review of submittals prepared by the Contractor or by Subcontractors or suppliers prior to submitting them to the Engineer are covered in Supplementary Conditions SC-27.08.
 - H. Submittals that contain deviations from the requirements of the Contract Documents shall be accompanied by a separate letter explaining the deviations. See Supplementary Conditions SC-27.08 and SC-27.11. The Contractor's letter shall:
 1. Cite the specific Contract requirement including the Specification Section and paragraph number for which approval of a deviation is sought.
 2. Describe the proposed alternate material, item or construction and explain its advantages and/or disadvantages to the Owner.
 3. State the reduction in Contract Price if any that is offered to the Owner.
 - I. Engineer's Review Procedure and Meaning
 1. The Engineer will stamp and mark each Product Review submittal prior to returning it to the Contractor. The stamp will indicate whether or not the review was favorable and what action is required of the Contractor. Review categories "No Exceptions Taken" and "Make Corrections Noted" both indicate Favorable Review.
 2. The Engineer's Favorable Review is contingent on the Contractor's warranties required by Supplementary Conditions SC-27.08, and is subject to all of the limitations and conditions in Supplementary Conditions SC-27. Favorable Review is also contingent on:
 - a. The compatibility of items included in a submittal with other related or interdependent items included in previous or future submittals.
 - b. Future submittal of items related to or required to be part of this submittal that were not included with this submittal.
 3. Favorable Review of a submittal does not constitute approval or deletion of items required as part of the submittal but not included with the submittal. Favorable Review of items included in the submittal does not constitute deletion of specified features, options or accessories that were not included in the submittal.
 4. The action required by the Contractor for each category of review is as follows:
 - a. **NO EXCEPTIONS TAKEN.** NO RESUBMITTAL REQUIRED.

- b. **MAKE CORRECTIONS NOTED:**
 - (1) **NO RESUBMITTAL REQUIRED.** The Contractor shall make corrections noted prior to manufacture.
 - (2) **PARTIAL RESUBMITTALS REQUIRED.** The Contractor shall submit related accessory or optional items as noted which are required but were not included with the submittal and/or shall resubmit unsatisfactory portions or attributes of items as noted. The Contractor may proceed to manufacture those portions of the submittal that will be unaffected by required resubmittals.
 - c. **AMEND AND RESUBMIT.** The Contractor shall amend and resubmit the submittal as noted or required to comply with the Contract Documents.
 - d. **REJECTED - RESUBMIT.** The item submitted does not comply with the Contract Documents in a major way. Resubmit items that comply with the requirements of the Contract Documents.
5. The letter of transmittal accompanying the returned Product Review submittal may contain numbered notes. Marking a corresponding number on a Shop Drawing or Product Data submittal shall have the same affect as applying the entire note to the submittal.
- J. Re-submittals that contain changes that were not requested by the Engineer on the previous submittal shall be accompanied by a letter explaining the change.
- K. Favorable Review Required Prior to Proceeding.
- 1. Do not proceed with manufacture, fabrication, delivery or installation of items prior to obtaining the Engineers Favorable Review of Product Review submittals. See General Conditions paragraph 12.1.
- L. Intent and Limitation on Engineer's Review
- 1. See Supplementary Condition SC-27.
 - 2. The Contractor has primary responsibility for submitting and providing work that complies with the requirements of the Contract Documents. That responsibility cannot be delegated in whole or in part to subcontractors or suppliers. Neither the Engineer's Favorable Review nor the Engineer's failure to notice or comment on deficiencies in the Contractor's submittals shall relieve the Contractor from the duty to provide work, which complies with the requirements of the Contract Documents.

1.06 PROPOSED EQUIVALENTS

- A. Comply with the submittal requirements for Shop Drawings, Product Data, and Samples submitted for Product Review in another paragraph of this Section.
- B. See Supplementary Conditions SC-27.01 through SC-27.15.
- C. Time of Submittal:
 - 1. Supplementary Conditions SC-27.03 requires submittal of Proposed Equivalents within 35 days of the Notice to Proceed. The Engineer may agree to a later submittal date if requested in writing within 35 days of the

Notice to Proceed. The request shall identify the item, give the Specification reference, and proposed manufacturer and model number of the item that will be submitted and the proposed submittal date.

2. The Engineer's agreement to a later submittal date shall be in writing and shall not be construed as Favorable Review or acceptance of the manufacturer or item proposed.
- D. Content of submittals shall be the same as that required for Product Data, Shop Drawings and Samples submitted for Product Review in another paragraph of this Section. In addition, the Contractor shall provide information on several recent similar installations of the item to verify its suitability. The information shall include the project name and location, the Owner's name, address, telephone number and name of a knowledgeable person to contact for information on performance of the product.
- E. If a non-equivalent substitute is submitted for review, it shall be accompanied by a proposed reduction in Contract Price which shall include the increased cost of Engineering service required to evaluate the proposed substitute (which shall be paid to the Owner whether or not the substitute is accepted) plus the greater of 1) the difference in price between the first specified item and the item submitted and 2) the difference in value to the Owner between the two items.

1.07 PRODUCT INFORMATION SUBMITTALS

- A. Submit a PDF electronically. See Supplementary Conditions SC-27.15.
- B. Product Information submittals are required for the Owner's permanent records and will be used for future maintenance, repair, modification or replacement work. Product Information submittals will be examined only to verify that the required submittals have been made; they will NOT be reviewed for compliance with the Contract Documents.
- C. Make Product Information submittals prior to delivering material, products or items for which Product Information submittals are required.
- D. The Contractor has the sole and exclusive responsibility for furnishing products and work that meets the requirements of the Contract Documents.
- E. The Engineer reserves the right to comment on any submittal and to reject any product or work delivered, installed or otherwise at any time that the Engineer become aware that it is defective or does not meet the requirements of the Contract Documents.

1.08 OPERATION AND MAINTENANCE MANUALS AND PARTS LISTS

- A. Submit three complete sets.
- B. Provide operation and maintenance manuals and parts list for all equipment furnished under this contract. Comply with the detailed requirements in Technical Specification sections. Include instructions for delivery, storage, assembly, installation, lubrication, adjusting, startup, operation and maintenance.

1. For all equipment include:
 - a. Startup instructions
 - b. Normal operation instructions.
 - c. Trouble shooting instructions.
 - d. Lubrication instructions.
 - e. Maintenance and reinstallation instructions.
 - f. Parts identification.
 - g. List of spare parts recommended to have on hand.
 - h. Operator safety instructions.
 2. For all Electrical Equipment, provide the following additional information:
 - a. Equipment ratings.
 - b. Calibration curves and rating tables if appropriate.
 3. For Complex Equipment provide in addition:
 - a. Alternate specified operating modes.
 - b. Emergency shutdown instructions.
 - c. Normal shutdown instructions.
 - d. Long-term shutdown instructions.
 4. Operation and maintenance manuals for systems composed of separate pieces of equipment shall include a system explanation of items 1, a, b, and c, and 3a through c, as well as the instructions for each separate piece of equipment.
- C. Submit at least fifteen (15) days prior to Equipment Startup and Adjustment specified in Section 11001.
- D. Provide the number of copies specified in paragraph 1.01 of this Section. Bind each copy in one or more "D" ring, 8-1/2 x 11, 3-ring binders with clear view spine and cover, Avery E-Z –D View Binder; K&M; or equal. Prepare Titles for the spine and cover and a Table of Contents listing each piece of equipment. Organize the contents by Specification Section and paragraph number under which the equipment was specified. Provide labeled tab separators for each major item or group of smaller similar items. When standard manufacturers literature is used highlight or mark all copies to shop specific items and options provided.

1.09 MANUFACTURER'S CERTIFICATES

- A. Submit a PDF electronically.
- B. When specified in Technical Specification section, submit manufacturers' certificate to Engineer for review. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate. Certificates may be recent or previous test results on material or Product, but must be acceptable to the Engineer.

1.10 NOT USED

END OF SECTION

SECTION 01500

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

1.01 TEMPORARY UTILITIES

- A. Sanitary Facilities: Provide and maintain self-contained portable sanitary facilities for the Contractor's, subcontractor's, Engineer's, and Owner's use. Facilities shall comply with applicable regulations and shall be serviced, cleaned and disinfected frequently.
- B. Temporary Power and Telephone Service: Provide all temporary utility service required for the project. Pay all utility service connection and use charges.
- C. Temporary Water: Coordinate temporary water service with Owner. Connect to Owner's existing water system and provide backflow prevention devices. Install a meter and reimburse the Owner for the cost of water used.
- D. Temporary Fire Protection:
 - 1. Provide and maintain fire protection equipment, including extinguishers, fire hoses, and other equipment required by law, insurance carriers, or necessary for proper fire protection during the course of the work.
 - 2. Use fire protection equipment only for fighting fires.
 - 3. Locate fire extinguishers in field offices, storage sheds, tool houses, temporary buildings, and at active construction areas.

1.02 TEMPORARY CONSTRUCTION

- A. The Contractor is solely and exclusively responsible for the design, construction and maintenance of all temporary construction including forms, falsework, shoring, scaffolding, stairs, ladders and all other similar items. See General Conditions paragraphs 5.3 and 5.20 through 5.28 and Section 01040.
- B. Construct adequate and safe forms and falsework, to rigidly support partially completed structures. Provide temporary bridges and decking to maintain vehicular and pedestrian access. Design and construct temporary forms, falsework, bridges and decking in accordance with applicable regulations and codes.

1.03 BARRICADES, FENCES AND ENCLOSURES

- A. See General Conditions paragraphs 5.3 and 5.20 through 5.28 and Section 01040.
- B. Barricades: Provide temporary guard rails, ladders, stairs, guards, and barricades to protect persons in accordance with applicable regulations, including California Code of Regulations Title 8 and Cal/OSHA.
- C. Fences:

1. Existing fences enclose portions of the site. The fences are for the protection and security of existing facilities and private landowners. If it is necessary for the Contractor to remove some of the fences for installation of new work, the Contractor shall provide equivalent temporary protection and security. Replace fencing removed by the Contractor with new fencing of equivalent quality prior to completion.

1.04 PROTECTION OF INSTALLED WORK

- A. Provide temporary and removable protection for installed products. Control activity in immediate work area to minimize damage.
- B. Provide heavy planking to protect curbs, gutters, culverts, paving and similar surfaces from damage by heavy equipment or vehicles.

1.05 SECURITY

- A. Provide security and facilities to protect the Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

1.06 ACCESS ROADS, PARKING AND STORAGE AREAS

- A. Access Roads: Use only existing roads to access the site.
- B. Parking: A limited amount of parking and storage area is available at the Sonora Water Treatment Plant; coordinate with the Owner.

1.07 TEMPORARY CONTROLS

- A. Cleaning:
 1. During Construction: Maintain the site and all work in a clean orderly fashion free of waste debris and rubbish. Store debris in covered containers. Pick up and remove debris daily if required, but not less frequently than weekly.
 2. Burning debris on site is not permitted.
 3. If work under this Contract creates dusty, dirty or unsightly conditions in adjacent areas, the Contractor shall immediately cleanup the affected areas. Clean mud from vehicles before leaving the site.
 4. Final cleanup is specified in Section 01700.
- B. Environmental Protection: Refer to Section 01140.

1.08 NOT USED

1.09 TRAFFIC REGULATION

- A. Conduct operations so as to offer the least possible obstruction and inconvenience to public traffic. Do not overload or damage paved or improved surfaces, sidewalks, curbs or gutters.

- B. Traffic Regulation: Provide such flagmen, patrols, pilot cars, drivers, barricades, flares, lights, warning signs, and safety devices as may be required for control of pedestrian and vehicular traffic adjacent to all areas of work.

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

1.01 FINAL CLEANUP

- A. Prior to Final Inspection clean the entire construction area and all other areas affected by the performance of work under this Contract. Perform all work to the highest trade standards applicable to that type of work.
 - 1. Remove all temporary construction, signs, tools, equipment, excess material and debris.
 - 2. Remove all lumps, splatters, spots and stains caused by paint, adhesive, asphalt, concrete, mortar, sealant or other foreign material from exposed or finished surfaces. Remove all temporary labels.
 - 3. Repair, patch or replace new or existing work including pavement, sidewalks, curbs, gutters, culverts, catch basins, gratings, manholes, covers, landscaping, plant materials and other items that have been damaged, broken, cracked or chipped as a result of performing this Work.
 - 4. Sweep clean and wash down all exterior pavement. Remove all hazardous material and material that may cause sediment in drainage systems prior to washdown. Remove all grease and oil stains on pavement caused by Contractor's equipment.

1.02 NOT USED

1.03 SUBSTANTIAL COMPLETION

- A. See General Conditions Article 14 and Supplementary Conditions SC-14.

1.04 FINAL INSPECTION AND ACCEPTANCE

- A. See General Conditions Article 14 and Supplementary Conditions SC-15.
- B. The Owner will record the Notice of Final Completion at the County Records Office.

1.05 RECORD DRAWINGS

- A. Provide Record Drawings to the Engineer. See General Conditions Paragraph 6.18.

1.06 NOT USED

END OF SECTION

SECTION 02203

TRENCH EXCAVATION AND BACKFILL

SCOPE

This section covers the work necessary for the earthwork, excavation, embankment, trench excavation, and backfill, complete and in place.

TYPES OF EXCAVATION

General Note:

Unauthorized excavation carried below the grade lines shown or established by the Engineer shall be replaced with approved compacted material at no additional cost to the Owner. The Contractor shall bear all costs for correcting over excavated area.

Common Excavation

Common excavation consists of all materials that can be excavated, transported, and unloaded using heavy ripping equipment and wheel tractor-scrappers with pusher tractors or that can be excavated and dumped into place or loaded onto hauling equipment by excavators equipped with attachments (shovel, bucket, backhoe, dragline, or clam shell) appropriate to the material type, character, and nature of the materials. Included in common excavation is asphalt or concrete side walk, concrete ditch lining, and asphalt pavement.

Rock Excavation

Rock excavation will be paid for as a separate bid item. Rock is defined as material that cannot be moved with a D-9 Caterpillar, including a single ripper tooth and/or material that cannot be excavated with a Cat / Mitsubishi 235 excavator, or approved equal.

Rock excavation includes firm, rigid and unweathered sedimentary, igneous and metamorphic rock that is naturally in-place. Boulders or detached stones with a volume of 1 cubic yard or greater are classified as rock.

Unclassified Excavation

Unclassified excavation consists of the excavation of and proper disposal of any type of material (excluding hazardous materials) that is encountered during the progress of work, including rock, regardless of its nature or the manner in which it is removed.

MATERIALS

Foundation Stabilization

Foundation stabilization shall be 2-1/2-inch minus crushed rock, with reasonably

uniform gradation from coarse to fine, and free from excessive dirt or other organic material.

Granular Pipe Bedding Material

Type A

Type A material shall consist of natural sand obtained from acceptable pits and shall not contain any asbestos. The sand shall be in accordance with Standard Specifications Section 19-3.02F(2), and shall have a minimum sand equivalent of 50, as determined by CALTEST 217-G.

No Type A material shall be used unless it has been accepted by the Engineer. Reports on the material from an independent testing laboratory shall be submitted for the Engineer's review.

Type B

Type B material shall be Type 2 aggregate base as per Cal Trans Standard Specifications. Submit test reports as specified for Type B material, or a past test report for material from the same pit to be used on this project. Type B material shall not be used for pipe zone bedding without prior approval from the Engineer.

Type C

Type C material shall be crushed rock free from organic matter and of such size and gradation that the desired compaction can be readily attained. When tested in accordance with ASTM D422, it shall conform to the following requirements.

U.S. Standard Sieve Size	Percent by Weight Passing
3/4 inch	100
1/2 inch	85-100
3/8 inch	20-60
No. 4	0-10

No Type C Material shall be used unless it has been accepted by the Engineer. Submit test reports as specified for Type C material.

Type D

Type D material shall be a blend of granular materials having a sand equivalent not less than 20, meeting the following requirements.

Screen Size	Percent Passing
3/4 inch	100
No. 4	80-100

No Type D material shall be used unless it has been accepted by the Engineer. Submit test reports as specified for Type D material.

Select Native Material

Select native material shall consist of 3-inch-minus material from trench excavations, or from other sources obtained by the Contractor. The material shall be reasonably well graded from coarse to fine with at least 70 percent by weight passing the 2-inch sieve.

In the event that adequate quantities of select native material cannot be obtained from trench excavation, then the Contractor shall acquire material conforming to the Specifications from other sources or use the hereinbefore specified Granular Pipe Bedding Material. Imported material, if any, shall be obtained by the Contractor at no additional cost to the Owner.

Slurry Cement Backfill

Slurry cement backfill shall conform to Caltrans Specifications, Section 19-3.02E. Slurry cement backfill shall consist of a fluid, workable mixture of aggregate, cement, and water. The aggregate must be one of the following:

1. Commercial-quality concrete sand
2. Excavated or imported material in any combination, free from organic material and other deleterious substances and complying with the gradation requirements shown in the following table:

Sieve Size	Percentage Passing
1-1/2"	100
1"	80-100
3/4"	60-100
3/8"	50-100
No. 4	40-80
No. 100	10-40

The cement must comply with Caltrans Section 90-1.02B(2), except testing is not required.

The water must be free from oils, salts, and other impurities that adversely affect the backfill.

Proportion slurry cement backfill by weight or volume. The backfill must contain at least 188 pounds of cement per cubic yard and enough water to produce a fluid workable mix that flows and can be pumped without segregation during placement.

Mix materials thoroughly by machine. Use a pugmill, rotary drum, or other authorized mixer. Mix until cement and water are thoroughly dispersed.

Compaction Tests

Compaction characteristics for materials shall be based on California Test Method (CTM) 216. Field tests of compacted density will be in accordance with ASTM D 1556 or ASTM D 2922 at the Engineer's option. The Contractor shall cooperate with the Engineer during field testing by leveling off small test areas as directed.

Water for Backfill

Regarding water for moisture conditioning of backfill see Paragraph "Temporary Water" in Section GENERAL REQUIREMENTS.

Compaction Equipment

Compaction equipment shall be of suitable type and adequate to obtain the amount of compaction specified. Compaction equipment shall be operated in strict accordance with the manufacturer's instructions and recommendations and shall be maintained in such condition that it will deliver the manufacturer's rated compactive effort.

Material Approval

Submit samples of all designated materials to the Engineer for tentative approval at least 2 weeks before material is needed on the project. Samples shall be representative of the source and shall be marked to show their intended use on the project. Final approval will be based on samples taken and test results from material after placement.

WORKMANSHIP

Preparation of Right-of-Way

Where clearing or partial clearing of the right-of-way is necessary, complete prior to the start of trenching. Do not permit excavated material to cover grass, brush, or trees prior to disposal.

Pavement and Sidewalk Removal (Where Applicable)

Cut all bituminous pavements and sidewalks, regardless of the thickness, prior to excavation of the trenches with an approved pavement saw or approved pavement cutter. Do not use hydrohammers. Width of the pavement cut shall be at least 6 inches more than the required width of the trench at ground surface. Pavement and concrete materials removed shall be hauled from the site and not used for trench backfill.

Trench Width

The maximum width at the top of the trench will not be limited, except where excess width of excavation would cause damage to adjacent structures or property.

Trench width measured at the top of the pipe zone shall not be less than the outside diameter of the pipe plus 12 inches nor more than the outside diameter of the pipe

plus 18 inches, except for jacking pits, valve excavation, or where specifically approved by the Engineer.

When approved by the Engineer, the Contractor may use pipe of greater strength or install a pipe bedding with a higher load factor in lieu of maintaining the trench widths specified.

Easements

The Contractor shall confine his operations to the limits of easements or rights-of-way and shall remove, protect, and replace all fences or other items encountered on private or public property. All owners of private property shall be informed by the Contractor in writing at least 48 hours in advance of the time he will commence operations through that property.

The Contractor is advised that if additional working space is required outside the limits of the easements provided, such additional width must be obtained directly from the property owners by the Contractor for use during the construction period.

Confine trench widths to dedicated rights-of-way or construction easements, unless special written agreements have been made with the affected property owner.

Grade

Excavate the trench to the lines and grades shown or as established by the Engineer with proper allowance for pipe thickness and for pipe bedding. If the trench is excavated below the required grade, correct any part of the trench excavated below the grade at no additional cost to the Owner, with compacted granular pipe bedding.

Blasting Requirements (If Blasting is Used)

Use the utmost care so as not to endanger life or property, cause slides, or disturb materials outside the payment limits of the trenches or excavations. All blasting shall be done by someone appropriately licensed and all necessary local, state and federal approvals shall be obtained prior to blasting.

Store all explosives in a safe, secure manner in compliance with Federal, State, and local laws and ordinances, and mark all such storage places clearly DANGEROUS EXPLOSIVES. Do not leave explosives in an unprotected manner along or adjacent to any highway, street, alley, or other area where such explosives could endanger persons or property.

Comply with the requirements of the Workmen's Compensation Board or similar appropriate public body having jurisdiction over use of explosives. Allow only persons experienced in the handling of explosives to use them on the Work. Where state or local laws require, explosives shall be handled only by licensed personnel.

Provide all necessary approved types of tools and devices required for loading and using explosives, blasting caps, and accessories. Conform to, and obey, all Federal, State and local laws that may be imposed by any public authority or to

directions that may be given from time to time by the Engineer relative to the handling, placing, and firing of explosives. Do not blast adjacent to any portion of exposed work or structures, unless proper precautions are taken to ensure that the structures and materials surrounding and supporting the same will not be damaged by the blasting.

When blasting rock in trenches, cover the area to be shot with blasting mats or other approved type of protective material that will prevent the scattering of rock fragments outside of the excavation. Give ample warning to all persons within the vicinity prior to blasting, and station men and provide signals of danger in suitable places to warn people and vehicles before firing any blasts. Unless otherwise approved by the Engineer, fire all blasts with an electric blasting machine which shall not be connected in the circuit until just prior to the time for firing, and then shall be connected by the man who will operate the blasting machine.

After a blast has been fired, the blaster shall make a careful inspection to determine that all charges have been exploded before employees are allowed to return to the operation. Correct misfires in accordance with the requirements of the applicable portions of the State or local safety code for blasting. The Contractor shall be responsible for any and all damages to property or injury to persons resulting from blasting, or accidental or premature explosions that may occur in connection with his use of explosives.

In case injury from blasting occurs to any portion of the work or to adjacent structures or property or to the material surrounding or supporting the work that is intended to remain, remove such damaged work, repair the work, and replace the material surrounding or supporting the same, or furnish such material and perform such work for repair or replacement as the Engineer shall order. Repair promptly, complete, and satisfactorily all damage to existing structures intended to remain, that is caused by blasting, at no expense to the Owner.

Shoring, Sheeting, and Bracing of Trenches

Sheet and brace the trench when necessary to prevent caving during excavating in unstable material, or to protect adjacent structures, property, workers, and the public. Increase trench width accordingly by the thickness of the sheeting. Maintain sheeting in place until the pipe has been placed and backfilled at the pipe zone. Shoring and sheeting shall be removed, as the backfilling is done, in a manner that will not damage the pipe or permit voids in the backfill. All sheeting, shoring, and bracing of trenches shall conform to the safety requirements of the Federal, State, or local public agency having jurisdiction. The most stringent of these requirements shall apply.

Location of Excavated Materials

During trench excavating, place the excavated material only within the construction easement, right-of-way, or approved working area. Do not obstruct any private or public traveled roadways or streets. Conform to all Federal, State, and local codes governing the safe loading of all trenches with excavated material.

Removal of Water

At all times provide and maintain ample means and devices to promptly remove and dispose of all water entering the trench excavation during the time the trench is being prepared for the pipe laying, during the laying of the pipe, and until the backfill at the pipe zone has been completed. These provisions shall apply during the noon hour as well as overnight.

Dispose of the water in a manner to prevent damage to adjacent property. Drainage of trench water through the pipeline under construction is prohibited.

Foundation Stabilization

When, in the opinion of the Engineer, the existing material in the bottom of the trench is unsuitable for supporting the pipe, excavate below the flow line of the pipe, as directed by the Engineer. Backfill the trench to subgrade of pipe bedding with foundation stabilization material specified hereinbefore. Place the foundation stabilization material over the full width of the trench and compact to 90 percent compaction in layers not exceeding 6 inches deep to the required grade.

Pipe Zone Backfill

Unless otherwise shown or directed, place the minimum thickness as shown on the Drawings of granular pipe bedding as hereinbefore specified. Place for the full width of the trench with the top of the granular base at flow line grade. Bed the pipe so that the flow line is at the required grade and elevation. Place and finish the base to grade ahead of the pipe-laying operation. Excavate bell holes at each joint to permit proper assembly.

Complete backfill of the pipe zone to 6 inches above the outside of the pipe for the full width of the trench with granular pipe bedding or concrete as indicated on the drawings. Place in the trench in lifts not exceeding 6 inches on both sides of the pipe. Thoroughly tamp and supplement by "walking in" the granular bedding materials. Use particular attention in placing material on the underside of the pipe to provide a solid backing and to prevent lateral movement during the final backfilling procedure.

Trench Backfill above Pipe Zone

General

When backfill is placed mechanically, push the backfill material onto the slope of the backfill previously placed and allow to slide down into the trench. Do not push backfill into the trench in such a way as to permit free fall of the material until at least 2 feet of cover is provided over the top of the pipe. Under no circumstances allow sharp, heavy pieces of material to drop directly onto the pipe or the tamped material around the pipe. Compaction shall be by mechanical means. Flooding or jetting is not permitted.

Class A Backfill for Unsurfaced Areas

Backfill the trench above the pipe zone with select native material compacted to 85

percent relative compaction.

Leave the trench with the backfill material neatly mounded approximately 6 inches above the existing ground for the entire width of the trench. Estimate and provide the amount of backfill material required so that after the normal settlement, the finished surface will meet the existing grade. Neatly replace the material over the trench and remove all excess. Any excess or deficiency of backfill material which becomes apparent after settlement and within the warranty period shall be corrected by regrading, disposal of excess material, and/or adding additional material where required. Remove rocks larger than 3 inches from the upper 8 inches of the backfill.

Class B Backfill for Shoulders and Gravel-Surfaced Areas

Backfill the trench above the pipe zone with select native material compacted to 95 percent relative compaction. Place and compact aggregate base (where required to match adjacent areas) in accordance with Section SURFACE RESTORATION.

Class C Backfill for Paved Roads

Backfill the trench to within 30 inches of the subgrade using 3-inch minus select native material compacted to 90 percent relative compaction. The top 30-inches of the trench material shall be compacted to a minimum of 95% relative compaction. Material in the top 30-inches of the trench shall comply with the details referenced on the plans, unless an encroachment permit exists for the project. In that case, the encroachment permit conditions govern. Place and compact aggregate base and asphalt concrete pavement as specified under Section SURFACE RESTORATION.

If permanent pavement replacement is not to be completed within one week of backfilling, maintain the surface of the trench level within 1 inch of the adjacent existing grade with aggregate base material and temporarily pave with asphalt until surface restoration is completed or cover with steel traffic plates.

Slurry Cement Backfill

Place slurry cement backfill in such a manner that no dirt or foreign material becomes mixed with the slurry. Consolidate the slurry with mechanical vibrators or by other means approved by the Owner. Placement shall be in a uniform manner that will prevent voids in, or segregation of, the backfill. Take care not to damage the pipe or to cause the pipe to shift or to float. After the slurry has taken its initial set of at least 4 hours, place select native material over the slurry to a maximum depth of one foot or bring the slurry cement to final grade. Do not compact on or over the trench area for a minimum of 48 hours after placement of the slurry. At the end of the 48-hour period, compact the material above the slurry to the relative compaction specified for Class A, B or C areas, and complete the trench backfill above the pipe zone.

Pipe Cover

In locations where insufficient pipe cover exists, place select native material as specified hereinbefore over the pipe as shown or directed to provide a minimum cover of 3 feet. Alternate concrete or slurry cement backfill may be used subject to

Owners prior approval in advance of construction at that site. No additional payment will be made for furnishing additional pipe cover.

Disposal of Excess Excavated Material

Dispose of all excess excavated materials. Make arrangements for the disposal and bear all costs or retain any profit incidental to such disposal.

Irrigation and Drainage Ditch Restoration

Undercrossings of minor irrigation and drainage ditches not designated for special backfill and bedding shall be backfilled so that the upper 1 foot of material in the ditch between ditch banks is topsoil, loam, or clay. Compact this upper 1 foot of material for the full ditch width to a minimum of 95 percent. Material placed below 1 foot of finish grade shall be placed and compacted to the requirements of the backfill class shown on the Drawings for the specific reach of pipe. The Contractor shall correct any ditch leakage occurring as a result of his operations at no cost to the Owner.

Settlement

Any settlement noted in backfill, fill, or in structure build over the backfill or fill within the 1-year warranty period in accordance with the General Conditions will be considered to be caused by improper compaction methods and shall be corrected at no cost to the Owner. Structures damaged by settlement shall be restored to their original condition by the Contractor at no cost to the Owner.

Culverts

Excavation, bedding and backfill for culverts shall be in accordance with Caltrans Standard Specifications Sections 19-3.02, 19-3.02F, 19-3.02C and 19-3.02E.

Excavation and Slope Excavation

Areas shown on the Drawings as Roadway Excavation or Slope Excavation shall be excavated in accordance with Caltrans Standard Specifications Sections 19-1.03B, 19-1.03C, 19-1.03D, 19-2.03F and 19-2.03G, except that payment will be made in accordance with the General Conditions and Supplementary Conditions.

Embankments

Areas shown on the Drawings as Embankment or Fill shall be constructed in accordance with Caltrans Standard Specifications Section 19-1.03C and Sections 19-5 and 19-6, except Paragraphs 19-5.05 and 19-6.04 are not applicable, and that payment will be made in accordance with the General Conditions and Supplementary Conditions.

PAYMENT

Payment for all the Work specified in this section will be included as part of applicable items stated in the Bid Schedule.

Payment for Foundation Stabilization Material and excavation for same shall be made by negotiated change order, if any foundation stabilization work is ordered by the Engineer.

END OF SECTION

SECTION 02370

SLOPE PROTECTION & EROSION CONTROL

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Provide all labor, materials, and equipment for seeding and placing riprap slope protection.

1.02 REFERENCES

- A. State of California, Department of Transportation, Standard Specifications (Standard Specifications).
- B. Technical Association of the Pulp and Paper Industry.

1.03 SUBMITTALS

- A. Submit in accordance with Section 01300.
- B. Submit the following under the Product Information category.
1. Submittals on seed mix, hydromulch mix, and filter blankets.

PART 2 - PRODUCTS

2.01 SEEDING

- A. Seed.
1. Seed shall comply with Section 20-2.10, "Seed", of the Standard Specifications.
 2. Seed shall be certified seed, clean, delivered in original unopened containers bearing an analysis of the contents and guaranteed 95% pure, and have a minimum germination rate of 80%.
 3. Erosion control seed mix:

Seed Mix	Percentage
Zorro Fescue	50%
California Brome	20%
Hykon Rose Clover	15%
Persian Clover	10%
Bolea Balaksa Clover	5%

1. Wildflower seed mix:

Seed Mix	Percentage
Tidy Tips	20%
Scarlet Flax	30%
Lanced Leaves Coreopsis	30%

Bachelor Buttons	20%
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B. Fertilizer shall have the following guaranteed chemical analysis:

Ingredient	Percentage
Nitrogen	15%
Phosphoric Acid	15%
Water Soluble Potash	15%

C. Straw shall be clean and free of mold and seeds and shall be delivered to the job site in dry bales.

D. Hydromulch Products:

1. Stabilizing Emulsion (Tackifier): A mixture of 100% organic, water soluble alginic acids derived from cold water kelps.
2. Fiber:
 - a. Green colored, fibrous, wood cellulose mulch containing no other growth or germination inhibiting factors and manufactured in such a manner that after addition and agitation in slurry tanks with fertilizer, seed, water, and other approved additives, the fibers in the material will become uniformly suspended to form a homogeneous slurry; and that when hydraulically sprayed on the ground, the material will form a blotter-like ground cover impregnated uniformly with seed; and which after application, will allow the absorption of moisture and allow the rainfall to percolate to the underlying soil.
 - b. Cellulose shall be certified to indicate that laboratory and field testing of the product has been accomplished and that it meets all of the foregoing requirements based on testing. Weight specifications of this material from suppliers and for all application shall refer only to air dry weight of the fiber material.
 - c. Absolute air dry weight is based on the normal standards of the Technical Association of the Pulp and Paper Industry for wood cellulose and is considered equivalent to 10% moisture. Each package of the cellulose fiber shall be marked by the manufacturer to show the air dry weight content.
3. Water: Clean, potable. Add to the slurry mixture in sufficient amount to spread uniformly the required quantity of hydromulch solids.

2.02 RIPRAP

A. Riprap:

1. Durable rock, free from cracks and seams shall conform to the quality requirements of the Standard Specifications, Section 72-2. Neither the breadth nor the thickness of any piece of riprap shall be less than one-third its length.
2. Grade the riprap to conform to Method B placement in the Standard Specifications, Section 72-2, for the class shown in the Drawings.

- B. Filter Blanket: Clean, hard, durable sand and gravel free of organic material, clays or other deleterious substances, with a minimum Durability Index of 40 and a minimum specific gravity of 2.5. The material shall conform to the following gradation. It shall not be gap graded.

Sieve Size	Percent Passing by Weight
3 inch	100
1-1/2 inch	80 – 100
3/8 inch	45 – 100
No. 4	30 – 70
No. 8	20 – 65
No. 30	0 – 20
No. 200	0 – 5

PART 3 - EXECUTION

3.01 SEEDING

- A. Preparation of Slopes:
1. Dress and grade the slopes to provide a uniform surface and slope. Do not compact the surface.
 2. Thoroughly water the slopes for one week prior to seeding. Take care not to cause erosion or otherwise damage the slope profile and integrity.
 3. Notify the Engineer at least 48 hours in advance of all seeding.
- B. Drilled Seeding Installation:
1. Drill seed mix at the following rates:

Seed Mix	Rate
Erosion Control	35 lbs. per acre
Wildflower	8 lbs. per acre

2. Broadcast fertilizer at a rate of 150 pounds per acre immediately after seeding. Do not drill the fertilizer with the seed.
3. Apply straw at a rate of one to two tons per acre. Incorporate the straw into the soil in accordance with Standard Specifications, paragraph 20-3.03.

- C. Hydromulch Seeding Installation:
1. Apply products in a two-step process, mixed as follows:

Step 1	
Product	Rate
Erosion Control	35 lbs. per acre
Wildflower	8 lbs. per acre
Fiber	300 lbs. per acre

Step 2	
Product	Rate
Fertilizer	300 lbs. per acre
Stabilizing Emulsion	Min. of 100 lbs. per acre
Fiber	1,500 lbs. per acre

2. **Equipment:** Use hydraulic equipment for the application of the fertilizer, seed, and slurry of prepared wood pulp of the type approved by the Engineer. This equipment shall have a built-in agitation system and operating capacity sufficient to agitate, suspend and homogeneously mix the slurry. The slurry distribution lines shall be large enough to prevent stoppage and equipped with a set of hydraulic spray nozzles which will provide a continuous non-fluctuating discharge and delivery of the slurry of the prescribed quantities uniformly, without misses, waste, or erosion. The slurry tank shall have a minimum capacity of 1,000 gallons and be mounted on a traveling unit which may be either self-propelled or drawn with a separate unit which will place the slurry tank and spray nozzles within sufficient proximity to the areas to be seeded so as to provide uniform distribution. The Engineer may allow equipment with smaller tank capacity provided that the equipment has the necessary agitation system and sufficient pump capacity to spray the slurry in a uniform coat.

- D. Do not water seeded areas. The Owner will maintain seeded areas.

3.02 RIPRAP INSTALLATION

- A. **Foundation Preparation:** Trim and dress the slopes to conform to cross sections shown on the Drawings. Where such areas are below the allowable minus tolerance limit, they shall be brought to grade by filling with earth similar to the adjacent material and compacted to a comparable density. Immediately prior to placing the filter rock, the prepared base will be inspected by the Engineer, and no material shall be placed thereon until that area has been approved.
- B. **Filter Blanket:** Spread filter uniformly on the prepared base to the slope lines and grades indicated on the Drawings. Placing of material by methods which will tend to segregate particle sizes within the filter rock layer will not be permitted. Any damage to the surface of the base during placing of the filter layer shall be repaired before proceeding with the work. Compaction of the filter rock layer will

not be required, but it shall be finished to present a reasonably even surface free from mounds or windrows.

- C. Riprap: Place rock for riprap on the filter blanket in such a manner as to produce a reasonably well graded mass of rock with the minimum practicable percentage of voids. Comply with the following tolerance to the lines and grades shown on the Drawings. A tolerance of plus 3 inches or minus 0 inches from the slope lines and grades shown on the Drawings will be allowed in the finished surface of the riprap. Place riprap to its full course thickness in one operation and in such a manner as to avoid displacing the filter rock material. Distribute the larger rocks over the entire surface. The entire mass of rocks in their final position shall be roughly graded to conform to the gradation specified. The finished riprap shall be free from pockets of small stones and clusters of larger stones. Placing riprap in layers will not be permitted. Placing riprap by dumping into chutes or by similar methods likely to cause segregation of the various sizes will not be permitted. The desired distribution of the various sizes of rocks throughout the mass shall be obtained by selective loading of the material at the quarry or other source; by controlled dumping of successive loads during final placing; or by other methods of placement which will produce the specified results. Rearranging of individual stones by mechanical equipment or by hand will be required to the extent necessary to obtain a reasonably well graded distribution of rock sizes as specified above. Maintain the riprap protection until the Contract is accepted. Replace any material displaced by any cause to the lines and grades shown on the Drawings.

END OF SECTION