

Great Valley Grasslands Floodplain Restoration Project

100% Design

TECHNICAL SPECIFICATIONS



SECTION 01100 GENERAL SUMMARY

PART 1 - GENERAL

1.01 SUMMARY OF WORK

- A. Goal of the project: to restore the historical flow patterns on the floodplain to restore historical grassland habitat.
- B. Summary of work: the construction work generally consists of the following:
 - 1. Develop a Storm Water Pollution Prevention Plan and implement it
 - 2. Establish temporary access and staging areas
 - 3. Protect existing trees and vegetation in the immediate vicinity of the work area
 - 4. Excavate segments of the existing levee as shown on the Plans
 - 5. Haul, place, and compact soil from existing levee removal in the identified fill placement areas
 - 6. Revegetate with native seeding

1.02 SCHEDULE REQUIREMENTS

- A. The Contractor shall schedule and sequence the work so that all earthwork and improvements do not commence prior to June 15th and are completed no later than November 1st, unless a construction window variance is obtained from requisite permitting agencies.
- B. The Contractor shall also schedule and sequence the work to minimize impacts or disturbance to the Owner's operations within the Dry Creek Rancheria.

1.03 DEFINITIONS

- A. Project Name: Great Valley Grasslands Floodplain Restoration Project
- B. Owner: California State Parks
- C. Owner's Representative: American Rivers
- D. Project Engineer: Paul Frank, P.E. FlowWest
- E. Standard Specifications: shall mean the Standard Specifications of the State of California, Business and Transportation Agency, Department of Transportation, 2018 edition.

1.04 PERMIT REQUIREMENTS

- A. The Owner has obtained the following permits for this project:
1. U.S. Army Corps of Engineers (USACE) – Section 404 Permit (still to be obtained)
 2. Central Valley Flood Protection Board Encroachment Permit
 3. Regional Water Quality Control Board 401 Certification
 4. CDFW Lake and Streambed Alteration Agreement by operational law

B. Copies of permits listed are included as part of the RFP Package.

C. The Contractor shall comply with all permit requirements for the project. These permits include restrictions on timing, methods, and duration of certain construction activities and protection of environmentally sensitive habitats and species. The Contractor shall notify the Engineer immediately of any discrepancy between project permits and Contract Documents. The Contractor shall maintain a copy of all permits at the site throughout construction.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

*** END OF SECTION ***

SECTION 01205 MEASUREMENT AND PAYMENT

PART 1 -GENERAL

1.01 SUMMARY

- A. This section describes the Contract requirements for the measurement and payment for work performed under this Contract.
- B. Payment for each contract bid item includes full compensation for all labor, equipment, tools, supplies and incidentals necessary to complete the work as shown on the Drawings and as described in these specifications.

1.02 LUMP SUM BID ITEMS

- A. Payment items for the work of this Contract for which contract lump sum payments will be made are listed in the Bid Schedule and described below. All costs for items of work, which are not specifically mentioned in a particular lump sum payment item, shall be included in the listed lump sum item most closely associated with the work involved. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided.
- B. Before the Contractor's first progress pay request on this project, the Contractor shall provide the Owner's Representative with a Schedule of Values (Lump Sum Breakdown) for each Lump Sum bid item shown on the Bid Schedule. The Schedule of Values shall be a well-balanced, detailed breakdown of work items consisting of estimated quantities, unit prices, material, and equipment costs the Contractor allocates for the work covered under each Lump Sum bid item.
- C. Such Schedule of Values shall not be unbalanced and will be subject to approval of the Owner's Representative and will be used to compute progress payments for Lump Sum bid item work. The Contractor shall provide proof of costs to justify the submitted Schedule of Values if requested by the Owner's Representative.
- D. Where Contract Change Orders are issued increasing or decreasing the scope of the work and cost, the Contractor shall prepare revisions to the Schedule of Values, where necessary, for approval of the Owner's Representative. The revised Schedule of Values will be used for subsequent progress payments.

1.03 UNIT PRICE BID ITEMS

- A. Items of work listed in the Bid Schedule that are Unit Price bid items shall be

measured for payment as set forth in this section, under the description of each relative bid item.

- B. All measurements for payment purposes shall be made by the Owner's Representative unless noted otherwise.

1.04 DESCRIPTION OF BID ITEMS

- A. The Bid Schedule bid items are presented to indicate major categories of the work for purposes of comparative bid analysis, payment, breakdown for monthly progress payments, and final payment to the Contractor under the Contract. The Bid Schedule is not intended to be exclusive descriptions of work categories and the Contractor shall determine and include in its pricing all materials, labor, equipment, and operations necessary to complete each bid item of work, as shown and specified, and all costs of compliance with all applicable regulations of public agencies having jurisdiction, including, but not limited to, the health and safety requirements of the California Division of Industrial safety and the Occupational Safety and Health Administration of the U.S. Department of labor (OSHA).
- B. Bid Item 1, Mobilization and Demobilization (Lump Sum): Payment to be made under this bid item includes, but is not limited to, all costs associated with mobilization to and demobilization from the project site, mobilization within the project site to individual work areas, temporary facilities, access roads, construction surveying, submittals, permits, site clean-up after completion and acceptance of all work, and other items relevant to this project and not specifically included in the other bid items.
- C. Bid Item 2, Temporary Erosion Prevention Plan and Implementation (Lump Sum): Payment to be made under this bid item shall be for developing a Stormwater Pollution Prevention Plan (SWPPP), submitting it to the Owner's Representative for approval, and implementing the SWPPP, including installing, inspecting and maintaining all supplemental stormwater BMPs that the Contractor deems necessary for SWPPP compliance during construction and throughout the erosion control maintenance period.
- D. Bid Item 3, Excavation (Cubic Yard): Payment to be made under this bid item will be based on in-place cubic yards for excavation as determined using post-construction surveys performed by the Contractor. The Contractor shall provide calculations of excavation volumes as prepared by the Contractor's Surveyor. Excavation volumes shall be calculated as the difference between existing grade and finished grades as surveyed, within tolerance. Existing grades shall be determined using existing topography (which can be provided electronically by the Project Engineer) as shown on the Drawings. (Alternatively, the Contractor may elect to perform a pre-construction survey to establish existing grades.) No payment will be made for excavation or fill placement that does not conform to the design, without approval from the Owner's Representative. At its own discretion, the Owner's Representative may independently calculate excavation volumes. Payment for Excavation shall include but not be limited to, excavation, excavation support, fill

placement, compaction, moisture conditioning, fine grading, dust, water and erosion control, dewatering if needed, loading, transportation and onsite disposal, and all incidental work.

E. Bid Item 4, Embankment (Cubic Yard): Payment for Embankment (also known as Fill) shall include placement of material to the grades shown on the drawings. Embankment volumes shall be determined using post-construction surveys performed by the Contractor. The Contractor shall provide calculations of excavation volumes as prepared by the Contractor's Surveyor. Embankment volumes shall be calculated as the difference between existing grade and finished grades as surveyed, within tolerance. Existing grades shall be determined using existing topography (provided electronically by the Project Engineer) as shown on the Drawings. (Alternatively, the Contractor may elect to perform a pre-construction survey to establish existing grades.) No payment will be made for excavation or fill placement that does not conform to the design, without approval from the Owner's Representative. At its own discretion, the Owner's Representative may independently calculate excavation volumes. Payment for Embankment shall include but not be limited to, embankment placement, excavation support, fill placement, compaction, moisture conditioning, fine grading, dust, water and erosion control, dewatering if needed, loading, transportation and onsite disposal, and all incidental work.

F. Bid Item 5 Seeding –Payment for seeding areas shall be made at the unit bid price for seeding all disturbed areas as shown on the Drawings. Payment shall include supplying and transporting all materials, proper care and handling, soil scarification, procurement and application of mulch and seeding, reseeding areas disturbed following initial seeding, to the approval of the Owner's Representative.

PART 2 - PRODUCTS – NOT USED

PART 3 -EXECUTION – NOT USED

*** END OF SECTION ***

SECTION 01450 FIELD ENGINEERING

PART 1 - GENERAL

1.01 SUMMARY OF WORK

- A. This section describes the lines, grades, and survey control to be established and maintained by Contractor, and also describes requirements of the surveys to be performed by Contractor.

1.02 STAKING OUT OF WORK

- A. Lines and Grades: The Contractor is responsible for providing all staking and surveying needed to achieve all lines, grades and dimensions shown on the Drawings. Stakes and markers shall be provided as necessary to control the work and assure construction is in conformance with the Contract Documents and as otherwise directed by the Owner's Representative. The Contractor shall anticipate the site conditions (e.g. high flows, traffic, vandalism etc.) when developing its approach to maintaining construction staking.
- B. Equipment and Personnel: Contractor's instruments and other survey equipment shall be accurate to within 0.1 foot, suitable for the surveys required in accordance with recognized professional standards, and in proper condition and adjustment at all times. Surveys shall be performed under the direct supervision of a surveyor licensed in the State of California.
- C. The Contractor shall use established survey benchmark and control data provided by the Engineer to layout the Work.
- D. Use by Owner: Owner or Owner's Representative may, at any time, use line and grade points and markers established by Contractor. Contractor's surveys are a part of the work and may be checked by Owner or Owner's Representative at any time. Contractor shall be responsible for any lines, grades, or measurements which do not comply with specified or proper tolerances, or which are otherwise defective, and for any resultant defects in the work. Contractor will be required to conduct resurveys or check surveys to correct errors indicated by review of the field notebooks and survey data.
- E. Surveys for Layout and Performance: Contractor shall perform all surveys for layout and performance of the work, shall reduce the field notes, and make all calculations and drawings necessary to carry out such work.
- F. When the Specifications or Owner's Representative require Bid Schedule items of work to be measured by surveying methods, Contractor shall perform the surveys. All such surveys, including control surveys run for establishing the measurement reference lines, shall be performed in the presence of Owner's Representative. Owner's Representative may independently reduce the field notes and calculate quantities to verify Contractor's payment request. The Owner's Representative also reserves the right to conduct an independent survey to determine quantities.

1.03 GENERAL SURVEY REQUIREMENTS

- A. The Contractor shall perform post-construction surveys as required for progress payments, Acceptance of the Work and to document post-construction conditions. The Contractor also has the option to perform pre-construction surveys as described in Paragraphs 1.04 of this section.
- B. The following requirements apply to surveys performed by the Contractor.
- 1 Licensed Surveyor: All surveys, computations and supporting drawings shall be prepared at the Contractor's expense by a Survey Contractor whose equipment and work force are independent of the Contractor's. All surveys and computations shall be performed under the supervision of a Land Surveyor registered in the State of California and actively engaged in surveying during the last three (3) years. The Land Surveyor shall provide references to confirm completion of at least three (3) similar projects in the last (3) three years. The name and State Land Surveyor's license number shall be submitted to the Owner's Representative at least five (5) calendar days prior to commencement of survey work for the Owner's Representative's approval.
 - 2 For survey transects, elevations shall be taken at breaks in slope and at intervals not greater than 10 feet along the cross section. Survey points shall extend at least 20 feet beyond the limits of earthwork (excavation and/or fill). Surveyed grade points shall be converted to elevations relative to NAVD 1988 and to the nearest one-tenth of a foot. Survey transects shall be taken at locations that are representative of existing grade.
 - 3 Drawings shall be prepared at a scale of 1"=20 feet on plan sheets that delineate the survey control lines. Section plots shall be prepared with a horizontal axis at a scale of 1"=10 feet with no vertical exaggeration. For pre-construction surveys, section plots shall include the design section used for quantity calculations.
 - 4 Survey sections shall be taken at the minimum intervals as stated below. The interval between sections may be reduced if, through surveys, earthwork is consistently found to be out of compliance with design requirements.
 - 5 Subsequent surveys shall re-occupy the same lines so the surveys and quantities can be directly compared.
- C. The Owner's Representative may elect to substitute the Contractor's survey with its own survey. The Owner's Representative will select the survey that will govern at its sole discretion.

1.04 PRE-CONSTRUCTION SURVEYS

- A. Prior to commencing earthwork, the Contractor has the option of performing a preconstruction topographic survey to establish existing grades at the site. If the Contractor does not perform a pre-construction survey, the Contractor agrees to waive any claims regarding the survey data provided.
- B. At a minimum, the pre-construction survey shall comply with the requirements for the post-construction survey per this section.

1.05 POST-CONSTRUCTION SURVEYS

- A. The Contractor shall perform post-construction surveys as needed to demonstrate design compliance and request Acceptance of Work, and to serve as the basis of payment for certain earthwork quantities. Post-construction surveys shall be submitted to the Owner's Representative in hard copy format (3 copies) and electronic format Autodesk Civil 3D CAD and PDF files. B. Minimum requirements for post-construction surveys are as follows:
1. Sections perpendicular to the channel baseline extending 20 feet beyond the limits of work on both sides of the creek with maximum cross section spacing of every 25 feet.
 2. Spot elevations:
 - a. Along the thalweg of the channel, with a spacing of 10 feet, to establish a profile of the new channel.
 - b. Along the crest of each Beaver Dam Analog
- C. One complete set of reproducible survey drawings shall be prepared. Drawings shall be prepared at the same scale as corresponding detail sheets in the Drawings. The base sheets shall also show the control points and grade break-lines on the Drawings. The Owner's Representative will provide hard copy reproducible or electronic files of the plan sheet Drawings if requested by the Contractor. The Contractor shall also prepare cross section drawings corresponding with survey lines, to scale.
- D. The Contractor shall submit three (3) hard copy sets of post-construction survey and any calculations to the Owner's Representative for review and approval, and electronic files (in Autodesk Civil 3D). The Contractor shall allow fourteen (14) calendar days for the Owner's Representative to review. The Contractor shall not consider any earthwork complete until he/she has received the Owner's Representative's written approval of the post-construction survey.
- E. The Contractor may submit post-construction survey results for review and approval in phases as the work is completed. If survey results are submitted in phases, the Contractor shall compile all data, drawings and computations and make one final complete submittal to the Owner's Representative.

1.06 VOLUME CALCULATION

- A. The Contractor's Surveyor shall calculate earthwork quantities for each unit price earthwork item in accordance with Section 01205 Measurement and Payment.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

*** END OF SECTION ***

SECTION 01500 TEMPORARY FACILITIES & CONTROLS

PART 1 - GENERAL

1.01 SUMMARY OF WORK

- A. Section Includes: Requirements for installation, maintenance, and removal of temporary utilities, facilities, controls, and construction aids during construction.

1.02 TEMPORARY UTILITIES

- A. General: Provide all necessary temporary electricity, gas, and water required during construction, including all necessary temporary meters, equipment, wiring, piping, fixtures, and connections. Remove the same prior to completion of the Project.
- B. Temporary Electricity: Provide temporary electrical service for power and lighting, including the furnishing and installation of meters at an approved location. Tools, Cords, and Electrical Equipment: Conform to Underwriters Laboratories standards and Cal-OSHA and be in proper working order to preclude hazard to persons and premises.
- C. Temporary Fire Protection: Comply with NFPA 241. Provide an adequate number and type of fire extinguishers at the jobsite. During the progress of any work requiring the use of welding and cutting equipment or heat-, flame, or spark-producing devices, provide in the immediate area accessible for use an adequate number of fire extinguishers, shields, guards, or coverings placed so as to protect adjacent persons and property.
- D. Temporary Water: Provide water service required for construction operations.

1.03 CONSTRUCTION FACILITIES

- A. Temporary Storage for Tools, Materials, and Equipment: Provide temporary storage sheds or other enclosed temporary structures as required or as deemed necessary by the Contractor to protect material and equipment stored on site. Remove the same prior to completion of Project.
- B. Temporary Sanitary Facilities: Provide and maintain adequate toilets, washing facilities, and drinking facilities for workers. Such items shall comply with all governing health and sanitation requirements. Remove the same upon completion of Project.
- C. Contractor shall not use any existing facilities, structures, improvements or other property of the Owner without written approval from the Owner's Representative.

1.05 SITE MAINTENANCE

A. Cleaning During Construction:

1. Control accumulation of waste materials and rubbish; periodically dispose of legally off-site.

1.06 REMOVAL

A. Remove temporary facilities, fencing, materials, equipment and services prior to Substantial Completion inspection.

- ### B. Clean and repair damage caused by installation or use of temporary facilities. Remove temporary overhead and underground lines and installations; grade site as indicated. Restore existing facilities used during construction to specified, or to original, condition.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Temporary materials and equipment may be new or used, but shall be adequate in capacity for the required usage, shall not create unsafe conditions, and shall not violate requirements of applicable codes and standards.
- B. Hazardous or Flammable Chemicals: Use and store hazardous or flammable chemical liquids or gases brought into the Project site in acceptable containers conforming to requirements of OSHA. Use such materials in a manner that will prevent their accidental spill or release. Do not discard such materials on the jobsite. Remove empty containers from premises immediately and dispose of in the proper manner.

PART 3 - EXECUTION - NOT USED

***** END OF SECTION *****

SECTION 01800 ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.01 SUMMARY OF WORK

- A. This section describes environmental protection measures to be applied throughout the duration of the Project, including the following:
- 1 Preparation and implementation of the Stormwater Pollution Prevention Plan (SWPPP)
 - 2 Sediment and Erosion Control
 - 3 Dust Control
 - 4 Noise Control
 - 5 Wildlife Protection
 - 6 Cultural and Prehistoric Resources
- B. General Requirements: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsurface soil contamination or pollution or other undesirable effects.

1.02 GENERAL

- A. Permits obtained for this project include specific requirements for sediment, erosion, water and pollution control and wildlife protection, which shall be adhered to at all times. See Attachment D of the RFP package for copies of project permits obtained by the Owner. Section 02200, Mobilization for permit compliance requirements.

1.03 STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

- A. The Contractor shall develop, maintain and implement a SWPPP that describes the proposed methods of erosion and sediment control for the excavation, grading and fill placement. At a minimum, the plan shall include:
- 1 Written and graphic description of SWPPP components.
 - 2 Monitoring and Reporting Program (M&RP)
 - 3 A description of actions to minimize turbidity and water quality impacts in the San Joaquin River
 - 4 Figures showing the design and location of the designated fueling area.
 - 5 A fuel and oil spill prevention plan and emergency clean-up plan.
 - 6 Incorporation of all permitting requirements regarding scheduling, sequencing, methods and performance standards for erosion, sediment and water pollution control.
 - 7 Training and monitoring procedures.
- B. At a minimum, the SWPPP shall include compliance with the erosion control measures specified in these Contract Documents (shown on the Drawings and/or included in Section 02910 Erosion Control).
- C. The Contractor shall select and implement additional Best Management Practices (BMPs) that

- are appropriate for the site and the Contractor's actual methods of construction, access and project phasing. The BMPs included in the SWPPP shall be selected in conformance with the SWRCB BMPs Construction Practice Handbook.
- D. The SWPPP and the Contractor's erosion and sediment control measures shall comply with the SWRCB Construction Storm Water Program effective July 1, 2010.
http://www.swrcb.ca.gov/water_issues/programs/stormwater/constpermits.shtml The Contractor's plan shall be prepared by a Qualified SWPPP Developer (QSD). The Contractor shall assume that the site is a Linear Underground/Overhead Project (LUP).
- E. The Contractor's detailed plan shall be submitted within seven (7) working days of the Notice to Proceed. The Contractor shall revise and resubmit the SWPPP as noted by the Owner's Representative. The Contractor shall not mobilize to the site until the SWPPP has been approved in writing by the Owner's Representative.
- F. The Contractor shall not deviate from the approved plan unless a revised plan has been approved in writing by the Owner's Representative. Failure to adhere to an approved plan that demonstrates conformance with the provisions of the Contract shall be cause for rejection of Contractor's request for payment until the plan has been brought into conformance.
- G. The Contractor shall keep a copy of the SWPPP onsite at all times during construction. The Contractor shall regularly update the SWPPP as needed to respond to site-specific conditions.

1.04 NPDES GENERAL PERMIT COMPLIANCE

- A. The Contractor shall prepare the Notice of Intent (NOI) to the State Water Resources Control Board (SWRCB) to obtain coverage under the SWRCB General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (NPDES General Permit). The Contractor shall provide the NOI and all associated documents to the Owner for submittal using the SWRCB's Storm Water Multi-Application and Report Tracking (SMARTs) system. The Contractor shall not begin any Work at the site until the NOI has been submitted.
- B. Contractor shall prepare inspection reports as required by the SWRCB for review by Owner's Representative. Following favorable review by Owner's Representative, the Contractor shall submit inspection reports to the SWRCB and other agencies as required.
- C. Upon Substantial Completion of the project, Contractor shall prepare and submit the Notice of Termination (NOT) and all associated documents to the Owner's Representative for submittal using the SWRCB's SMART system. Substantial Completion is defined as completion of all work, including punch list items, except erosion control maintenance.
- D. For bidding purposes, the Contractor shall anticipate that at least three (3) rain events will occur during the construction period and the Contractor will be required to perform monitoring, sampling and analysis and reporting in accordance with the M&RP.
- E. The Contractor may assume that compliance with the M&RP will not be required throughout the erosion control maintenance period, provided that (a) the NOT has been submitted by the Owner, and (b) the project has been accepted by the Owner's Representative as Substantially Complete per Section 01770 Closeout Procedures.

1.05 SEDIMENT AND EROSION CONTROL

- A. The Contractor shall install and maintain erosion and sediment control measures as needed to mitigate the potential for sediment migration away from the work area into the San Joaquin River and other open waters. At a minimum, the Contractor shall comply with the requirements of this section and the Technical Specifications (Division 2). The Contractor shall modify and enhance these measures to meet permitting requirements and/or as needed to mitigate sediment migration at no additional expense to the Owner.
- B. Comply with specific measures for sediment and erosion control as described in Section 02910 Erosion Control.

1.06 NON-STORM WATER CONTROL

- A. The Contractor shall designate one fueling and wash area within the staging areas. The Contractor shall only perform fueling, maintenance and emergency repair of vehicles and equipment within the designated fueling area or offsite.
- B. The designated fueling and wash area shall be constructed to provide containment of any spills and to prevent any waste from contacting and penetrating the ground by use of methods such as berms and/or liners. The Contractor shall include details of its fueling and wash area in the SWPPP.
- C. Inspect all equipment for leaks immediately prior to the start of construction, and regularly thereafter until equipment is removed from the site. Equipment repair (other than emergency repairs) shall be performed offsite.
- D. Any hazardous materials and/or hazardous substances that the Contractor deems necessary for performance of the work shall be stored, used and contained within the fueling and wash area. Dispose of all contaminated water, sludge, spill residue, or other hazardous compounds offsite at a lawfully permitted or authorized facility.
- E. Clean up any accidental leaks or spills immediately and remove any contaminated soils or other materials offsite. Dispose offsite in accordance with all applicable laws. The Contractor's plan and contingency measures for preventing and cleanup of accidental spills shall be detailed in the SWPPP. At a minimum, the Contractor shall maintain onsite a spill kit for emergency cleanup throughout the life of the project.
- F. Immediately notify the Owner's Representative in the event of any spill or release of any chemical in any physical form on or immediately adjacent to the creek or river channel during construction.
- G. Upon the Contractor's removal and cleanup of the designated fueling area, the Owner's Representative will sample and analyze underlying soil for petroleum hydrocarbons and/or other chemical constituents as appropriate to determine if any contamination has occurred. The Contractor shall be solely responsible for all costs incurred in removing any contamination caused by its activities. This includes, but is not limited to, contamination caused by accidental spills or leaks, wheel tracking, water runoff, water run on and erosion.

1.07 DUST CONTROL

- A. During the performance of all work under the Contract Documents, the Contractor shall employ conscientious and effective means of dust control. The Contractor shall assume responsibility for all damages, delays, government-imposed penalties or fines, and claims

that result from the Contractor's dust control practices. Comply with the local Air Pollution Control District guidelines.

B. Dust control activities will primarily be associated with soil excavation, stockpiling, backfill and compaction, hauling and transport loading operations; however, the Contractor's responsibility for dust control shall cover all the Contractor's operations and shall be continuous (even outside of business hours) throughout the duration of the project.

C. At a minimum, the Contractor shall control dust using the following methods.

- 1 Limit vehicle speeds to 15 miles per hour (mph) on unpaved roads or access routes.
- 2 Water all active construction areas and access routes at least three times daily during dry and dusty conditions.
- 3 Water exposed soil surfaces, soil stockpiles, or other dust generation sites, at the frequency necessary to prohibit dust generation.
- 4 Provide watering equipment capable of applying water to the point of dust generation.
- 5 Use the minimum practicable drop heights during transport vehicle loading.
- 6 Wash all equipment prior to delivery to the site, periodically during construction, and prior to leaving the site.
- 7 To the extent practicable, equipment shall be selected and operated in a manner that minimizes dust generation.
- 8 Maintain equipment engines in good condition and properly tuned (in accordance with manufacturer's specifications).
- 9 Cover truckloads hauling earth offsite.

D. Contingency Requirements

1. If (1) observations or measurements made by the Contractor, Owner's Representative or regulatory agencies, or (2) complaint by the adjacent residents, businesses, or patrons indicate the need for more stringent dust control measures, the Contractor shall perform the following:
 - a. Increase the dosage of dust controls.
 - b. Increase the frequency of dust controls.
 - c. Apply commercial dust palliatives, subject to the approval by the Owner's Representative.
2. These measures shall be performed at no additional cost to the Owner and the Contractor shall include appropriate funds in the Contractor's Bid to cover such measures.
3. If (1) sustained winds exceed 25 mph, (2) instantaneous gusts exceed 35 mph, or (3) dust from construction might obscure driver visibility on public roads, suspend all earthmoving activities.
4. If further dust control measures are needed, the Contractor will be consulted and one of the following measures may be required, at the sole discretion of the Owner's Representative. If, through no fault of the Contractor, further dust control measures are required by the Owner's Representative, a Change Order will be negotiated for the following measures.
 - a. Suspension of certain of the Contractor's operations for more than 4 hours (anticipated only during abnormally high wind conditions).
 - b. Use of windscreens.
 - c. Enclosures of loading operations.

1.08 EXCESSIVE WATERING

- A. Except as required by Owner's Representative, the Contractor shall not employ dust control methods which result in ponded water, erosion, or a material increase in the weight of excavated soil.

1.09 NOISE CONTROL

- A. Comply with local noise ordinances. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from residences, businesses, or patrons located near the project site. See Section 02200 Mobilization for work hours.
- B. Internal combustion engines shall be equipped with a muffler of a type recommended by the manufacturer. Equipment and trucks used for construction shall utilize the best available noise control techniques (e.g., engine enclosures, acoustically-attenuating shields or shrouds, intake silencers, ducts, etc.).
- C. Construction workers shall wear earplugs during operation of heavy equipment.
- D. Stationary noise sources and staging areas shall be located as far from sensitive receptors as possible.
- E. Signs shall be posted at the construction site that include and describe permitted construction days and hours, and a day and evening contact number for the job site. A complaint and enforcement manager shall be appointed to respond to and track noise complaints.

1.010 WILDLIFE PROTECTION

- A. Comply with all permit requirements for wildlife protection per Section 02200 Mobilization and Attachment D (Project Permits).
- B. The Owner's Biological Monitor will perform pre-construction surveys, environmental training, monitoring, and wildlife relocation as summarized in the table below. The Contractor shall cooperate with the Owner's Biological Monitor throughout construction and provide adequate notification to the Owner's Representative to allow sufficient time for required activities.
- C. Contractor's Monitor: The Owner's Biological Monitor will be present at the work site until all initial work instruction has been completed. After this time, the Contractor will designate a person to monitor on-site compliance with all minimization measures that has received the proper training from the Owner's Biological Monitor.
- D. The Contractor shall include in its construction schedule delay of construction activities as needed to allow the Owner's Biological Monitor to conduct initial surveys, periodic monitoring, wildlife relocation and other activities to ensure wildlife protection. Review permit requirements (Attachment D) to determine the anticipated length and frequency of construction delays due to biological monitoring.

1.011 WILDLIFE EDUCATION TRAINING

- A. The Owner's Biological Monitor will conduct education programs for all construction personnel prior to initiating construction. All construction personnel and subcontractors must complete the training before they are authorized to work in the project area.
- B. At a minimum, the training will include a description of each of the protected species, their importance, their habitat, a report of the occurrence within the project area, an explanation of the status of this species and its protection requirements, the conservation measures that are being implemented, and the work site boundaries within which construction may occur. A fact sheet conveying this information will be prepared for distribution to the above-mentioned people and anyone else who may enter the project site. Upon completion of the program, personnel will sign a form stating that they attended the program and understand all the avoidance and minimization measures.

1.012 MINIMUM WILDLIFE PROTECTION MEASURES

- A. At a minimum, the Contractor shall comply with the following measures for wildlife protection:
 - 1 Trash and waste material must be properly disposed of in trash receptacles that prevent the access or trapping of wildlife. These containers shall be available and used at all times. Trash shall be removed from the site daily.
 - 2 All equipment such as buckets, and open holes, trenches or items that may potentially trap wildlife must be covered by the end of each workday. If this is not possible, one or more escape ramps constructed of earth fill or wooden planks will be established in the hole.
 - 3 Thoroughly inspect all holes or trenches for animals before filling. If at any time wildlife is discovered trapped in a trench or pit, halt work and notify the Owner's Representative immediately.
 - 4 Storage of any pipes measuring four (4) inches or greater in diameter at the site will be avoided, or the ends of any such pipes will be sealed with tape as they are brought to the site.
 - 5 No cats or dogs or firearms (except for federal, state, or local law enforcement officers or security personnel) will be permitted onsite to avoid harassment, killing, or injuring of protected wildlife.
 - 6 Erosion control fabric with plastic netting may not be used.
 - 7 Lighting of the project site by artificial lighting during night time hours should be minimized to the maximum extent practicable.

1.013 CULTURAL AND PREHISTORIC RESOURCES

- A. The Contractor shall (1) suspend work in the area and (2) notify the Owner's Representative immediately, if evidence of any of the following are items encountered during performance of the Work:
 - 1 Archaeological artifacts
 - 2 Fossils
 - 3 Human remains

1.014 DELAYS

- A. Any delays in excess of 24 hours resulting from encountering cultural or prehistoric artifacts will be considered as a basis for a Change Order for contract time.

PART 2 - PRODUCTS - NOT USED

PART 3 -EXECUTION - NOT USED

***** END OF SECTION *****

SECTION 02200 MOBILIZATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Mobilization shall consist of the following work:
- 1 Mobilization of materials and equipment to the site for all phases of construction;
 - 2 Preparation of all necessary permits, submittals, notifications and other documentation;
 - 3 Demobilization of all of materials and equipment from the site;
 - 4 Final site cleanup; and
 - 5 Any other items required to complete the construction not otherwise measured and paid for.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 MOBILIZATION AND DEMOBILIZATION

- A. Mobilization and demobilization shall conform to Section 9 of the latest edition of the California Department of Transportation Standard Specifications (Standard Specifications).
- B. Mobilization shall also include finish work and operations (demobilization) including, but not limited to removal of personnel, equipment, supplies and incidentals from the project site and clean-up of the project site. The Contractor shall not demobilize equipment from the site until approved in writing by the Owner's Representative. The Owner's Representative will allow demobilization of equipment that the Contractor declares is no longer needed to complete a given phase of the work. Authorization to demobilize equipment does not relieve the Contractor of the responsibility to re-mobilize as needed to complete the work.
- C. The Contractor's attention is directed to contract schedule and sequence requirements: Section 0110 of these specifications and as indicated on the Drawings. Re-locating equipment to the staging area or offsite temporarily will be allowed to facilitate performance of the work, and/or protection of property and safety, and is not considered demobilization. The cost of any temporary relocation shall be included under the appropriate bid items and no additional payment will be made therefore.
- D. Mobilization shall also include preparation of all necessary permits, submittals, notifications and other documentation necessary for the performance of the work.
- E. The Contractor shall clean all equipment of dirt, mud and plant material prior to entering the work area to prevent the introduction of invasive exotic plants.

3.02 PERMITS OBTAINED BY THE OWNER

- A. The Owner has obtained the following permits for this project:
- 1 U.S. Army Corps of Engineers (USACE) – Section 404 Permit
 - 2 Central Valley Flood Protection Board Encroachment Permit

- B. Copies of permits listed are included as Attachment D of the RFP Package.
- C. The Contractor shall comply with all permit requirements for the project. These permits include restrictions on timing, methods, and duration of certain construction activities. The Contractor shall notify the Owner's Representative immediately of any discrepancy between project permits and Contract Documents. The Contractor shall maintain a copy of all permits at the site throughout construction.
- D. The Contractor shall obtain all other permits required for the performance of the work.

3.03 ACCESS TO PROJECT SITE

- A. Access to the project site is from Highway 165. The Contractor shall confirm the location of the vehicular access to the project site and staging area with the Owner's Representative prior to mobilization.

3.04 STAGING AREA

- A. The primary staging area is shown on the Drawings.
- B. The Contractor shall provide necessary facilities and utilities at the staging area. There is no office area or sanitary facilities available for the Contractor's use.
- C. The Contractor shall make its own investigations to determine the adequacy of any facilities made available by the Owner's Representative and shall determine if they are adequate for equipment access and performance of the work.
- D. The Contractor is responsible for security of its equipment at the staging area. Delineate the staging area with temporary fencing, or similar method as approved by the Owner's Representative. The Contractor shall remove all equipment, facilities, waste and other items delivered to the staging area, and return the staging area to its original condition to the Owner's satisfaction upon completion of the work.

3.05 PROTECTION OF EXISTING FACILITIES

- A. The Contractor shall protect all existing structures, pavements, utilities, trees, fences, and appurtenances within the limits of work and along access routes unless otherwise identified in the Drawings or at the direction of the Owner's Representative. The Contractor shall promptly restore, at Contractor's cost, all damage to existing improvements not scheduled for removal or modification. Damage shall be corrected to the satisfaction of the Owner's Representative. All damage shall be promptly repaired by the Contractor.
- B. The Contractor shall use care in performing the work to protect all existing structures, including but not limited to gates, fencing, buildings and other infrastructure adjacent to the work insofar as they may be jeopardized by access to and from the site or performance of the work. To the satisfaction of the Owner's Representative, and at no cost to the Owner, the Contractor shall make good all damage it causes to structures and property.
- C. Protection of Work and Property:
 - 1 Confine the storage of materials and workmen's operations to the limits established on the Drawings and by law, permits, and/or directions of Owner's Representative.

Do not unreasonably encumber the premises with materials.

- 2 Contractor is responsible for the protection and preservation of all materials and equipment supplied of every description (including property which may be furnished or owned by Owner or by others) while such property is located on the construction site.
- 3 Provide such watchman services as may be deemed necessary to safeguard properly all materials, tools, appliances, and work. The Owner will not assume any responsibility for the loss of or damage to materials, tools, appliances, or work arising from acts of theft, vandalism, malicious mischief, or other causes which may occur during or after working hours.
- 4 Contractor shall promptly comply with all reasonable requests of the Owner's Representative to specially protect such property. If, as determined by Owner's Representative, such property and work are not adequately protected by Contractor, such property and work may be protected by Owner and the cost thereof may be charged to Contractor or deducted from payments then due or later becoming due.
- 5 Repair or replace all work performed or materials, supplies, or equipment furnished which may be damaged or lost by any cause, to the satisfaction of Owner's Representative without cost to Owner.

D. Contractor shall be responsible for all damage to roads, existing vegetation, existing buildings, utilities and other property and improvements resulting from its use and shall repair all damage resulting from such use at no cost to Owner.

E. Contractor's Staging Area: Store construction materials and equipment within boundaries of designated staging and storage area shown on the Drawings.

F. Tree and Plant Protection:

- 1 Do not store materials or equipment, permit burning, or operate or park equipment under the branches of any existing plant to remain except as actually required for construction in those areas.
- 2 Provide barricades, fences, or other barriers as necessary at the drip line to protect existing plants and trees from damage during construction. Refer to Section 02230 Clearing and Grubbing for additional information.
- 3 Notify Owner's Representative in any case where Contractor feels grading or other construction called for by Contract Documents may damage existing plants to remain.
- 4 If existing plants to remain are damaged during construction, Contractor shall replace such plants with others of the same species and size as those damaged, at no cost to Owner. Determination of extent of damage and value of damaged plants shall rest solely with the Owner's Representative.

3.06 EXISTING UTILITIES

A. The Contractor shall identify, locate, and protect all existing utilities within the limits of work including access routes.

B. The location of existing utilities and underground facilities are unknown to the Project Engineer, and are not shown on the Drawings. Utilities or underground facilities present may be present that are not shown.

C. Obtain best available current information on location, identification and marking of existing utilities, piping and conduits and other underground facilities before beginning any excavation. In addition, call Underground Service Alert at 1-800-227-2600 or 811 for

information at least 48 hours in advance of beginning work. Notify the Owner's Representative immediately if any utilities conflict with the work.

3.07 WORK HOURS

- A. Standard work hours for the project are between 7 a.m. and 6 p.m., Monday through Friday. Construction work may be performed outside these hours, including weekends or holidays, provided:
- 1 The Contractor gives the Owner's Representative at least seventy-two (72) hours advance notice and with approval from the Owner's Representative
 - 2 Work is performed and scheduled in a manner that meets all noise control requirements described in Section 01800 Environmental Protection.

*** END OF SECTION ***

SECTION 02230 CLEARING, GRUBBING & MINOR DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The work includes the following:
- 1 Removal of vegetation and trees as needed to complete the work
 - 2 Select trimming of roots and tree limbs as needed to complete the work.
 - 3 Burning or disposing of removed vegetation and debris offsite. Limited onsite disposal may be allowed for select items as approved by the Owner's Representative.
 - 4 Minor demolition and debris removal associated with earthwork and grading.
- B. The Contractor shall protect all trees and all other vegetation not slated for demolition. Prior to commencing construction, the Contractor shall install temporary fencing, flagging or, perimeter of all vegetated areas and/or individual trees to be preserved, and any other improvements onsite. Prior to commencing work, the Contractor shall review all tree and other protection fencing with the Owner's Representative, and field adjust the limits as directed.
- C. The Contractor shall remove debris including timber, rock, concrete, rubble, debris, vegetative matter and other items which may exist within the limits of work.
- D. Unless shown to be removed or altered, existing improvements and facilities, utilities, adjacent property, trees and plants are not to be removed and shall be protected from injury or damage.

PART 2 - PRODUCTS – NOT USED

PART 3 - PART 3 - EXECUTION

3.01 SEQUENCE

- A. Prior to start of clearing operations, the Contractor shall meet with Owner's Representative to stake out tree protection fencing at tree protection areas together.
- B. Clearing and grubbing operations shall proceed in an organized manner in advance of earthwork. Clearing and grubbing shall be sequenced by area such that earthwork begins within two (2) calendar weeks of an area being cleared and grubbed. Clearing and grubbing operations shall also be sequenced to minimize dust generation and erosion at the site.

3.02 CLEARING AND GRUBBING

- A. Limit clearing to two (2) feet beyond limits of earthwork.
- B. Areas shall be cleared and grubbed by removing obstructions, trees, shrubs, grass, and other vegetation. Removal includes digging out stumps and obstructions and grubbing roots. Completely remove stumps, roots, obstructions, and debris extending to a depth of 6-inches below subgrade. Use only hand methods for grubbing within drip line of trees to remain.
- C. The Contractor shall take care to avoid damaging any trees or native herbaceous plants that are not designated for removal.

3.04 TREE PRUNING

- A. Contractor shall obtain approval from the Owner's Representative prior to pruning any tree to remain. Only prune trees as required for performance of the work.
- B. If pruning is needed, prune trees to balance the crown, and eliminate hazards. Perform main work to reduce sail effect through thinning, reducing end weights, shortening long heavy limbs, removing deadwood, weak limbs and sucker growth. Prune limbs back to an appropriate lateral branch. Perform pruning work in a safe and proper manner, adhering to CAL-OSHA and ANSI Standards.

3.05 ROOT PRUNING

- A. Do not cut tree roots greater than 2 inches in diameter and less than 12-inches below ground level without approval of the Owner's Representative.
- B. Cut tree roots cleanly, as far from the trunk as possible. Root pruning shall be to a depth of 18 inches.
- C. Prune tree roots using a Vermeer root-cutting machine. Obtain the Owner's Representative's approval before using alternate equipment or techniques.
- D. Complete tree root pruning prior to any excavation adjacent to the tree.
- E. Do not expose tree roots to drying out. Cover root ends with soil or burlap and keep moist until the final backfill is completed.

3.07 MINOR DEMOLITION AND DEBRIS REMOVAL

- A. This section refers only to minor demolition associated with grading and earthwork activities.
- B. Remove any man-made structures deep enough to prevent interference with the work outlined within the Drawings and these specifications. Any demolition of unidentified structures, and not specified elsewhere, that are not visible on the surface by the Contractor shall be negotiated as extra work, subject to authorization by the Owner's Representative.
- C. Remove incidental debris encountered during clearing and grubbing activities and segregate and dispose of debris offsite. Vegetative matter is not debris. Any debris removal that meets any one of the following criteria shall be negotiated as extra work, subject to authorization

by the Owner's Representative:

- 1 Debris that requires special equipment for removal.
- 2 Hazardous debris that requires special offsite disposal per the direction of the Owner's Representative.

D. Except for materials indicated to be stockpiled or to remain the Owner's property, cleared materials are the Contractor's property. Remove cleared materials from site and dispose of in lawful manner.

*** END OF SECTION ***

SECTION 02300 EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

- A. This section applies to all excavation, transportation, stockpiling, fill placement, compaction, and finish grading, within the grading limits shown on the Drawings and offsite disposal. Earthwork includes, but is not limited to:
- 1 Excavation of existing levees
 - 2 Excavation to connect the floodplain channel with the San Joaquin River active channel
 - 3 Fill placement in the designated areas

1.02 QUALITY ASSURANCE

- A. Reference standards: Reference to "Standard Specifications" shall mean the Standard Specifications of the State of California, Business and Transportation Agency, Department of Transportation, latest edition.

1.03 SUBMITTALS

- A. Refer to Section 01330 Submittal Procedures.
- B. Operations Plan. The Contractor shall submit a detailed Operations Plan describing the Contractor's proposed use of the site, including a water diversion and dewatering plan. The Contractor shall submit the Operations Plan to the Owner's Representative for review and comment at least 14 calendar days prior to the start of work. The Contractor shall have an Owner-approved plan prior to mobilizing to the site. At a minimum, the plan shall include:
- 1 A list of major equipment to be used.
 - 2 A diagram of the site showing the Contractor's designated staging area, including its fueling and washdown area.
 - 3 The site diagram shall also include all haul routes (onsite and offsite) to be used throughout construction.
 - 4 A diagram showing the sequence of work.
 - 5 A diagram and narrative description of the work to be completed in each phase of construction.
 - 6 A time schedule of the operations, including specific dates for work.
- C. The Contractor shall not deviate from the approved Operations Plan unless a revised plan has been approved in writing by the Owner's Representative. Failure to adhere to an approved plan shall be cause for rejection of Contractor's request for payment for Excavation bid item, until the plan has been brought into conformance.
- D. Offsite Disposal Location(s): Prior to transporting any excavated material offsite, the Contractor shall submit the proposed offsite disposal locations for the Owner's Representative's approval.

1.04 EARTHWORK QUANTITIES

- A. Estimated earthwork volumes for certain bid items are provided in this section. These quantity estimates are approximate and provided only to assist bidders with understanding the scale of the project. The quantity estimates have been made by the Project Engineer using three dimensional CAD surface models and the best topographic data available. Quantities are based on in-place volumes and do not account for volume changes due to bulking, water loss, swelling, compaction, transport losses, vegetation mass and other factors.
- B. Contractor is responsible for preparing all earthwork volume estimates and its quantity takeoffs. The Contractor shall immediately notify the Owner's Representative of any discrepancy between the calculated volume and that shown herein.
- C. The Contractor may, at its option and sole cost, elect to perform its own pre-construction topographic survey prior to construction as described in Section 01450 Field Engineering.
- D. Except as provided herein, the Contractor shall waive any and all claims regarding earthwork quantities and survey data.
- E. The Contractor shall perform site investigations, estimate quantities, and include sufficient contingency in its bid to cover variations from topographic variation from available topographic survey data.

PART 2 -PRODUCTS

Not used

PART 3 - EXECUTION

3.01 SEQUENCE OF WORK

- A. Prior to commencing earthwork, the Contractor shall stake the grading limits and channel centerline for review and approval by the Owner's Representative. Adjust stakes as instructed by the Owner's Representative to meet the design intent.
- B. Excavation and fill placement shall progress in an orderly manner, with completion of contiguous areas as work progresses. Limit the area of active grading as needed for dust and erosion control.
- C. Comply with all restrictions on timing and duration of earthwork activities as required by project permits (Attachment D).
- D. See also schedule and sequence requirements listed in Section 01100 Summary.

3.02 EXCAVATION

- A. Excavate all materials to lines, grades, and slopes as shown on the Drawings to accommodate the finished contours or grades.

- C. Blasting will not be permitted.
- D. Excavation Support: Excavation shall be adequately shored, braced, sloped or otherwise supported in accordance with applicable laws, and as the Contractor deems necessary for safe and controlled performance of the earthwork activities. Shoring shall conform to the requirements of the Construction Safety orders issued by the State of California, Department of Industrial Relations, Division of Industrial Safety. The Contractor shall obtain all necessary excavation permits from the Division of Industrial Safety. The Contractor shall retain the responsibility for determination, design and installation of the sloping, shoring, bracing and other measures required for safe excavations, whether these excavations are greater or less than five feet in depth. The Contractor shall be solely responsible for damages which may result from failure to provide adequate shoring and bracing.
- E. All excavated steep-walled holes or trenches should be covered at the end of each workday with plywood or similar materials. If this is not possible, one or more escape ramps constructed of earth fill or wooden planks will be established in the hole. Before such holes or trenches are filled, they will be thoroughly inspected for animals.

3.03 SEGREGATING MATERIALS

- B. The Contractor shall segregate excavated material as needed to meet these specifications.
- C. The Contractor shall segregate debris from native earthen material for all excavated material.
- D. The Contractor shall coordinate with the Owner's Representative to confirm the location of interim and longer term (for future separate work phases) stockpiling of segregated materials as well as the amount of stockpiling acceptable within the project limits and/or elsewhere on the Owner's property. Excess material that will not be used to complete the Work shall be stockpiled at the direction of the Owner's Representative.

3.04 SUBGRADE PREPARATION

- A. The Contractor shall excavate subgrade to the lines and grades shown on the Drawings. Grade tolerance in section 19-1.03 shall be 0.1 feet.

3.05 CONTROL OF WATER

- A. The Contractor shall be aware that surface water and/or groundwater (including seeps), may enter the areas of excavation. The work may include excavation of material from below the groundwater surface.
- B. The Contractor shall provide and operate equipment to control water as needed to keep excavations free of standing water, and as the Contractor deems necessary for safe and efficient execution of the Work. The Contractor shall provide equipment to remove, contain, treat and dispose of groundwater entering the excavation. The Contractor shall treat and contain removed water as needed to adequately remove suspended sediment prior to disposal. Dispose of water in an environmentally acceptable manner, in accordance with project permits, applicable law, and such that property is not damaged. The Contractor shall avoid settlement or damage to adjacent property or facilities from dewatering operations.

- C. Contractor shall be responsible for obtaining all necessary permits for treatment and disposal of groundwater removed from the excavation.

3.06 FILL PLACEMENT AND COMPACTION

- A. Excavated material may be used for onsite fill placement, provided that it meets the requirements as stated in Part 2 and with approval of the Owner's Representative.
- B. All fill shall be compacted to eighty-five percent (85%) relative compaction, unless specified otherwise on the Drawings. During all compacting operations, the Contractor shall maintain optimum moisture content so that the specified relative compaction is obtained in each lift as the lift is compacted. Maintain moisture content uniform throughout the lift. At the time of compaction the water content of the materials shall be at optimum moisture content, plus or minus 3 percentage points. Fill compaction by ponding and jetting will not be permitted.
- C. The Owner's Representative has the option to perform in-place density and moisture content testing on each lift of fill. The Contractor shall cooperate with this testing by leveling small test areas. The frequency and location of testing will be determined solely by the Owner's Representative. As the Contractor nears completion of compaction of each lift, notify the Owner's Representative so that the Owner's Representative is afforded the opportunity to test each lift.

3.07 FINE GRADING

- A. The Contractor shall finish grade within the grading limits to smooth slopes to the lines and grades shown on the Drawings.
- B. All finished surfaces shall be graded to drain.

3.08 TOLERANCES AND ACCEPTANCE

- A. The Contractor shall endeavor to excavate and place fill to the finish grade neat lines indicated in the Drawings. A tolerance of plus or minus 0.1 foot) vertical deviation of final grade from these neat lines will be allowed at all locations unless noted otherwise.
- B. The project may not be accepted as complete if finished grade is outside the limits of these tolerances. In addition, areas of contour grading shall conform to the shapes and slopes indicated in the Drawings so that graded areas gently slope to drain. The Owner's Representative may require the Contractor to conduct additional work at its expense to complete excavation and fill to the lines and grades indicated, within these tolerances, and associated surveying to demonstrate conformance with the desired finished grades.
- C. The Contractor shall perform post-construction surveys as described in Section 01450 Field Engineering. Any additional surveying required due to non-conformance shall be performed by the Contractor, at no expense to the Owner.
- D. The Contractor shall furnish the use of equipment and personnel to the Owner's Representative if requested by the Owner's Representative, as may be reasonably necessary for the inspection of the work.

- E. Excavation that is consistently over or under the finished grade is not allowed.
- F. The Contractor shall be responsible for repair of slope failures within the project limits during the construction period.

*** END OF SECTION ***

SECTION 02900 SEEDING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide all material, labor and equipment necessary to perform the Work for seeding as shown on Drawings and as specified herein. The Work of this Section includes applying seeding as shown on the Drawings and to the limits of disturbance.

1.02 REFERENCE STANDARDS

- A. Nomenclature:
 - 1. The Jepson Manual: *Vascular Plants of California, Second Edition*, University of California Press, Berkeley, CA.
- B. California Seed Law (California Department of Food and Agriculture). More information is available online at:
 - 1. http://www.cdfa.ca.gov/plant/pe/nursery/pdfs/SeedLaw_2011.pdf
 - 2. <http://www.cdfa.ca.gov/phpps/pe/nursery/Seed.html>
- C. *California Department of Transportation (Caltrans), Standard Specifications, 2018 Edition.*
- D. All standards shall include the latest additions and amendments as of the date of advertisement for bids

1.03 SUBMITTALS

- A. Contractor shall submit manufacturer's letter of compliance and product literature as follows:
 - 1. Proof that the constituents within the compost meet the Specification described in this Section.
 - 2. Prior to application, Contractor shall submit to Owner's Representative product data sheets from each supplier indicating that the seed and other seeding materials meet the Specification requirements.
 - 3. Seed:
 - a. A letter, or appropriate seed lot tags, from seed supplier stating the botanical name, common name, provenance, minimum percent purity, minimum percent germination, and pounds pure live seed of the seed mix prior to application.

1.04 TIMING AND COORDINATION

- A. It is the responsibility of Contractor to coordinate all Work in this Section with other phases of construction so as not to incur any scheduling or installation conflicts.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Materials not conforming to these Specifications and requirements shall remain the property of Contractor and shall be removed from Project site at no additional cost to the Owner.

2.02 SEED

- A. Seed shall be a fresh, clean, new crop mixed by dealer and packaged in dealer's unopened container with original label. Containers opened prior to inspection or without a label or tag will not be accepted. Each seed bag shall be delivered to Project site sealed and clearly marked as to the species, purity, percent germination, weed seed, inert material, dealer's guarantee, and date of test.
- B. All seed shall comply with the California Seed Law. Commercially obtained seed shall be labeled under the California Food and Agricultural Code, and by the vendors supplying the seed. The percent of weed seed shall not exceed 1.5 percent by weight of the total seed mixture.
- C. Seed treated with Mercury compounds shall not be used.
- D. Seed shall have been tested for purity and germination not more than fifteen (15) months prior to the application of the seed.
- E. Seed shall be of California Central Valley origin, preferably within the greater San Joaquin River Watershed. If a particular species is not available from the Central Valley, available seed stock from adjacent areas may be substituted only upon approval from Owner's Representative. Contractor shall coordinate with Owner's Representative thirty (30) working days prior to seeding to obtain these approvals.
 - 1. Contractor shall procure seed of the species and proportions as shown on the Drawings.

2.03 BROADCAST SEEDING EQUIPMENT

- A. A "drill seeder" type seeder shall be used to place seed, or alternative method approved by the Owner's Representative.

PART 3 – EXECUTION

3.01 FIELD QUALITY CONTROL

- A. Work in this Section shall be coordinated with all other disciplines and timed to not interfere with their work. Work shall also be coordinated so that no future work disturbs seeded areas.
- B. Contractor shall inspect Project site and become familiar with any access requirements, access restrictions, and any other site conditions.

- C. Contractor shall review soil preparation areas for presence of rock, chemicals, or other harmful substances and notify Owner's Representative if such conditions are observed.
- D. Work described in this Section shall not be performed in wet weather, muddy soils, or frozen conditions.
- E. Contractor shall coordinate with Owner's Representative to schedule inspections at the following stages:
 - 1. Inspection of site conditions prior to site preparation.
 - 2. Site preparation.
 - 3. Acceptance of site preparation / inspection of site conditions prior to seeding.
 - 4. Inspection during seeding.
 - 5. Acceptance of seeding.
- F. Progress inspections: In addition to the inspections specified, Owner's Representative may make periodic progress inspections.
- G. Owner's Representative reserves the right to take and analyze samples of materials for conformity to these Specifications at any time.

3.02 BROADCAST SEEDING

- A. Timing
 - 1. Contractor shall conduct seeding between 15 April and 15 October unless otherwise approved by Owner's Representative.
 - 2. Contractor shall request and receive approval from Owner's Representative for any delay in the application of broadcast seed. Timing should be coordinated to occur after grading and other disruptive construction activities are completed and final grades have been approved.
 - 3. Contractor shall request seed delivery from supplier five (5) working days prior to application. Contractor shall keep seed in a cool, dry, shaded place until utilized.
 - 4. Contractor shall coordinate with Owner's Representative a minimum of five (5) working days prior to seed application to ensure that Owner's Representative will be present during seed application.
 - 5. Seed shall be applied before the onset of winter rains. Work shall be performed only at times when weather conditions at Project site are favorable. No Work shall be performed when wind conditions prohibit uniform distribution of seed unless approved by Owner's Representative. No Work shall be performed when soils are saturated.
- B. Layout:
 - 1. The broadcast seed mix shall be applied to all areas shown on the Drawings.
- C. Site Preparation
 - 1. Clear all areas to be seeded of substantial debris and any other impediments to seed-soil contact.
 - 2. Prior to seed application, prepare soil in all seeding areas by raking with a metal rake in two (2) directions.
- D. Seed Application:

1. Seed shall be delivered to Project site in unopened separate containers with the seed tag attached. Containers without a seed tag attached will not be accepted.
2. Apply the seed mix evenly and at the rates specified on the Drawings.
3. Hand rake all seed into soil immediately after application. Rake seed bed lightly to cover seed with 1/8-inch to 1/4-inch layer of soil. Seed cover shall not exceed 1/4 inch.
4. Apply certified noxious weed free native straw mulch, at a rate of 2 tons per acre in accordance with the following NRCS Straw Mulching guidelines:
https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_064765.pdf.
Approximately 20-40% of the soil should be exposed. The native straw mulch should be applied by hand broadcast or blown onto the site to a uniform depth of 2-3 inches. The mulch should be punched into the soil with a spade or roller to protect the mulch from wind drifting or being carried away by water.
5. Prevent foot traffic or storage of supplies in seeded areas.

3.03 SITE CLEANUP

- A. Contractor shall cleanup following seeding activities as follows and as directed by Owner's Representative:
 1. Remove all containers, packaging, and other debris resulting from seeding operations.
 2. Dispose of all debris legally at licensed disposal facilities.
 3. Clean all surfaces not designated for treatment and remove all residues resulting from mixing, applying, or equipment flushing.
 4. Remove temporary items.
- B. Seeded areas disturbed by subsequent construction activities shall be re-seeded within five (5) working days of the completion of such activities.

3.04 ACCEPTANCE OF SEEDING

- A. Acceptance of Work: Owner's Representative will accept Work when all improvements and corrective Work have been performed as specified and to the satisfaction of Owner's Representative.

*** END OF SECTION ***

SECTION 02910 EROSION CONTROL

PART 1 - GENERAL

1.01 SUMMARY

- A. This section describes the following work:
- 1 Implementation of sediment and erosion control measures (1) during construction, and (2) upon completion of construction.
 - 2 Maintenance and repair of erosion and sediment control measures during the maintenance period.

1.02 DEFINITIONS

- A. Construction Period: Between the dates of Notice to Proceed and Substantial Completion of the Work.
- B. Maintenance Period: Between the date of Substantial Completion and April 15th of the year following Substantial Completion.

1.03 SUBMITTALS

- A. Refer to Section 01330 Submittal Procedures.
- B. The following shall be submitted to the Owner's Representative for all fabric materials:
- 1 Product Data: Manufacturer's printed product data, specifications and samples for each type of material proposed for use by the Contractor.
 - 2 Manufacturer's Printed Instructions: Instructions for storage, handling, installation and overlapping of materials in accordance with this section.
 - 3 Compliance with Manufacturer's Installation Specifications: Manufacturer installation details for hold-downs, anchoring, stapling, repairs and other details as required for the installation per manufacturer's standards and as shown on the drawings.
- C. Manufacturer's Certification: That the installer and installation procedures are manufacturer-approved and proposed materials comply with the requirements specified in this section and that the proposed materials are suitable for the intended uses.
- D. Manufacturer's Certificate of Warranty: For each of the materials, including installation.

1.04 DELIVERY, HANDLING AND STORAGE

- A. All commercially processed or packaged materials shall be delivered to the site in sealed bags or containers clearly marked to identify the item or materials.
- B. The Contractor shall provide a storage location at the staging area(s) shown on the Drawings or as designated by the Owner's Representative, in which to secure and store equipment and associated construction materials used in this work.
- C. Fabric Materials:

- 1 Each roll of fabric material shall be wrapped with a material covering that will protect it from damage due to shipment, direct sunlight and storage.
- 2 Supply fabric material in rolls, tagged with manufacturer or supplier name, product identification and indicating roll number and roll dimensions.
- 3 Handling of the materials on site shall utilize manufacturer-approved methods, such as forklifts, cables and slings. Materials shall be kept clean and free from damage prior to installation. Fabric materials shall be protected from direct sunlight, ultra-violet rays, temperatures greater than 140 degrees F, mud, dirt, dust and debris during shipment and storage. To the extent possible, the fabric shall be maintained wrapped in a heavy duty protective coating.
- 4 At the time of installation, fabric shall be rejected if it has defects, rips, holes, flaws, deterioration or damage incurred during manufacture, transportation or storage.

PART 2 - PRODUCTS

2.01 BEST MANAGEMENT PRACTICES (BMPs)

- A. The following is the minimum list of products for typical BMPs that the Contractor shall employ throughout the site for erosion and sediment control. The Contractor shall supplement this list as needed.
 - 1 Silt Fence: Woven filter fabric, UV resistant silt fence. Wooden or steel posts three (3) feet high minimum (does not include embedment).
 - 2 Coir /straw Wattle: 100% Biodegradable 10-inch minimum diameter straw or coir/straw wattle. North American Green SedimentSTOP, or approved equivalent.
 - 3 Erosion Control Fabric: Erosion control blanket constructed of 100% biodegradable materials with a 100% coconut fiber matrix and a functional longevity of approximately 24 months. Manufacturer: North American Green C125BN, or approved equivalent.

PART 3 -EXECUTION

3.01 GENERAL REQUIREMENTS

- A. At a minimum, the Contractor shall install and maintain temporary erosion and sediment control measures in accordance with the SWPPP, manufacturer's recommendations, as shown on the Drawings and as required by these Technical Specifications. In case of a conflict, the more rigorous installation requirements shall apply.
- B. Implement additional measures as needed to control erosion from exposed soil surfaces and to reduce sediment runoff from the project site. These measures shall be implemented and maintained throughout the construction and maintenance periods.
- C. During the construction period, the Contractor shall maintain onsite sufficient quantities of erosion and sediment control materials to be installed in the event that rain is forecast, and for rapid response to failures or emergencies. The Contractor shall consult the local weather forecast daily.
- D. If rain is forecast during construction, Contractor shall, at a minimum, secure all soil stockpiles by covering and/or installing a perimeter silt barrier.

- E. All temporary erosion control measures deemed necessary for the Maintenance Period shall be installed by October 15th.

3.02 COIR/STRAW WATTLES

- A. Coir/straw wattles shall be installed on all areas disturbed during construction.
- B. Install all coir/straw wattles subsequent to completion of fine grading in an area, and in all cases by October 15th. Maintain coir/straw wattles throughout the maintenance period. Following each rain event inspect coir wattles, and replace anchoring stakes and/or coir wattles as needed.
- C. Install coir wattle in accordance with manufacturer's recommendations and the following requirements:
 - 1 Embed the wattle a minimum of 4 inches below grade. Install wattles by excavating a 4-inch deep by 10-inch wide trench, placing the wattle into the trench, and backfilling with soil or gravel, as needed for proper anchoring.
 - 2 Stake the wattle at three (3) feet on center. Install additional stakes as needed to completely anchor the wattle.
 - 3 Align wattle installations along elevation contours.
 - 4 Turn last 10 feet of wattle at right angles in upslope direction (in "L" shape), to allow for capture and dispersion of surface runoff.

3.03 SILT FENCES

- A. Silt Fences shall be used and installed as necessary during the project construction period as a temporary measure for sediment and erosion control.
- B. At a minimum, install silt fences to enclose soil stockpiles if rain is forecast and at the perimeter of the grading area.
- C. Silt fence placement to be coordinated and approved by the Owner's Representative.
- D. Install silt fence in accordance with manufacturer's recommendations and as described in the SWPPP.

3.04 EROSION CONTROL FABRIC

- A. The erosion control fabric shall be installed as shown on the Drawings. Locations or areas of the materials may be changed slightly due to construction limitations, rock and biotechnical structure locations, or other limiting factors with approval by the Owner's Representative. In general, erosion control fabric shall be required on all disturbed slopes. Installation procedures, if not specified herein, shall be in accordance with the manufacturer's specifications.
- B. Secure erosion control fabric by stapling the panels and seams in accordance with the manufacturer's specifications.
- C. Avoid damage to the erosion control fabric as a result of the installation process. Should the fabric become damaged during installation, a fabric patch shall be placed over the damaged area extending three (3) feet beyond the perimeter of the damage. The patch shall be held in place by 6-inch staples placed at all corners and six (6) inches apart along the edges and

12 inches apart in the field.

3.05 RESHAPING

- A. The Contractor shall maintain the areas covered with erosion control fabric until final acceptance of the project. Prior to final acceptance, any damaged areas shall be reshaped as necessary with the erosion control fabric satisfactorily repaired or replaced.

3.06 MAINTENANCE

- A. The Contractor shall regularly inspect, maintain and repair temporary erosion control measures throughout construction and the maintenance period. Inspect all temporary erosion control measures when rain is forecast, and immediately following rainfall events.
- B. Following each event, remove accumulated sediment, repair any damage and install any additional measures as needed. Follow all monitoring and reporting requirements per the SWPPP and Section 01800 Environmental Protection.

3.07 CLEANUP

- A. Upon completion of the maintenance period, remove all materials and dispose of properly at approved offsite facility. Regrade and restore natural drainage patterns at locations of disturbance and smooth grades and replace erosion control BMPs.

*** END OF SECTION ***