

**County of Napa**

**SECTION C - TECHNICAL SPECIFICATIONS**

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# 1 SUMMARY OF WORK

## PART 1 - GENERAL

### 1.01 GENERAL

- A. The work to be done under the Contract, except as modified or supplemented in these Technical Specifications, shall adhere to the following order of precedence:
1. Special Provisions
  2. The project plans (Plans).
  3. State of California Department of Transportation (Caltrans) Revised Standard Specifications dated October 2018. The last effective 2018 Caltrans Revised Standard Specifications (RSS) available at bid opening to the project special provisions can be found at <https://dot.ca.gov/programs/design/ccs-standard-plans-and-standard-specifications>.
  4. State of California Department of Transportation (Caltrans) Standard Specifications dated 2018 (Standard Specifications).
  5. Caltrans Standard Plans dated 2018, (Standard Plans), unless otherwise noted in the Technical Specifications.
  6. Napa County Public Works Department (County) standards, specifications, and details.
- PURPOSE OF TECHNICAL SPECIFICATIONS

### 1.02 PURPOSE OF TECHNICAL SPECIFICATIONS

- A. These Technical Specifications are additions or modifications to the Plans, the Standard Specifications, and the Standard Plans.

### 1.03 APPLICATION OF TECHNICAL SPECIFICATIONS

- A. All requirements of the Plans, the Standard Specifications, and the Standard Plans shall apply unless deleted by these Technical Specifications. In case of conflict, the stricter or more conservative specification, as determined by the Engineer, shall apply.

### 1.04 SUMMARY OF WORK

- A. The project consist of replacement of the existing bridge on Chiles Pope Road over Chiles Creek. The proposed bridge structure consists of an approximately 105-foot-long by 26-foot-wide two-span cast-in-place prestressed concrete slab bridge that is two feet in depth. Abutments 1 and 3 would consist of a seat-type abutment cap beam supported on soldier piles with ground anchors. The soldier pile walls would also retain soil behind Abutments 1 and 3. Bent 2 would consist of four 3-foot cast-in-place-drilled-hole (CIDH) shaft extensions. The new abutments would require excavation to a depth of approximately six feet below existing road surface.
- B. The project site has steep ground slopes along and adjacent to the proposed bridge. To provide the ground stability and to retain the soil along the steep elevation differences, four new retaining walls

CHILES CREEK BRIDGE

consisting of soldier pile walls above existing grade, and secant pile walls below the existing grade. The existing bridge is to be removed.

Work will include the following:

- Mobilization
- Staging Area Setup
- Implementation on Erosion and Sediment Control Best Management Practices (BMP)
- Construction Area Signs per CAMUTCD standards and Special Provisions
- Temporary Traffic Control per CAMUTCD standards and Special Provisions
- Grading, excavation, backfill
- Temporary construction facilities include fence, gate, surveillance, field office, etc.
- Demolition of existing bridge, retaining wall, asphalt pavement, concrete, etc.
- Construction Survey and staking
- Drilled hole steel soldier pile concrete retaining walls
- Drilled hole shaft extensions
- Construction of bridge, abutments concrete slab, concrete barriers, and retaining walls
- Prestressing the tendons in concrete slab
- Construction of roadway approaches and roadway pavement
- Installation of erosion control materials: fiber rolls, hydroseed, temporary drainage inlet protection
- Installation of bioswales, low growing vegetation, rock slope protection, and drainage facilities
- Pavement markings, Signing and striping
- Clear and grub, including tree removal
- Installation of Maxtension TL-3 Crash Cushion or Midwest Guardrail System
- Auxiliary work shown on the plans and as directed by engineer.
- All construction activities including any temporary staging shall occur within County right of way unless directed otherwise by the engineer.
- Final cleanup
- Project Closeout
- All other items of work as shown in the plans and described in the specifications and associated work to complete the construction of the project

C. Additional supplemental project information are available:

CHILES CREEK BRIDGE

**Supplemental Project Information**

Means	Description
Included with the project plans	Geotechnical Foundation Report, As-builts, Hazardous Material Report

1.05 SEQUENCE AND SCHEDULE REQUIREMENTS

- A. The construction is anticipated to begin in the spring 2021 to be completed in the spring of 2022.
- B. Work window within the limits of the Chiles Pope Creek is limited to **from August 1 to March 31** unless authorized otherwise.
- C. Primary construction access to the work area in Chiles Pope Creek will be from the existing roadway and through the temporary construction easement at the north west quadrant of Chiles Pope Road.
- D. The Contractor shall schedule and sequence the work so that all earthwork is completed no later than October 31th, of each year.
- E. Submit baseline schedule and required submittals prior to or at the preconstruction meeting.
- F. Prior to mobilization submit staging area plan, construction sequencing plan, signage plan, and traffic detour plan for approval of the engineer.
- G. Stormwater Pollution Prevention (SWPPP) Best Management Practices shall be implemented at the start of the project and maintained throughout the various phases of construction.
- H. Contractor shall coordinate and sequence work and include in the schedule for work performed by County Team and others including:
  - 1. Inspection by county and county’s construction management, inspection and testing team, regulatory agencies, etc.
  - 2. Quality Assurance Team performing Survey Verification, QSD Inspection, Geotechnical Observations, Special Inspections, Material Testing, Source Inspection, etc.
  - 3. Environmental survey and monitoring by county’s environmental consultant.
  - 4. All other coordination that may arise during the duration of the project.

1.06 DEFINITIONS

- A. County: Napa County Public Works Department
- B. Engineer: Napa County Engineer or its agent
- C. Scope of Work: the scope of work depicted on the Plans with reference to the Standard Plans, the Standard Specifications, County standards, and these Technical Specifications.

1.07 USE OF PROJECT SITE

- A. The Contractor shall limit his operations to the grading limits and designated access route(s) shown on the Plans or as approved in writing by the Engineer.

CHILES CREEK BRIDGE

B. Staging Area

1. The contractor shall submit a construction staging plan to be approved by the Engineer.
2. The Contractor shall restore the site at the Contractor's own cost prior to demobilization. Failure to restore the site to the property owner's satisfaction will result in delay in release of final payments until the issue has been resolved.

C. See Section 9 Mobilization of these Technical Specifications for further requirements for protection of existing property.

1.08 COORDINATION

A. Coordination of work shall conform to Section 10, "Coordination of Work" of the 2018 Caltrans Standard Specifications.

1.09 PERMITS OBTAINED BY THE COUNTY

A. Regional Water Quality Control Board – Section 401, Water Quality Certification

B. U.S. Army Corps of Engineers - Nationwide Permit Section 404 of the Clean Water Act

C. California Department of Fish and Wildlife - Streambed Alteration Agreement No. 16002013-0317 R3

D. NOI - RWQCB General Construction Permit and is categorized as Risk Level 2.

1.10 PERMITS OBTAINED BY THE CONTRACTOR

A. All permits as required for Contractor's Operation

**PART 2 – PRODUCTS - NOT USED**

**PART 3 – EXECUTION - NOT USED**

**PART 4 – MEASUREMENT AND PAYMENT**

A. Full compensation for complying with the provisions of this section shall be considered as included in the contract price for the various bid items, and no separate payment will be made.

## **2 QUALITY CONTROL**

### **PART 1 – GENERAL**

#### 1.01 DESCRIPTION

- A. The Contractor is responsible for Quality Control.
- B. The Contractor is responsible for the quality of the work including materials and workmanship performed by the subcontractors.
- C. The Contractor will cooperate and coordinate with the County for Quality Assurance testing performed by the County.
- D. The County performing Quality Assurance inspections and testing does not relieve the Contractor from the responsibility of performing all Quality Control testing required to deliver a quality project.
- E. Quality Control includes all tasks required to deliver a coordinated and complete project that is in compliance with the intent of the Contract Documents.

### **PART 2 – PRODUCTS - NOT USED**

### **PART 3 – EXECUTION**

#### 3.01 SITE INVESTIGATION AND CONTROL

- A. The Contractor shall verify all dimensions in the field and shall check all field conditions continuously during construction. The Contractor shall be solely responsible for any inaccuracies built into the Work. The Contractor shall inspect related and appurtenant work and shall report in writing to the Engineer, any conditions which will prevent proper completion of the Work. Any required removal, repair, or replacement caused by unsuitable conditions shall be done by the Contractor at its sole cost and expense.

#### 3.02 INSPECTION OF WORK

- A. The Work shall be conducted under the general observation of the Engineer and shall be subject to inspection by the County and other agencies having jurisdiction over the project to assure strict compliance with the requirements of the Contract Documents.
- B. The authorized representative of the Engineer on the project site shall be acting directly and through various inspectors at the site. The presence of the inspectors, however, shall not relieve the Contractor of his responsibility for the proper execution of the Work in accordance with all requirements of the contract documents. Compliance is a duty of the Contractor and shall not be avoided by any act or omission on the part of an inspector.
- C. All materials and articles furnished by the Contractor shall be subject to inspection. No material or articles shall be used in the Work until it has been inspected and accepted by the Engineer or by the County.



- D. Source Inspection: Some material shall be subject to inspection by the Engineer or his authorized representative at the place of production.
- E. The presence of the Engineer at the place of production shall not relieve the Contractor of the responsibility for furnishing products, materials, and equipment that comply with all requirements of the contract documents.

### 3.03 SAMPLING AND TESTING

- A. Unless otherwise specified in these Technical Specifications all sampling and testing shall be in accordance with the methods prescribed in the current standards of the ASTM or other specified published standards, as applicable to the class and nature of the article or materials considered. The County reserves the right to use any generally accepted system of sampling and testing which, in the opinion of the Engineer, will assure the County that the quality of the workmanship is in full accord with the contract documents.
- B. Any waiver by the County of any specific testing or other quality assurance measures, whether or not such waiver is accompanied by a guarantee of substantial performance as a relief from the specified testing or other quality assurance requirements as originally specified, and whether or not such guarantee is accompanied by a "performance bond" to assure execution of any necessary corrective or remedial Work, shall not be construed as a waiver of any prescriptive or performance requirements of the contract documents. "Performance bond" as used in this section is a separate bond in addition to the Contract Performance Bond required in the General Conditions.
- C. Notwithstanding the existence of waiver, and in addition to any testing and inspection performed by any other inspector on behalf of the County or any other public agency having jurisdictions over the project, the Engineer shall have the right to make independent investigations and tests, and failure of any portion of the Work to meet any of the requirements of the contract documents shall be reasonable cause for the Engineer to require the removal or correction and reconstruction of any such work in accordance with the General Conditions.

### 3.04 TIME OF INSPECTIONS AND TESTS

- A. Samples and test specimens required under the contract documents shall be furnished by the Contractor and prepared for testing in time for the completion of the necessary tests and analyses before the subject materials or articles are to be used.
- B. The County will perform field compaction testing. The Contractor shall furnish all required test specimens at its own expense. Except as otherwise provided in the contract documents performance of the required initial test will be by the County and all costs will be borne by the County except that the cost of any test (retesting) after the initial test shall be borne by the Contractor. The County performing Quality Assurance testing does not relieve the Contractor from his responsibility of performing all required Quality Control testing to deliver a quality project.
- C. The Contractor at the Contractor's own expense shall perform field testing for utilities that may be affected by the Work. The Contractor shall coordinate and schedule witnessing of field testing with the

County and any other agency having jurisdiction over the project. The Contractor shall notify the Engineer no less than 48 hours in advance of beginning field testing.

- D. Whenever the Contractor is ready to backfill, bury, cast in concrete, hide, or otherwise cover or make inaccessible any work under the Contract, the Contractor shall notify the Engineer no less than 48 hours in advance of beginning any work of backfilling, burying, casting in concrete, hiding, covering, or making inaccessible any portion of the Work to be inspected so that required inspections can be performed.
- E. Failure by the Contractor to notify the Engineer at least 48 hours in advance of any inspection or field testing shall be reasonable cause for the Engineer to require sufficient delay in the Contractor's schedule to allow time for such inspections and any remedial or corrective work required. All costs of such delays, including its impact or effect upon the Work, shall be borne by the Contractor.

### 3.05 DEFECTIVE AND NONCOMPLIANT WORK

- A. Attention is directed to Section 5-1.30 Noncompliant and Unauthorized work and Section 5-1.39 Damage Repair and Restoration of the Standard Specifications
- B. Per Section 5-1.30 Noncompliant and Unauthorized work of the Standard Specifications, the contractor shall correct or remove and replace work that does not comply with the Contract at contractor's cost. County will reduce payment for non-compliant work left in place until the work has been corrected. If the contractor fails to comply promptly with an order under section 5-1.30, the County may correct, remove, or replace noncompliant or unauthorized work. The County will deduct the cost of this work from the contract.
- C. Per Section 5-1.39 Damage Repair and Restoration of the Standard Specifications, before Contract acceptance, the contractor shall restore damaged work to the same state of completion as before the damage. The County does not adjust payment for repair or restoration that the Engineer determines was caused by the contractor's failure to construct the work under the Contract or protect the work.
- D. The contractor shall submit a repair or restoration work plan and scheduled for the approval of the Engineer prior to proceeding with work. The submittal must comply with the requirements in Section 4 Submittal Procedures of this Special Provisions.

## **PART 4 - MEASUREMENT AND PAYMENT**

- A. Full compensation for complying with the provisions of this section shall be considered as included in the contract price for the various bid items, and no separate payment will be made.

### 3 PROJECT MEETINGS

#### PART 1 - GENERAL

##### 1.01 SUMMARY

A. This section includes:

1. Contractor participation in a preconstruction conference.
2. Administration of progress meetings.

##### 1.02 PRECONSTRUCTION CONFERENCES

A. The Engineer will administer a preconstruction conference for the purpose of executing County-Contractor agreements and will provide clarification of County and Contractor responsibilities in the use of the Work site and for review of administrative procedures, contract documents, standards, correspondence, and submittal requirements.

1. Personnel present at this meeting are the Engineer, inspector, design consultants, environmental consultant, quality assurance team, archeologist, County representatives, and representatives of other agencies, the Contractor, job superintendent, and the major subcontractors and their foremen or superintendents who will be working on the site.
2. The Contractor shall be prepared to discuss timing, procedures for smooth job progress, items requiring clarification, distribution of documents, and correspondence with the Engineer and other County representatives.

##### 1.03 PROGRESS MEETINGS

A. The Engineer shall schedule and administer project meetings throughout progress of the Work at weekly intervals and other meetings as needed throughout construction.

1. The Engineer shall prepare an agenda with copies for participants and record minutes, and distribute copies within three (3) days to the Contractor, and to the project team. Those affected by decisions made at the meetings may also be notified.
2. Attendance: Contractor's job superintendent, major subcontractors and suppliers, design consultants, environmental consultant, quality assurance team, archeologist, other representatives of the County and other agencies as appropriate to address topics for each meeting.
3. Suggested Agenda: Review of Work progress, status of progress schedule and adjustments, material order and delivery schedules, submittals, maintenance of quality standards, pending changes and substitutions, and other items affecting progress of the Work.

B. The Engineer shall prepare and distribute meeting minutes to the project team and other attendees as requested following each meeting after the minutes have been reviewed and approved by the Engineer. Meeting minutes shall include a running list of action items for the Contractor. The contents of minutes

do not constitute a part of the contract documents. Contract requirements can only be amended by change order.

- C. The Contractor shall prepare, maintain and distribute logs for change orders, request for information, submittals, etc. The logs will be submitted at the weekly progress meetings.

#### 1.04 ENVIRONMENTAL EDUCATION MEETINGS

- A. Each time workers and/or subcontractors come onto the jobsite for the first time the Contractor shall convene a meeting prior to them commencing any work.
- B. Required attendance includes jobsite superintendents, foremen, and workers.
- C. Discussions shall include wildlife identification and permit requirements for environmental protection.

### **PART 2 – PRODUCTS - NOT USED**

### **PART 3 – EXECUTION - NOT USED**

### **PART 4 - MEASUREMENT AND PAYMENT**

- A. Full compensation for complying with the provisions of this section shall be considered as included in the contract price for the various bid items, and no separate payment will be made.

## 4 SUBMITTAL PROCEDURES

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. This section includes: Administrative and procedural requirements for submitting shop drawings, product data, samples, and other submittals.

#### 1.02 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires the Engineer's responsive action.
- B. Informational Submittals: Written information that does not require the Engineer's responsive action. Submittals may be rejected for not complying with requirements.

#### 1.03 SUBMITTAL PROCEDURES

A. General:

1. These Technical Specifications shall conform to Section 5-1.23 "Submittals" of the Standard Specifications. The minimum required submittals are included in Attachment A
2. The Contractor shall submit six (6) sets of each required submittal
3. Electronic copies of CAD Drawings of the contract drawings will be provided by the Engineer for the Contractor's use in preparing submittals upon the Contractor's written request.

- B. Coordination: The Contractor shall coordinate preparation and processing of submittals with the performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
3. The Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
4. The Contractor shall be responsible for the timely submittal of all project submittals including project submittals for work to be done by subcontractors. The Contractor shall not be entitled to project delays resulting from late, inaccurate, or incomplete submittals.

- C. Submittals Schedule: The Contractor shall comply with the construction schedule for time requirements for scheduled performance of related construction activities.

- D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows: Time for review shall commence on the Engineer's receipt of the submittal. No extension of the contract

time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow fifteen (15) days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. The Engineer will advise the Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If an intermediate submittal is necessary process it in same manner as an initial submittal.
3. Resubmittal Review: Allow fifteen (15) days for review of each resubmittal.

E. Identification: Affix a permanent label or title block on each submittal for identification.

1. Indicate the name of the firm or the entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 inches by 8 inches on the label or adjacent to the title block to record the Contractor's review and approval markings and actions taken by the Engineer.
3. Include the following information on label for processing and recording action taken:
  - a. Project name.
  - b. Date.
  - c. Name and address of the Engineer.
  - d. Name and address of the Contractor.
  - e. Name and address of subcontractor.
  - f. Name and address of supplier.
  - g. Name of manufacturer.
  - h. Submittal number or other unique identifier, including revision identifier. Submittal number shall use Standard Specification section number followed by a decimal point and then a sequential number (e.g., 06100.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01.A).
  - i. Number and title of appropriate Standard Specification section.
  - j. Drawing number and detail references, as appropriate.
  - k. Location(s) where product is to be installed, as appropriate.
  - l. Other necessary identification.

F. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the contract documents on submittals.

G. Additional Copies: Unless additional copies are required for final submittal, and unless the Engineer observes noncompliance with provisions in the contract documents, initial submittal may serve as final submittal.

- H. Transmittal: Package each submittal individually and appropriately for transmittal and handling and submit directly to the Engineer. Transmit each submittal using a transmittal form.
1. Transmittal Form: Use standardized form approved by the Engineer.
  2. On an attached separate sheet, prepared on the Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by the Engineer on previous submittals, and deviations from requirements in the contract documents, including minor variations and limitations. Include the same label information as is affixed to the related submittal.
- I. Resubmittals: Make resubmittals in same the form and number of copies as the initial submittal.
1. Note date and content of previous submittal.
  2. Note date and content of revision in label or title block and clearly indicate extent of revision.
  3. Resubmit submittals until they are marked "Approved", or "Approved as Noted".
- J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- K. Use for Construction: Use only final submittals with mark indicating approval by the Engineer.

## **PART 2 - PRODUCTS**

### 2.01 ACTION SUBMITTALS

- A. General: Prepare and submit action submittals required by individual Standard Specification sections.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
  2. Mark each copy of each submittal to show which products and options are applicable.
  3. Include the following information, as applicable:
    - a. Manufacturer's written recommendations.
    - b. Manufacturer's product specifications.
    - c. Manufacturer's installation instructions.
    - d. Standard color charts.
    - e. Manufacturer's catalog cuts.
    - f. Mill reports.
    - g. Standard product operation and maintenance manuals.

- h. Compliance with specified referenced standards.
      - i. Testing by recognized testing agency.
      - j. Application of testing agency labels and seals.
      - k. Notation of coordination requirements.
    - 4. Submit product data before or concurrent with samples.
    - 5. Number of Copies: Submit six (6) copies of product data, unless otherwise indicated. The Engineer will return two (2) copies to the Contractor. Mark up and retain one (1) returned copy as a project record document.
- C. Shop Drawings: Prepare project-specific information, drawn accurately to scale.
- 1. Preparation: Fully illustrate requirements in the contract documents. Include the following information, as applicable:
    - a. Dimensions.
    - b. Identification of products.
    - c. Fabrication and installation drawings.
    - d. Roughing-in and setting diagrams.
    - e. Schedules.
    - f. Design calculations.
    - g. Compliance with specified standards.
    - h. Notation of coordination requirements.
    - i. Notation of dimensions established by field measurement.
    - j. Seal and signature of professional engineer if specified.
  - 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit shop drawings on sheets at least 8-1/2 inches by 11 inches but no larger than 30 inches by 40 inches.
  - 3. Number of Copies: Submit six (6) opaque (bond) copies of each submittal unless otherwise indicated. The Engineer will return two (2) copies to the Contractor. Mark up and retain one (1) returned copy as a project record document.
- D. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
- 1. Name, address, and telephone number of entity performing subcontract or supplying products.
  - 2. Number and title of related Standard Specification section(s) covered by subcontract.
  - 3. Drawing number and detail references, as appropriate, covered by subcontract.



4. Number of Copies: Submit three (3) copies of subcontractor list, unless otherwise indicated. The Engineer will return two (2) copies to the Contractor. Mark up and retain one (1) returned copy as a project record document.

## 2.02 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit informational submittals required by 2018 Caltrans Standard Specification sections.
  1. Number of Copies: Submit three (3) copies of each submittal unless otherwise indicated. The Engineer will not return the copies.
  2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
  3. Test and Inspection Reports: Comply with requirements specified in Standard Specification Section 6 – Control of Materials.
- B. Contractor's Construction Schedule: Comply with requirements specified in the General Conditions. The contractor shall provide a Critical Path Method schedule in Primavera 6, time impact analysis, and monthly updates.
- C. Qualification Data: Prepare written information that demonstrates the capabilities and the experience of firms and persons. Include lists of completed projects with project names and addresses, names and addresses of engineers and owners, and other information specified.
- D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the contract documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- E. Product and Material Certificates: Prepare written statements on manufacturer's letterhead certifying that product or material complies with requirements in the contract documents.
- F. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the contract documents.
- G. Schedule of Values: Prepare a schedule of values breakdown for all lump sum items of work and submit it at the pre-construction meeting.

## PART 3 - EXECUTION

### 3.01 CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other Work of the contract and for compliance with the contract documents. Note corrections and field dimensions. Mark with approval stamp before submitting to the Engineer.

1. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of the Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the contract documents.

### 3.02 ENGINEER'S ACTION

- A. General: The Engineer will not review submittals that do not bear the Contractor's approval stamp and will return them without action.
- B. Action Submittals: The Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. The Engineer will stamp each submittal with an action stamp and will mark the stamp appropriately to indicate action taken.
- C. Informational Submittals: The Engineer will review each submittal and will return it if it does not comply with requirements. If the submittal does meet the requirements the submittal will not be returned. The Engineer will forward each submittal to an appropriate party.
- D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- E. Submittals not required by the contract documents may not be reviewed and may be discarded.

### **PART 4 - MEASUREMENT AND PAYMENT**

- A. Full compensation for complying with the provisions of this section shall be considered as included in the contract price for the various bid items, and no separate payment will be made.

## 5 MEASUREMENT AND PAYMENT

### PART 1 – general

#### 1.01 WORK INCLUDED

- A. This specification section describes 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.

#### 1.02 MEASUREMENT AND PAYMENT

##### A. Lump Sum Bid Items:

1. 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.
2. Before the Contractor's first progress pay request on this project, the Contractor shall provide the Engineer with a Schedule of Values (Lump Sum Breakdown) for each Lump Sum bid item shown on 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.
3. Such Schedule of Values shall not be unbalanced and will be subject to approval by the Engineer 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 Engineer.
4. 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 by the Engineer. The revised Schedule of Values will be used for subsequent progress payments.
5. Monthly Payment Application shall be accompanied by an updated As Built drawing that clearly illustrates modification made to the original scope of work due to RFI's or similar unilateral change directive issued by the Engineer. As-Built shall be submitted electronically in PDF format.

##### B. Unit Price Bid Items:

1. Items of work listed in the Bid Schedule that are Unit Price bid items shall be measured for payment as set forth under the description of each relative bid item.
2. All measurements for payment purposes shall be made by the Engineer unless noted otherwise by the Engineer.

C. Waiver Certificate

1. CALIFORNIA LIEN WAIVER AND RELEASE UPON PROGRESS PAYMENT

- k. The Contractor shall submit a Conditional Waiver and Release on Progress Payment form with each progress payment request.

2. CALIFORNIA LIEN WAIVER AND RELEASE UPON FINAL PAYMENT

1. The Contractor shall submit a Conditional Waiver and Release on Final Payment form with final payment request.

D. Payment for a bid item includes payment for work in sections referenced by the section set forth by that bid item.

E. Add to the end of section 9-1.16C:

The following items are eligible for progress payment even if they are not incorporated into the work:

1. Steel Soldier Piling

1.03 DESCRIPTION OF BID ITEMS

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).

**PART 2 – PRODUCTS - NOT USED**

**PART 3 – EXECUTION**

3.01 MOBILIZATION AND DEMOBILIZATION

A. Add to the beginning of section 9-1.16(B):

Submit a schedule of values for each lump sum bid item before Notice to Proceed is given. Determine the quantities required to complete the work. Submit the quantities as part of the schedule of values.

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### 3.02 MASTER DRAWINGS

#### A. Add to section 5-1.23B(2):

During the project, keep a separate master set of drawings, updated on a continual basis to note any variation of the Contract Work from the drawing set approved for construction. This set of drawings must be kept on site and is to be used only as a record set.

Redlined construction drawings showing all approved changes and other field changes made during construction, which reflect the as-built condition and differences from the drawing set approved for construction, must be maintained by Contractor and made available to the Engineer for review. As-built construction drawings that are not satisfactorily maintained can be grounds for withholding of all or a portion of monthly progress payments until the redlined drawings are made current by the Contractor.

Show all changes in dimensions, elevations, details, etc. on these plans. Show the contract change order number where applicable. Superseded data must be lined out. Do not eradicate original figures, nor make corrections over them. Extensive changes, which cannot be shown clearly on the record drawing sheet, must be made on a new drawing of the same sheet.

Sheets with changes must state "Record Drawing." If no changes are made to a sheet, it must state "No Record Drawing Changes." Each sheet of the Record Drawing plans must be signed and dated by the Contractor's authorized representative. The Contractor's authorized representative's name must be printed in cases where the signature is not legible.

Upon completion of the work, produce a master "Record" set of plans. This "Record" set must be created by using a red pen to neatly transfer by hand all such noted variations of the Contract Work to full-size black and white copies of the drawing set that was approved for construction. The "Record" set must be completed in a manner acceptable to the Engineer, and must be delivered to the Engineer within 30 days after completion of all construction work, and prior to acceptance of the work and the Contractor's Final Application for Payment. Failure to fulfill this submission requirement will be grounds for withholding of the final payment.

### 3.03 CONSTRUCTION SURVEYS

#### A. Replace section 5-1.26 with:

The County is not responsible for placing stakes and marks under Chapter 12, "Construction Surveys," of the Caltrans' Survey Manual. Set any stakes or marks required for this Project, throughout construction.

Verify the accuracy of all construction or construction staking and notify the Engineer of inconsistencies that may affect the lines and grades.

Preserve stakes and marks placed. If the stakes or marks are destroyed, you are responsible to replace them.

Construction Surveys are paid for as Construction Staking.

### 3.04 PAYMENT FOR BMP WORK

#### CHILES CREEK BRIDGE

A. Add to section 13-1.04:

The County does not pay for or share the costs of the BMP work described in section 13.

**PART 4 - MEASUREMENT AND PAYMENT**

A. Full compensation for complying with the provisions of this section shall be considered as included in the contract price for the various bid items, and no separate payment will be made.

## 6 CONSTRUCTION SURVEYING

### PART I - GENERAL

#### 1.01 DESCRIPTION

- A. This section describes the lines, grades, and survey control to be established and maintained by the Contractor, and also describes the survey requirements to be performed by the Contractor.
- B. The Contractor shall furnish all labor, equipment and materials necessary to provide construction surveying and staking for the project as shown on the contract documents.
- C. All surveying shall be done by, or under the direction of, a land surveyor licensed in the State of California.
- D. It is the Contractor's responsibility to verify the accuracy of all survey controls and stakes set in the field. Provide immediate notification of apparent errors in the initial staking or in the furnished data.
- E. Preserve all initial reference and control points. After beginning construction replace all destroyed or disturbed initial reference or control points necessary to the work.
- F. Before surveying or staking discuss and coordinate with the Engineer.
- G. Include staking activities in the construction schedule submitted. Include the dates and sequence of each staking activity.
- H. Pothole all utilities at proposed connection to verify horizontal and vertical locations prior to the installation of any utilities. If elevations or locations are not per plans. Contractor shall immediately notify the engineer.
- I. The County, at its discretion, may perform random survey verification for the project. The Contractor shall give the County 48 hours' notice prior to setting controls and stakes in the field. Once controls and stakes are set in the field the Contractor shall give the County 48 hours' notice to perform survey verification.
- J. The County's survey verification of the project shall not relieve the Contractor of the responsibility for the proper execution of the Work in accordance with all requirements of the contract documents. Compliance is a duty of the Contractor and shall not be avoided by acts or omissions by the County.

#### 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 Plans. 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 Engineer. The Contractor shall anticipate the site conditions (e.g. wetlands, vandalism etc.) when developing its approach to maintaining construction staking.
- B. Equipment and Personnel: The Contractor's instruments and other survey equipment shall be accurate, 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 land surveyor licensed in the State of California.

- C. The Contractor shall use established survey benchmark data as shown on the Plans to lay out the Work.
- D. Use by Owner: The County may use line and grade points and markers established by the Contractor. The Contractor's surveys are a part of the Work and may be checked by the County. The 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. The Contractor will be required to conduct resurveys or check surveys to correct errors indicated by review of the field notebooks.
- E. Surveys for Layout and Performance: The 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 the Engineer requires Bid Schedule items of work to be measured by surveying methods, the Contractor shall perform the surveys. All such surveys, including control surveys for establishing the measurement reference lines, shall be performed in the presence of the County. The County may independently reduce the field notes and calculate quantities to verify the Contractor's payment request. The County reserves the right to conduct an independent survey to determine quantities. The cost of the independent survey will be at the County's expense.

### 1.03 GENERAL SURVEY REQUIREMENTS

- A. 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 Licensed Surveyor in the State of California.
  - 2. For survey transects, elevations shall be taken at breaks in slope and at intervals not greater than ten (10) feet. Elevations shall extend at least ten (10) feet beyond the limits of earthwork (excavation and fill). Surveyed grade points shall be converted to elevations relative to NAVD 88 and shall be provided to the nearest one-tenth (1/10) of a foot. Survey transects shall be taken at locations that are representative of existing grade.
  - 3. 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.
  - 4. Subsequent surveys shall re-occupy the same lines so the surveys and quantities can be compared.

## **PART 2 – PRODUCTS - NOT USED**

## **PART 3 – EXECUTION**

### 3.01 CONSTRUCTION SURVEYING AND STAKING REQUIREMENTS

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- A. Perform all survey, staking, recording of data, and calculations as necessary to construct the project from the initial layout to final completion. Reset stakes as many times as necessary to construct the work.
- B. Before surveying or staking, discuss and coordinate the following with the Engineer.
  - 1. Surveying and staking methods
  - 2. Stake marking
  - 3. Grade control for courses of material
  - 4. Referencing
  - 5. Structure control
  - 6. Any other procedures and controls necessary for the work.
- C. Perform all surveying, staking, and recording of data essential for establishing the layout and control of the following, as applicable:
  - 1. Approach roads
  - 2. Curb and dike
  - 3. Guardrail
  - 4. Crash cushion
  - 5. Signs, delineators, and object markers; and pavement markings.
  - 6. Bridge superstructure and substructure
  - 7. Limits of grading and excavations
  - 8. Retaining walls
  - 9. Slope
  - 10. Culverts and miscellaneous drainage ditches
  - 11. Vegetation areas
  - 12. Other features and limits of work to control and complete the Work
- D. Control work for construction staking: The Construction Surveyor shall set horizontal and vertical control points to complete the construction staking. Prior to any construction staking, existing survey monuments and pipes shown on the plans shall be surveyed to verify the distances and basis of bearings shown.
  - 1. Survey and establish controls within the tolerances shown in Table 1 in these Technical Specifications.
  - 2. Prepare field notes in an approved format. Furnish all survey notes at least weekly. All field notes and supporting documentation become the property of the County upon completion of the work.

3. Start work only after staking for the affected work is accepted.
  4. The construction survey and staking work may be spot-checked for accuracy, and unacceptable portions of work may be rejected. Resurvey rejected work, and correct work that is not within the tolerances specified in Table 1.
  5. Acceptance of the construction staking does not relieve the Contractor of responsibility for correcting errors discovered during the work and for bearing all additional costs associated with the error.
  6. Remove and dispose of all flagging, lath, stakes, and other staking material after the project is complete.
- E. Control points. Relocate initial horizontal and vertical control points in conflict with construction to areas that will not be disturbed by construction operations. Furnish the coordinates and elevations for the relocated points before the initial points are disturbed
- F. Clearing and Grubbing Stakes. Clearing and grubbing stakes will be set prior to the beginning of construction work. The boundary of the area(s) to be cleared and grubbed shall be staked or flagged at a maximum interval of 200 feet, closer if needed, to clearly mark the limits of work. Set clearing and grubbing limits on both sides of centerline at roadway cross-section locations.
- G. Paving Demolition Staking/Painting. Layout of planned asphalt pavement demolition work will be indicated by placement of painted instructions on the pavement, adjacent to the areas to be removed.
- H. Rough Grade Stakes. Cuts and fills will be given to the nearest tenth (0.1) of a foot. Horizontal location will be given to the nearest tenth (0.10) of a foot.
1. Slope Stakes. Slope stakes will be set at five (5) foot offsets to the toe-of-slope, at angle points, and at midpoints when the horizontal distance exceeds sixty (60) feet. The cut or fill, and the horizontal distance to hinge point, will be given for each slope.
  2. Daylight Stakes. Where design grade intersects natural grade and does not constitute a slope, a daylight stake will be set at approximately fifty (50) foot intervals.
  3. Retaining Walls. Stakes for retaining walls will be set five (5) feet from the face of wall, on approximately twenty-five (25) foot intervals unless otherwise specified by the Engineer. The stakes will be marked with an offset and a cut or fill to the design top of wall grade.
  4. Bridge. Construction survey procedures shall be reviewed by the Engineer prior to commencing any construction staking. The Engineer's review and approval of survey procedures is required prior to commencing construction activities for major structures including bridges, abutments, piers, piling foundations, and drainage control facilities. Horizontal and vertical control for the project shall be verified by the Contractor prior to any construction activity. The Contractor shall verify existing field elevations and verify existing river bottom elevations prior to commencing excavation and grading and placement of roughed channel rocks. If any discrepancies are found between the Contract Documents and existing conditions the Contractor shall inform the Engineer immediately.

5. Set adequate horizontal and vertical control and reference points for all bridge substructure and superstructure components. Establish and reference the bridge chord or the bridge tangent. Also establish and reference the centerline of each pier, bent, and abutment.
  6. Channel. Construction survey procedures shall be reviewed by the Engineer prior to commencing any construction staking. Set adequate horizontal and vertical control and reference points for channel construction. Horizontal and vertical control for the project shall be verified by the Contractor prior to any construction activity. The Contractor shall verify existing field elevations and verify existing river bottom elevations prior to commencing excavation and grading and placement of roughed channel rocks. If any discrepancies are found between the Contract Documents and existing conditions the Contractor shall inform the Engineer immediately.
- I. Finish Grade Stakes. Cuts or fills will be given to the nearest hundredth (0.01) of a foot. Set grade finishing stakes, for grade elevations and horizontal alignment, on centerline and on each shoulder at roadway cross-section locations. Set stakes at the top of subgrade and the top of each aggregate course. Set stakes in all ditches to be paved. The maximum longitudinal spacing between stakes is twenty-five (25) feet when the centerline curve radius is less than or equal to five hundred (500) feet. When the centerline curve radius is greater than five hundred (500) feet, the maximum longitudinal spacing between stakes is fifty (50) feet. The maximum transverse spacing between stakes is twenty (20) feet. Use brushes or guard stakes at each stake.
1. Roadway cross-sections. Take roadway cross-sections normal to centerline. When the centerline curve radius is less than or equal to 500 feet, take cross-sections at a maximum centerline spacing of 25 feet. When the centerline curve radius is greater than 500 feet, take cross-sections at a maximum centerline spacing of 50 feet. Take additional cross-sections at significant breaks in topography and at changes in the typical section. Along each cross-section, measure and record points at breaks in topography, but no further apart than 20 feet. Measure and record points to at least the anticipated slope stake and reference locations. Reduce all cross-section distances to horizontal distances from centerline.
  2. Centerline reestablishment. Reestablish centerline from instrument control points. The maximum spacing between centerline points is 25 feet when the centerline curve radius is less than or equal to 500 feet. When the centerline curve radius is greater than 500 feet, the maximum distance between centerline points is 50 feet.
  3. Bridge Staking. Construction survey procedures shall be reviewed by the Engineer prior to commencing any construction staking. The Engineer's review and approval of survey procedures is required prior to commencing construction activities for major structures including bridges, abutments, piers, piling foundations, and drainage control facilities. Horizontal and vertical control for the project shall be verified by the Contractor prior to any construction activity.

The Contractor shall verify existing field elevations where planned foundations, pilings, piers and support structures are to be placed prior to any construction activity. The Contractor shall verify existing river bottom elevations for all pier construction prior to commencing pile

driving and excavation activity. If any discrepancies are found between the Contract Documents and existing conditions the Contractor shall inform the Engineer immediately.

Set adequate horizontal and vertical control and reference points for all bridge substructure and superstructure components. Establish and reference the bridge chord or the bridge tangent. Also establish and reference the centerline of each pier, bent, and abutment.

4. Retaining walls. Survey and record profile measurements along the face of the proposed wall and 5 feet in front of the wall face. Every 25 feet along the length of the wall and at all major breaks in terrain take cross-sections within the limits shown on the plans. For each cross-section, measure and record points every 25 feet and at all major breaks in terrain. Set adequate references and horizontal and vertical control points.
5. Culverts. Stake culverts to fit field conditions. The location of culverts may differ from the Plans. Perform the following:
  - a. Survey and record the ground profile along the culvert centerline.
  - b. Determine the slope catch points at the inlet and outlet.
  - c. Set reference points and record information necessary to determine culvert length and end treatments.
  - d. Plot-to-scale the profile along the culvert centerline. Show the natural ground, the flow line, the roadway section, and the culvert including end treatments and other appurtenances. Show elevations, grade, culvert length, and degree of elbow.
  - e. Submit the plotted field-design cross-section for approval of final culvert length and alignment.
  - f. When the field design has been approved, set drainage structure survey stakes, reference stakes, and stake inlet and outlet ditches to make the structure functional.
  - g. Stake or grade ditches to make the culvert functional.
6. Channel Staking. Construction survey procedures shall be reviewed by the Engineer prior to commencing any construction staking. Set adequate horizontal and vertical control and reference points for channel construction. Horizontal and vertical control for the project shall be verified by the Contractor prior to any construction activity. The Contractor shall verify existing field elevations and verify existing river bottom elevations prior to commencing excavation and grading and placement of roughed channel rocks. If any discrepancies are found between the Contract Documents and existing conditions the Contractor shall inform the Engineer immediately.
7. Slope stakes and references. Set slope stakes and references on both sides of centerline at the cross-section locations. Establish slope stakes in the field as the actual point of intersection of the design roadway slope with the natural ground line. Set slope stake references outside the clearing limits. Include all reference point and slope stake information on the reference stakes.

When initial references are provided, slope stakes may be set from these points with verification of the slope stake location with field measurements. Re-catch slope stakes on any section that does not match the staking report within the tolerances established in Table 1. Take roadway cross section data between centerline and the new slope stake location. Set additional references even when initial references are provided.

8. Permanent monuments and markers. Perform all survey and staking necessary to establish permanent monuments and markers. The scope includes all work and filing of necessary documents with the county surveyor.

J. Construction Survey and Staking Tolerances

**TABLE 1**

<b>Staking Phase</b>	<b>Horizontal</b>	<b>Vertical</b>
Existing Government network control points	±0.06 feet	±0.035 feet × M (2)
Local supplemental control points set from existing Government network points	±0.03 feet	±0.01 feet × N (3)
Centerline points (4) — (PC), (PT), (POT), and (POC) including references	±0.03 feet	±0.03 feet
Other centerline points	±0.16 feet	±0.16 feet
Cross-section points and slope stakes (5)	±0.16 feet	±0.16 feet
Slope stake references (5)	±0.16 feet	±0.16 feet
Culverts, ditches, and minor drainage structures	±0.16 feet	±0.06 feet
Retaining walls and curb and gutter	±0.06 feet	±0.03 feet
Bridge substructures	±0.03 feet (6)	±0.03 feet
Bridge superstructures	±0.03 feet (6)	±0.03 feet
Clearing and grubbing limits	±2.00 feet	—
Roadway subgrade finish stakes (7)	±0.16 feet	±0.03 feet
Roadway finish grade stakes (7)	±0.16 feet	±0.03 feet

- (1) At 95% confidence level. Tolerances are relative to existing Government network control points.
- (2) M is the distance in miles.
- (3) N is the number of instrument setups.
- (4) Centerline points: PC - point of curve, PT - point of tangent, POT - point on tangent, POC - point on curve.
- (5) Take the cross-sections normal to the centerline ±1 degree.
- (6) Bridge control is established as a local network and the tolerances are relative to that network.
- (7) Includes paved ditches.

#### **PART 4 - MEASUREMENT AND PAYMENT**

- A. Full compensation for complying with the provisions of this section shall be considered as included in the contract price for the various bid items, and no separate payment will be made.
- B. Contractor shall be responsible for surveying and setting the abutment bearings, seat elevations, top of column elevations, and top and bottom of retaining wall elevations.

## 7 CLOSEOUT PROCEDURES

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. This section includes: Closeout procedures, final submittals, final cleaning and adjusting, project record documents, submittal of operation and maintenance data, and warranties and bonds.

#### 1.02 SUBSTANTIAL COMPLETION

- A. Substantial Completion means completion of all work in the contract documents, except maintenance of erosion control best management practices (BMPs) throughout the maintenance period.
- B. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  2. Advise County of pending insurance changeover requirements.
  3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  4. Obtain and submit releases permitting the County unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  5. Prepare and submit Project Record Documents, damage or settlement surveys, property surveys, and similar final record information.
  6. Terminate and remove temporary facilities from Work site, along with mockups, construction tools, and similar elements.
  7. Complete final cleaning requirements, including touchup painting.
  8. Restore disturbed areas including staging areas and access routes within and to the site.
- C. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, the Engineer will either proceed with inspection or notify the Contractor of unfulfilled requirements. The Engineer will prepare the Certificate of Substantial Completion after inspection or will notify the Contractor of items, either on the Contractor's list or additional items identified by the Engineer that must be completed or corrected before the certificate will be issued.
1. Re-inspection: Request re-inspection when the work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for Final Completion.

#### 1.03 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, the Contractor shall complete the following:
1. Submit a final Application for Payment according to Section 1200 – Measurement and Payment Procedures.
  2. Submit certified copy of the Engineer’s Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by the Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  3. Instruct County personnel in operation, adjustment, and maintenance of products, equipment, and systems. Provide services of skilled and competent supervisory personnel to instruct County personnel in the operation and maintenance of all operating equipment and systems provided as part of the Contract.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, the Engineer will either proceed with inspection or notify the Contractor of unfulfilled requirements. The Engineer will prepare a final Certificate for Payment after inspection or will notify the Contractor of construction that must be completed or corrected before the certificate will be issued.
1. Re-inspection: Request re-inspection when the work identified in previous inspections as incomplete is completed or corrected.

#### 1.04 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by the Contractor that are outside the limits of construction.
1. Organize items applying to each work area.
  2. Include the following information at the top of each page:
    - a. Project name.
    - b. Date.
    - c. Name of the Engineer.
    - d. Name of the Contractor.
    - e. Page number.

#### 1.05 PROJECT RECORD DOCUMENTS

- A. Maintain on the site one set of the following Record Documents to record actual revisions to the Work.
1. Plans.
  2. Specifications.
  3. Addenda.
  4. Change Orders and other Modifications to the Contract.

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5. Reviewed shop drawings and product data.
- B. Store Record Documents separate from documents used for construction. Record information concurrent with construction progress.
- C. Record Drawings: Do not permanently conceal any work until required information has been recorded. Legibly mark each item to record actual construction including:
1. Measured elevations of all improvements.
  2. Measured horizontal and vertical locations of all improvements including but not necessarily limited to: retaining walls, guard rails, pedestrian railing, ditches, and drains and drainage systems.
  3. Field changes of dimension and detail.
  4. Details not on original Plans.
  5. Deviations from sizes, locations, and other changes to installation as shown on the contract documents.
  6. Established locations of underground work, points of connection with existing utilities, changes in direction of underground lines, locations of valves, manholes, etc.
  7. Locations of all items not concealed that the Contractor elects to alter or modify from the contract documents contingent upon the approval of the Engineer for the alteration or modification.
- D. Specifications: Legibly mark and record at each Product section a description of actual Products installed, including the following:
1. Manufacturer's name and product model and number.
  2. Product substitutions or alternates utilized.
  3. Changes made by Addenda and Modifications with corresponding Addenda or Modification number.
- E. Submit all Record Documents to the Engineer with claim for Substantial Completion inspection. Submit documents with a transmittal letter containing date, Project title, the Contractor's name and address, list of documents, and signature of the Contractor.
- F. The Engineer will return Contract Drawings and Record Documents to the Contractor. The Contractor shall transfer all as-built information onto a set of reproducible prints for the County's use.
- G. The County will not make Final Payment to the Contractor until the Record Documents are provided by the Contractor.

#### 1.06 WARRANTIES AND BONDS

- A. Provide duplicate notarized copies. Execute and assemble documents from the Contractor's submittals and documents executed by subcontractors, suppliers, and manufacturers. Provide table of contents and assemble in a D three ring binder(s) with durable plastic cover. Submit three (3) sets.

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B. Submit warranties and bonds prior to final Application for Payment.

1. For equipment put into use with the County’s permission during construction, submit within ten (10) days after first operation.
2. On request of the County, for designated portions of the Work, submit within ten (10) days of commencement of warranty.
3. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten (10) days after acceptance, listing date of acceptance as start of warranty period.

C. The General Conditions of the Contract Documents cover the Contractor's responsibility to remedy defects due to faulty workmanship and materials which appear within one (1) year from the Date of Acceptance. Warranties for more than one (1) year, where indicated in the various sections of the contract documents, shall be in the form of a warranty written on the letterhead of the Contractor, subcontractor, or supplier doing the work or supplying the item to be warranted, as follows:

WARRANTY FOR

We hereby warrant that the \_\_\_\_\_ which we have installed in     NAPA COUNTY, CALIFORNIA     for     NAPA COUNTY    , has been done in accordance with the Drawings and Specifications, and that the work, as installed, will fulfill the requirements of the warranty included in the Specifications. We agree to repair or replace any or all of our work, together with any other and adjacent work which may be displaced by so doing, that may prove to be defective in its workmanship or material within a period of one year from the Date of Acceptance of the above named Project, without any expenses whatsoever to the Owner, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with the above-mentioned conditions within a reasonable time, but in no event longer than thirty (30) days after being notified in writing by the Owner, we, collectively or separately, do hereby authorize the Owner to proceed to have said defects repaired and made good at our expense, and we will honor and pay the costs and charges therefore upon demand.

Signed

Subcontractor/Supplier

Date

Countersigned

Contractor

Date

**PART 2 – PRODUCTS**

2.01 MATERIALS

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A. Cleaning Agents and Equipment: As recommended by the manufacturer or fabricator of the surface to be cleaned.

1. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

### **PART 3 - EXECUTION**

#### **3.01 FINAL CLEANING**

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for the Work or for a portion of Work:

1. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
2. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
3. Pave all access roads to and within the site that are materially damaged from pre-project conditions.
4. Remove tools, construction equipment, machinery, and surplus material from Project site.
5. Remove temporary stormwater BMPs installed for the Project.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the County or private property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Work site and dispose of lawfully.

D. Remove tools, surplus materials, equipment, temporary buildings, sheds, and construction facilities from the site.

### **PART 4 - MEASUREMENT AND PAYMENT**

A. Full compensation for complying with the provisions of this section shall be considered as included in the contract price for the various bid items, and no separate payment will be made.

## 8 SHEETING, SHORING, AND BRACING

### PART 1 – GENERAL

#### 1.01 DESCRIPTION

- A. This section specifies requirements for sheeting, shoring and bracing of trenches and excavations greater than five (5) feet deep.
- B. This section references the following documents. They are a part of this section as specified and modified. In case of conflict between the requirement of this section and those of the listed documents, the requirements of this section shall prevail.

<u>Reference</u>	<u>Title</u>
CAL OSHA	<i>State of California Construction Safety Orders</i>
	<i>California State Labor Code</i>

- C. The Contractor shall design sheeting, shoring, and bracing in accordance with Article 6 of CAL OSHA, Caltrans Trenching and Shoring Manual, and the California State Labor Code. The standards of design referred to in the Labor Code shall be those of CAL OSHA. The shoring procedure designed by the Contractor shall be suitable for the site subsurface conditions and project operational constrains.
- D. The design shall be signed and sealed by an Engineer licensed in State of California.

#### 1.02 SUBMITTALS

- A. The Contractor shall submit information required by section 6705 of the California State Labor Code. Submittals shall be made in accordance with Section 4, “Submittals.”

### PART 2 – PRODUCTS - NOT USED

### PART 3 – EXECUTION

#### 3.01 PLACEMENT

- A. The construction of sheeting, shoring and bracing shall not disturb the state of soil adjacent to or below the trench or excavation.

### PART 4 - MEASUREMENT AND PAYMENT

- A. Full compensation for complying with the provisions of this section shall be considered as included in the contract price for the various bid items, and no separate payment will be made.

## 9 MOBILIZATION

### PART I - GENERAL

#### 1.01 DESCRIPTION

- A. These Technical Specifications replace Section 9-1.16D, “Mobilization” of the 2018 Caltrans Standard Specifications.
- B. Mobilization shall consist of the following work:
  - 1. Bonds and insurance.
  - 2. Mobilization of materials and equipment to the site.
  - 3. Providing construction fencing, office trailers, temporary sheds, temporary utilities, and temporary facilities and all preparatory work prior to the commencement of productive work at the site required under this Contract.
  - 3. Providing environmental protection.
  - 4. Preparation of all necessary permits, submittals, notifications, record drawings and other documentations.
  - 5. Coordination and any other items required to complete the construction not otherwise measured and paid for.
  - 6. Demobilization of all of materials and equipment from the site.
  - 7. On-going and final site clean-up.
- C. The Construction anticipated to begin in the spring of 2021 and to be completed in the spring of 2022.
- D. Work window within the limits of Chiles Pope Creek is limited to June 1 to October 31 unless authorized otherwise.
- E. Primary construction access to the work area in Chiles Pope Creek and the road will be from the existing roadway and through the temporary construction easement at the north east quadrant of Chiles Pope Road.
- F. The Contractor shall schedule and sequence the work so that all earthwork is completed no later than October 31<sup>st</sup>.
- G. Submit baseline schedule and required submittal prior to or at the preconstruction meeting.
- H. Prior to mobilization submit staging area plan, construction sequencing plans, signage plan, and traffic detour plan for approval of the engineer.
- I. Stormwater Pollution Prevention (SWPPP) Best Management Practices shall be implemented at the start of the project and maintained throughout the various phases of construction.
- J. Environmental Sensitive Area (ESA) fence shall be implemented at the start of the project and maintained throughout the project.

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## **PART 2 – PRODUCTS - NOT USED**

## **PART 3 – EXECUTION**

### **3.01 MOBILIZATION AND DEMOBILIZATION**

- A. The Contractor shall inspect the site to observe actual field conditions prior to bidding the project.
- 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 the project is accepted as complete, unless directed otherwise in writing by the Engineer.
- C. Mobilization shall also include preparation of all necessary permits, submittals, notifications and other documentation necessary for the performance of the Work.
- D. Contractor shall clean all equipment of dirt, mud, and plant material prior to entering the work areas to prevent the introduction of invasive plants.

### **3.02 PERMITS OBTAINED BY THE COUNTY**

- A. The County has obtained CEQA clearance for the project. A copy of the CEQA documents will be available to the Contractor upon request.
- B. The Contractor shall obtain all other permits required for the performance of the Work.
- C. Copies of permits listed above are included as Appendix A – Permits are considered part of these Contract Documents. The Contractor shall maintain a copy of all permits at the site throughout construction.
- D. The County prepared an Initial Study / Mitigated Negative Declaration (MND) for this project. A copy of the MND is available at the county office and incorporated by reference.
- E. 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 Engineer immediately of any discrepancy between project permits and the Contract Documents.
- F. The Contractor shall obtain all other permits required for the performance of the work
- G. Cultural and Prehistoric Resources - The Contractor shall (1) suspend work in the area and (2) notify the Engineer immediately, if evidence of any of the following are items encountered during performance of the Work:
  - 1. Archaeological artifacts
  - 2. Fossils
  - 3. Human remains

### **3.03 PROTECTION OF EXISTING PROPERTY AND CONDITIONS**

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A. Protection of Work and Property:

1. Confine the storage of materials and workmen's operations to the limits established on the contract documents and by law, permits, and/or directions of the Engineer. Do not unreasonably encumber the premises with materials.
2. Contractor is responsible for the protection and preservation of all materials and equipment located on the construction site.
3. Provide watchman services as may be deemed necessary to safeguard properly all materials, tools, appliances, and work. The County 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 Engineer to protect the site.
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 the Engineer.

B. Contractor shall be responsible for all damage to all roads, existing vegetation, existing structures, utilities and other property and improvements resulting from the contractor's use and shall repair all damage resulting from such use to the satisfaction of the Engineer and at no cost to County.

C. Contractor's Staging Area: Store construction materials and equipment within boundaries of designated staging and storage areas as shown on the Plans and as approved by the Engineer.

D. Tree and Plant Protection:

1. Do not store materials or equipment, 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.
3. Notify Engineer where Contractor feels grading or other construction called for by Contract Documents may damage existing plants/trees 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 or as directed by Engineer, at no cost to the County.

3.04 WORK HOURS

A. Construction activities shall be limited to the hours between 7 a.m. and 5 p.m. Monday through Friday unless otherwise authorized. Work shall not occur on weekends or holidays, except during emergency conditions, and at the Engineer's approval.

B. At the discretion of the County, the contractor shall compensate the County for inspection and oversight time outside the above work windows.

### 3.05 ACCESS TO THE PROJECT SITE

- A. Access to the site is over public roads. Exercise care in the use of such roads and repair any damage to the satisfaction of the County or agency having jurisdiction over the road.
- B. Under no circumstances shall the Contractor use any other private roads that are not designated for access.
- C. Comply with all dust control requirements per Section 14, “Environmental Stewardship” in these special provisions, and Section 18, “Dust Palliatives” of the 2018 Caltrans Standard Specifications and comply with Bay Area Quality Control District (BAQCD) guidelines.
- D. Do not track mud onto private or public roads. The Contractor shall employ a street sweeper as needed to keep all paved surfaces free of tracked mud or dirt.

### **PART 4 – MEASUREMENT AND PAYMENT**

- A. The contract lump sum price paid under Mobilization shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for performing all the work involved in mobilization as specified in this Special Provisions, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.
- B. Partial payments will be made in accordance with Public Contract Code §10261 and §10264



## **10 COORDINATION OF WORK**

### **PART I - GENERAL**

#### **1.01 DESCRIPTION**

- A. The Contractor shall coordinate work with work to be performed by others which may include but may not be not limited to:
1. Inspections by county and county's construction management, inspection and testing team, regulatory agencies, etc.
  2. Environmental survey and monitoring
  3. Quality Assurance: Survey Verification, QSD Inspections, Geotechnical Observations, Special Inspections, Material Testing, Source Inspection, etc.
  4. Environmental survey and monitoring by county's environmental consultant.
  5. All other coordination that may arise during the duration of the project.

### **PART 2 – PRODUCTS - NOT USED**

### **PART 3 – EXECUTION - NOT USED**

### **PART 4 – MEASUREMENT AND PAYMENT**

- A. Full compensation for complying with the provisions of this section shall be considered as included in the contract price for the various bid items, and no separate payment will be made.

## 11 WELDING

### PART I - GENERAL

#### 1.01 DESCRIPTION

- A. These Technical Specifications supplement to the Section 11, “Welding” of the 2018 Caltrans Standard Specifications.

#### 1.02 QUALITY CONTROL

- A. Quality Control of Welding shall comply with Section 11-2 “Welding Quality Control” of 2018 Caltrans Standard Specifications and these Technical Specifications.
- B. The following items, but not limited to, must comply with the specifications for welding QC:
1. Flange Reinforcement Plates at Steel Soldier Piling (Bridge).
  2. Stiffener Plates at Steel Soldier Piling (Bridge).
  3. Anchorage Enclosure at Steel Soldier Piling (Bridge).
  4. Pile Welding (Bridge)
  5. Pile Welding (Retaining Wall)

### PART 2 – PRODUCTS - NOT USED

### PART 3 – EXECUTION - NOT USED

### PART 4 – MEASUREMENT AND PAYMENT

- A. Full compensation for complying with the provisions of this section shall be considered as included in the contract price for the “Steel Soldier Piling, Bridge (W14x74)” and “Steel Soldier Piling, Retaining Wall (W12x106)”.

## 12 TEMPORARY TRAFFIC CONTROL

### PART 1 - GENERAL

#### 1.01 SUMMARY OF WORK

- A. This section includes specifications for all Temporary Traffic Control required for the project and shall include and not be limited to: temporary traffic signal and lighting system, construction area signs, flagging, placing and installing temporary traffic-handling equipment and devices, maintaining traffic, placing and installing temporary traffic control systems, and placing temporary pavement delineation, etc.
- B. The construction work is to be performed at the following location: Chiles Pope Rd post mile 2.08 as shown on the Plans.
- C. Temporary Traffic Control Plan shall conform to Section 12, "Temporary Traffic Control" of the 2018 Caltrans Standard Specifications and these Technical Specifications. Temporary Traffic Control must also comply with Part 6, "Temporary Traffic Control," of the California MUTCD.
- D. The Contractor shall inspect the site to observe actual field conditions prior to bidding the project.
- E. The Contractor shall furnish all labor, materials and equipment necessary to complete the work as shown on the Plans and to maintain the temporary traffic control and signal system in full time operation for the duration of the construction work requiring single lane traffic control, as specified in these Technical Specifications, as directed by the Engineer and in strict accordance with the conditions of the Contract. All incidental work not shown on the Plans or specified in this section which is necessary to complete the work necessary to provide and maintain the system described, or shown, shall be furnished and installed as part of this contract at no additional cost.
- F. The Temporary Traffic Control System for lane closures is for closing traffic lanes with stationary lane closures on 2-lane, 2-way highways. The traffic control system for a lane closure must comply with the approved Traffic Control Plan, Section 12, "Temporary Traffic Control" of the 2018 Caltrans Standard Specifications and these Technical Specifications.
- G. Type III Barricade shall conform to Section 12-3.10, "Barricades" of the 2018 Caltrans Standard Specifications and these Technical Specifications.
- H. Construction Area Signs shall conform to Section 12-3.11, "Construction Area Signs" of the 2018 Caltrans Standard Specifications and these Technical Specifications.
- I. Temporary Railing (Type K) shall conform to Section 12-3.20, "Type K Temporary Railing" of the 2018 Caltrans Standard Specifications.
- J. Temporary Crash Cushion Module shall conform shall conform to Section 12-3.22, "Temporary Crash Cushion Module" of the 2018 Caltrans Standard Specifications and these Technical Specifications.

#### 1.02 SUBMITTALS

- A. Prior to the commencement of work, and within ten (10) days following the notice to proceed, the Contractor shall submit:

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1. Schedule of Values
  2. Three (3) copies in three-ring binders of a complete list of equipment and materials to be furnished, including all substitutions proposed to the Engineer for approval.
  3. Temporary Traffic Control Plan for Engineer's approval.
- B. Shop drawings shall be submitted in a complete package. Partial submittal will not be considered.

### 1.03 WARRANTIES, GUARANTEES, AND INSTRUCTION SHEETS

- A. The Contractor shall be responsible for all work and materials and/or equipment installed under these Plans and Specifications.
- B. The Contractor shall repair or replace at his expense, any defective work, material, or equipment that may become evident during the operation of the temporary traffic signal system.
- C. If any part (or parts) of the temporary traffic signal system fails while the temporary single lane traffic control system is in operation, the Contractor shall provide flaggers until such time as the temporary traffic signal system is operational.

## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. Temporary Traffic Signal System shall conform to these Technical Specifications.
- B. Type III Barricade shall conform to Section 12-3.10B, "Materials" of the 2018 Caltrans Standard Specifications.
- C. Construction Area Signs shall conform to Section 12-3.11B, "Materials" of the 2018 Caltrans Standard Specifications.
- D. Temporary Pavement Delineations shall conform to these Technical Specifications. Painted traffic stripes used for temporary delineation must comply with Section 84-2, "Painted Traffic Stripes and Pavement Markings" of the 2018 Caltrans Standard Specifications and these Technical Specifications.
  1. Temporary Centerline Delineation - Temporary pavement markers must be the same color as the centerline markers being replaced. Temporary pavement markers must be one of the temporary pavement markers on the Authorized Material List for short-term day or night use, 14 days or less, or long-term day or night use, 180 days or less.
  2. Temporary Edge Line Delineation - Temporary, removable, construction-grade striping and pavement marking tape must be one of the types on the Authorized Material List. Apply temporary, removable, construction-grade striping and pavement marking tape under the manufacturer's instructions
- E. Temporary Railing (Type K) shall conform to Section 12-3.20B, "Materials" of the 2018 Caltrans Standard Specifications

- F. Portable Changeable Message Sign shall conform to Section 12-3.32B “Materials” of the 2018 Caltrans Standard Specifications.

### **PART 3 – EXECUTION**

#### **3.01 REGULATIONS AND CODE**

- A. All work and materials shall conform to the latest codes, rules and regulations of the following:
  - 1. State codes and ordinances
  - 2. Local City and/or County ordinances
  - 3. National Electrical Code
  - 4. International Building Code
- B. Nothing in these Technical Specifications is to be construed to permit work not conforming to the above; expense for compliance with the above shall be paid for by the Contractor. Whenever the Plans and Specifications require higher standards or larger sizes than those required by the Ordinances and Statutes, the Plans and Specifications shall take priority.
- C. The Contractor shall have Special Dispensation from the California Occupational Safety and Health Administration to conduct operations no closer than 6 feet, but within 10 feet, of a high voltage line prior to any work in these areas.

#### **3.02 MAINTAINING TEMPORARY TRAFFIC CONTROL SYSTEM**

- A. Whenever components of the traffic control system are displaced or cease to operate or function as specified from any cause, immediately repair the components to the original condition or replace the components and restore the components to the original location.
- B. For a stationary lane closure made only for the work period, remove the components of the traffic control system from the traveled way and shoulder, except for portable delineators placed along open trenches or excavation adjacent to the traveled way at the end of each work period.
- C. The Contractor may store the components at selected central locations designated by the Engineer with the limits of the roadway.

#### **3.03 TEMPORARY PAVEMENT DELINEATIONS**

- A. Painted traffic stripes used for temporary delineation must comply with Section 84-2, "Painted Traffic Stripes and Pavement Markings" of the 2018 Caltrans Standard Specifications and these Technical Specifications. The scope of work shall include: placing, applying, maintaining, and removing temporary pavement delineation.
- B. Whenever work activities obliterate pavement delineation, place temporary or permanent pavement delineation before opening the traveled way to traffic. Place centerline pavement delineation for traveled ways open to traffic.

- C. Establish the alignment for temporary pavement delineation, including required lines or markers. Surfaces to receive an application of paint or removable traffic tape must be dry and free of dirt and loose material. Do not apply temporary pavement delineation over existing pavement delineation or other temporary pavement delineation. Maintain temporary pavement delineation until it is superseded or you replace it with a new striping detail of temporary pavement delineation or permanent pavement delineation.
- D. Place temporary pavement delineation on or adjacent to lanes open to traffic for a maximum of 14 days. Before the end of the 14 days, place the permanent pavement delineation. If the permanent pavement delineation is not placed within the 14 days, replace the temporary pavement markers with additional temporary pavement delineation equivalent to the striping detail specified for the permanent pavement delineation for the area. The County does not pay for the additional temporary pavement delineation.
- E. When the Engineer determines the temporary pavement delineation is no longer required for the direction of traffic, remove the markers, underlying adhesive and removable traffic tape from the final layer of surfacing and from the existing pavement to remain in place. Remove temporary pavement delineation that conflicts with any subsequent or new traffic pattern for the area.
- F. Temporary Lane Line and Centerline Delineation
  - 1. Whenever lane lines or centerlines are obliterated, the minimum lane line and centerline delineation must consist of temporary pavement markers placed longitudinally at intervals not exceeding 24 feet. The temporary pavement markers must be temporary pavement markers on the Authorized Material List for short-term day or night use, 14 days or less, or long-term day or night use, 180 days or less. Place temporary pavement markers under the manufacturer's instructions. Cement the markers to the surfacing with the adhesive recommended by the manufacturer, except do not use epoxy adhesive to place pavement markers in areas where removal of the markers will be required.
  - 2. For temporary lane line or centerline delineation consisting entirely of temporary pavement markers, place the markers longitudinally at intervals not exceeding 24 feet.
- G. Temporary Edge Line Delineation
  - 1. Whenever edge lines are obliterated on multilane roadways, freeways, and expressways, place edge line delineation for that area adjacent to lanes open to traffic consisting of (1) solid, 4-inch wide traffic stripe tape of the same color as the stripe being replaced, (2) traffic cones, (3) portable delineators or channelizers placed longitudinally at intervals not exceeding 100 feet. You may apply temporary painted traffic stripe where removal of the 4-inch wide traffic stripe will not be required.
  - 2. The Engineer determines the lateral offset for traffic cones, portable delineators, and channelizers used for temporary edge line delineation. If traffic cones or portable delineators are used for temporary pavement delineation for edge lines, maintain the cones or delineators during hours of the day when the cones or delineators are being used for temporary edge line delineation.

3. Channelizers used for temporary edge line delineation must be an orange surface-mounted type. Channelizers must be one of the 36-inch, surface-mounted types on the Authorized Material List.
4. Remove the temporary edge line delineation when the Engineer determines it is no longer required for the direction of traffic.

#### 3.04 TEMPORARY RAILING (TYPE K)

- A. Temporary Railing (Type K) shall conform to Section 12-3.20C, "Construction" of the 2018 Caltrans Standard Specifications.

#### 3.05 CONSTRUCTION AREA SIGNS

- A. Construction Area Signs shall conform to Section 12-3.11C, "Construction" of the 2018 Caltrans Standard Specifications.

### **PART 4 – MEASUREMENT AND PAYMENT**

The contract unit price paid for performing all the work involved as shown on the plans and as specified in these Special Provisions, the Standard Specifications and as directed by the Engineer for the various bid items shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the Plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.

- A. The contract price paid per each for "Portable Changeable Message Sign" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work, as shown on the plans, as specified in the Standard Specifications, these Technical Specifications, and as directed by the Engineer.
- B. The contract price paid per each for "Type III Barricade" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.
- C. The contract price paid per each for "Temporary Railing (Type K)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.
- D. The contract price paid per each for "Traffic Control System" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.
- E. The contract price paid per each for "Construction Area Sign" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work

involved as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.



## 13 WATER POLLUTION CONTROL

### PART 1 – GENERAL

#### 1.01 DESCRIPTION

- A. These Technical Specifications shall conform to Section 13, "Water Pollution Control" and Section 21, "Erosion Control" of the 2018 Caltrans Standard Specifications and these Special Provisions.
- B. This section describes the following work:
  - 1. Implementation of the Stormwater Pollution Prevention Plan (SWPPP)
  - 2. Implementation of the Best Management Practices and Erosion Control Plan
  - 3. Implementation of sediment and erosion control measures (1) during construction, and (2) upon completion of construction.
  - 4. Qualified SWPPP Practitioner (QSP) Services
  - 5. Coordination with County's Qualified SWPPP Developer (QSD)
  - 6. All other auxiliary work to comply with the Construction General Permit
- C. See related Sections:
  - 1. Erosion Control
  - 2. Bioretention facilities

#### 1.02 PERMITS

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 Section 10, "Mobilization" for permits obtained by the County.

#### 1.03 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 three (3) months from substantial completion.
- C. Seeding: Application of seed by hydraulically applied methods. Used interchangeably with Hydro-mulching.

#### 1.04 PHOTO SURVEY

- A. Before the start of construction, establish two photo-documentation points at each of the Project sites in the presence of the Engineer to document pre-Project conditions of the creek channels below the bridges.
- B. Submit a list of digital photo equipment proposed for use.

- C. For the pre-construction and post-construction photo survey, the following requirements apply:
1. Use a digital camera capable of capturing a minimum resolution of 3264x2449 pixels or eight megapixels.
  2. All digital photos must be saved in the JPEG file format.
  3. The image quality option of the JPEG file must be set to high.
  4. The JPEG files must be stored in separate folders based on photo location.
  5. The CD-ROM must be written in ISO 9660 format with Joliet extensions. The CD-ROM must be submitted to the Engineer as part of the Notice of Project Construction Completion.
  6. Every digital photo image in the Notice of Project Construction Completion must be authenticated in writing that it has not been modified using photo editing computer software. Said letter must be included with every Notice of Project Construction Completion.
- D. Perform pre-construction photo survey and monitoring in the presence of the Engineer at least 20 working days prior to beginning construction. Perform post-construction photo survey and monitoring in the presence of the Engineer on the same facilities within 10 working days after the completion of construction.
- E. Within 45 days after completing construction activities, submit a Notice of Project Construction Completion to the Engineer with the following information:
1. As-built report that documents any significant deviations between the extent of impacts to the creeks and the impacts authorized by the Clean Water Act Section 401 Water Quality Certification and Order.
  2. Pre-construction and post-construction photo-documentation of the condition of the sites from the photo-documentation points established prior to construction.
  3. CIWQS Place ID 859101, the date when the first disturbance of waters in the State occurred, and the date construction was completed.

#### 1.05 STORMWATER POLLUTION PREVENTATION PLAN (SWPPP)

- A. The Contractor shall implement and maintain the SWPPP in accordance with the Construction General Permit and Section 13-3 of the 2018 Caltrans Standard Specifications. A SWPPP has been prepared for the project and it describes the minimum requirements for erosion and sediment control for the project. The SWPPP is included in the Contract Documents by reference. The project is a Risk Level 2 project. It is the contractor's responsibility to implement necessary modifications, perform monitoring and sampling and provide all required QSP services for the project.

This shall include but not limited to:

1. Provide QSP Services
2. Coordinate with County's QSD
3. Implement, maintain and upgrade the SWPPP.

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4. Implement, maintain and upgrade the Best Management practices (BMP)
  5. Monitoring and report keeping of required inspections
  6. Rain Event Action Plan
  7. Submit figures showing the location and layout of the staging area, the designated fueling area, etc.
  8. Submit a fuel and oil spill prevention plan and emergency clean-up plan within five days of the Notice to Proceed.
  9. Incorporate all permitting requirements regarding scheduling, sequencing, methods and performance standards for erosion, sediment and water pollution control.
  10. Training and monitoring procedures and documentation.
  11. All other required items per the Construction general permit not specifically listed here.
- B. 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 and the Napa County Grading Ordinance Chapter 16.28, Stormwater Management and Discharge Control.
- C. The Contractor's erosion and sediment control measures shall comply with the newest SWRCB Construction Storm Water Program: [http://www.swrcb.ca.gov/water\\_issues/programs/stormwater/constpermits.shtml](http://www.swrcb.ca.gov/water_issues/programs/stormwater/constpermits.shtml)
- D. The Contractor shall track modifications to the SWPPP on the plan and coordinate with the County's Qualified SWPPP Developer (QSD) for revisions.
- E. The Contractor's modifications to the SWPPP shall be submitted within five (5) working days of the Notice to Proceed. The Contractor shall revise and resubmit the SWPPP as noted by the County's Qualified SWPPP Developer (QSD). The Contractor shall not mobilize to the site until the SWPPP has been approved in writing by the County's QSD.
- F. The Contractor shall not deviate from the approved plan unless a revised plan has been approved in by the QSD. 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.

#### 1.06 NPDES CONSTRUCTION GENERAL PERMIT

**Not required.**

- A. The County 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 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 the QSD. Following favorable review and acceptance by QSD, the QSD shall submit inspection reports to the SWRCB and other agencies as required.
- C. Upon Substantial Completion of the project, Contractor shall prepare and submit all associated documents to the QSD. The County will prepare the Notice of Termination (NOT) for submittal using the SWRCB's SMART system. Substantial Completion is defined as completion of all work, including punchlist items, except erosion control maintenance.
- D. For bidding purposes, the Contractor shall estimate the rain events that will occur during the construction period for which the Contractor will be required to prepare a Rain Event Action Plan (REAP), perform monitoring, sampling and analysis and reporting in accordance with the Construction General Permit for Risk Level 2.
- E. The Contractor may assume that compliance with the monitoring and reporting will not be required throughout the erosion control maintenance period, provided that (a) the NOT has been submitted by the County.

#### 1.07 SEDIMENT AND EROSION CONTROL

- A. The Contractor shall install and maintain erosion and sediment control measures to mitigate the potential for sediment migration from the work area and into any drainage system and water bodies. The Contractor shall modify and enhance these measures regularly to meet County, State and Federal regulations and prevent sediment migration at no additional expense to the County.
- B. Comply with specific measures for sediment and erosion control as required for compliance and as directed by the Engineer.
- C. BMPs, including silt fencing and fiber rolls, would be implemented to minimize dust, dirt, and debris resulting from construction activities, and to protect water quality of Chiles Creek pursuant to the requirements of the RWQCB and project permits.
- D. Following completion of construction activities, appropriate erosion control measures would be implemented to ensure that soils disturbed by construction are stabilized, to minimize non-stormwater discharges into Chiles Creek, and to meet requirements of the RWQCB and project permits.

#### 1.08 NON-STORM WATER CONTROL

- A. The Contractor shall designate one fueling and wash area within the staging areas, outside the top of embankments. 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 submit details of its fueling and wash area for Engineers approval.

- 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. Contractor shall maintain onsite spill kits for emergency cleanup throughout the life of the project.
- F. Immediately notify the Engineer in the event of any spill or release of any chemical in any physical form in the site during construction.
- G. In case of any accidental spill, upon the Contractor's removal and cleanup of the designated fueling area, the Contractor 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 submit test results to the Engineer. 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.

#### 1.09 SUBMITTALS

A. Attention is directed to all of the provisions of Section 21, "Erosion Control," of the 2018 Caltrans Standard Specifications and these Special Provisions.

#### B. Temporary Creek Diversion System Plan

Within 20 days of Contract approval, submit 3 copies of the Temporary Creek Diversion System Plan (TCDSP). The TCDSP must include:

1. Installation and removal process, including equipment, platforms for equipment, and access locations.
2. Anticipated flow rates.
3. Calculations supporting the sizing of piping, channels, pumps, or other conveyance by using FHWA HY-8 or other equivalent method. Calculate the discharge water flow rate and velocity anticipated where it discharges on any erodible surface, so its conveyance does not cause erosion within the project or at the discharge to the water body. Temporary culverts attached to banks, walls, or other locations must be designed to hold the full weight of the culvert at capacity and restrain the culvert for any expected hydraulic forces.
4. Plans showing locations of diversion, including layouts, cross sections, and elevations.
5. Materials proposed for use, including MSDS if applicable.
6. Operation and maintenance procedures for the TCDS.

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7. Restoration plans showing before and after conditions, including photos of existing conditions for areas disturbed during the installation, operation, and removal of the TCDS.
8. Monitoring and reporting plan to ensure applicable water quality objectives are met. This includes schedule of work including Temporary BMP implementation as part of the Construction Site BMP strategy, and SWPPP or WPCP as applicable. Use with section 13-3.01A.
9. Details of the pumping system, if used, including power source, debris handling, fish screens, and monitoring requirements.
10. Fish passage plan, following the Caltrans Fish Passage Design for Road Crossings, CA Department of Fish and Wildlife (CDFW), CA Salmonid Stream Habitat Restoration Manual, and National Marine Fisheries Service (NMFS), Guidelines for Salmonid Passage at Stream Crossings, as required by the applicable PLACs.
11. The TCDS design must demonstrate how it will comply with section 13-12.03A, water tightness, and prevent seepage.
12. Contingency plan to remove workers, equipment, materials, fuels, and any other work items that will cause pollution or violation of PLACs during a rain event out of the flow area. Develop the contingency plan for when a 12-inch freeboard cannot be maintained and overtopping of the coffer dams may occur.

If revisions are required, the Engineer notifies you of the date when the review stopped and provides comments. Submit a revised TCDSP within 15 days of receiving the comments. The Department's review resumes when a complete TCDSP has been resubmitted.

Submit an electronic copy on a read-only CD, DVD, or other Engineer-authorized data storage device and 4 printed copies of the authorized TCDSP.

If the RWQCB or other regulatory agency requires review of the authorized TCDSP, the Engineer submits it to the RWQCB for review and comment. If the Engineer orders changes to the TCDSP based on the RWQCB's comments, submit a revised TCDSP within 10 days.

All submittals which include plans, specifications, and calculations must be sealed and signed by a civil engineer registered in the State.

#### 1.10 QUALITY ASSURANCE

- A. Contractor Qualifications: The Contractor shall demonstrate to the satisfaction of the Engineer that it is a qualified landscape Contractor with a valid California C-27 license and a minimum of five (5) years of experience whose work has resulted in successful establishment of native grass cover in disturbed wild land settings.
- B. Attention is directed to all of the provisions of Section 21, "Erosion Control," of the 2018 Caltrans Standard Specifications and these Special Provisions.

#### 1.11 DELIVERY, HANDLING AND STORAGE

- A. Attention is directed to all of the provisions of Section 21, “Erosion Control,” of the 2018 Caltrans Standard Specifications and these Special Provisions.
- B. 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.
- C. The Contractor shall provide a storage yard with appropriate temporary security fencing at the staging area(s) shown on the contract documents or as designated by the Engineer, in which to secure and store equipment and associated construction materials used in this work.
- D. Fabric Materials:
  - 1. Each roll of fabric material shall be wrapped with a material covering that will protect them from damage due to shipment, direct sunlight and storage.
  - 2. 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, and temperatures greater than 140 degrees Fahrenheit, 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.

1.12 WARRANTY

- A. All work shall be done by an experienced contractor familiar with California native grasses and their horticulture and industry methods and standards for grass seeding. The Contractor shall employ modern equipment and state of the art methods and techniques. The Contractor shall have a minimum of five (5) years of applicable on the job experience with native grass seeding and weed control during native grassland establishment periods.

**PART 2 – PRODUCTS**

2.01 BEST MANAGEMENT PRACTICES (BMPs)

- A. The following is a list of products for typical BMPs that the Contractor shall employ throughout the site for erosion and sediment control.
  - 1. Silt Fence: Woven filter fabric, UV resistant silt fence. Wooden or steel posts three feet high minimum (does not include embedment).
  - 2. Straw/coir Fiber roll: 100% Biodegradable 10-inch minimum diameter straw or coir/straw fiber roll. North American Green Sediment STOP, or approved equivalent.
  - 3. Attention is directed to all of the provisions of Section 21, “Erosion Control,” of the 2018 Caltrans Standard Specifications and these Special Provisions.
- B. Appropriate hazardous material BMPs, including having a spill prevention kit onsite, would be implemented to minimize potential for chemical spills or containment releases into Chiles Creek.

- C. All equipment refueling, and maintenance would be conducted in the upland staging area, away from the creek per standard specifications and regulatory permits. In addition, vehicles and equipment would be checked daily for fluid and fuel leaks, and drip pans would be placed under all equipment that is parked and not in operation.

## 2.02 MATERIALS

### A. Gravel must be:

1. Be river run gravel obtained from a river or creek bed with gradation of 100 percent passing a 3/4 inch sieve and 0% passing a 3/8 inch sieve
2. Be clean, hard, sound, durable, uniform in quality, and free of any detrimental quantity of soft, thin, elongated or laminated pieces, disintegrated material, organic matter, or other deleterious substances
3. Be composed entirely of particles that have no more than 1 fractured face
4. Have a cleanliness value of at least 85, as determined by California Test 227

### B. Impermeable Plastic Membrane must be:

1. Single ply, commercial quality, polyethylene with a minimum thickness of 10 mils complying with ASTM D2103. You must use stronger plastic membrane if required as part of design to resist hydraulic forces.
2. Free of holes, punctures, tears or other defects that compromise the impermeability of the material.
3. Suitable for use as an impermeable membrane.
4. Resistant to UV light, retaining a minimum grab breaking load of 70 percent after 500 hours under ASTM D4355.

### C. Gravel-Filled Bags must comply with Section 13-5.02G of 2018 Caltrans Standard Specifications. The 2<sup>nd</sup> paragraph of section 13-5.02G does not apply.

### D. Plastic Pipes must comply with Section 61-3.01 of 2018 Caltrans Standard Specifications, and must:

1. Be clean, uncoated, in good condition free of rust, paint oil dirt or other residues that could potentially contribute to water pollution
2. Be adequately supported for planned loads
3. Use watertight joints under section 61-2.01.



4. Be made of a material or combination of materials that are suitable for clean water and which do not contain banned, hazardous or unlawful substances
  5. For temporary pipes not reused on the project you may use the following materials:
    - a. PVC closed-profile wall pipe must comply with ASTM F1803
    - b. PVC solid wall pipe must comply with ASTM D3034, ASTM F679, AWWA C900, AWWA C905, or ASTM D2241 and cell class 12454 defined by ASTM D1784
    - c. HDPE solid wall pipe must comply with AASHTO M 326 and ASTM F714
    - d. Polyethylene large-diameter-profile wall sewer and drain pipe must comply with ASTM F894
- E. Rock layer must comply with the table titles *Rock Gradation for 7-inch-thick Layer* in Section 72-4.02 of 2018 Caltrans Standard Specifications.
- F. Pumping System must:
1. Comply with section 74-2.02B of 2018 Caltrans Standard Specifications
  2. Be equipped with secondary containment
  3. Be free of fuel and oil leaks
  4. Meet intake screen regulatory requirements
- G. Seepage Pumping System: If seepage occurs in the dewatered work area, the water must be removed by sump pumps as part of the TCDS. Seepage pumping system must:
1. Comply with section 74-2.02B of 2018 Caltrans Standard Specifications.
  2. Ensure discharge water conform with PLACs or is treated on site
  3. Be free of fuel and oil leaks
- H. Discharge Water Energy Dissipation and Erosion Control: Discharge water from pumps, pipes, ditches, or other conveyances must have BMPs to dissipate the flows and velocity of water discharged from the temporary diversion system if erosion would otherwise occur. Energy dissipation measures:
1. May be plastic sheeting, flared end sections, rubber matting, or other materials appropriate for the design hydraulics
  2. Must be anchored to prevent movement by expected flows
  3. Must be removed when the TCDS is removed

## **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 Erosion Control Plan and manufacturer's recommendations, as shown on the Plans and as required by these Technical Specifications. In case of a conflict, the more rigorous installation requirements, as determined by the Engineer, 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, the Contractor shall, at a minimum, secure all soil stockpiles by covering and/or installing a perimeter silt barrier.
- E. All temporary erosion control measures shown on the Plans and additional measures deemed necessary for the maintenance period shall be installed at the time of substantial completion.
- F. Seeding area must be scarified to a minimum depth of one (1) inch using a flexible tine harrow or hand tools to create a loose and friable topsoil medium prior to broadcast seeding operations.
- G. Staging areas would be sited away from the edges of the river to reduce potential for disturbance of, or non-stormwater discharge to, Chiles Creek.
- H. Work areas would be minimized to the smallest area feasible.

### **3.02 COIR/STRAW FIBER ROLLS**

- A. Coir/straw fiber rolls shall be installed in accordance with manufacturer's recommendations and as shown on the Plans.
- B. Coir/straw fiber rolls shall be installed on all areas disturbed during construction, spaced as shown on the Plans, or closer, if needed for adequate erosion control. Risk level 2 projects require that linear sediment controls such as fiber rolls be installed at the toe of slope, face of slope and at grade breaks to comply with sheet flow lengths at a no more than 20-feet apart on slopes less than 25%.
- C. Install all coir/straw fiber rolls subsequent to completion of fine grading in an area, and in all cases by October 15. Maintain coir/straw fiber rolls throughout the maintenance period. Following each rain event inspect coir fiber rolls, and replace anchoring stakes and/or coir fiber rolls as needed.
- D. Install coir fiber roll in accordance with manufacturer's recommendations and the following requirements:
  - 1. Embed the fiber roll a minimum of four (4) inches below grade. Install fiber rolls by excavating a four (4) inch deep by ten (10) inch wide trench, placing the fiber roll into the trench, and backfilling with soil or gravel, as needed for proper anchoring.

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2. Stake the fiber roll at three (3) feet on center. Install additional stakes as needed to completely anchor the coir fiber roll.
3. Align coir fiber roll installations along elevation contours.
4. Turn last ten (10) feet of fiber roll at right angles in the upslope direction (in an “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 active channel bank (wet edge) throughout floodplain grading operations.
- C. Silt fence placement and removal shall be coordinated and approved by the Engineer.
- D. Install silt fence in accordance with manufacturer’s recommendations.

### 3.04 HYDROSEED

- A. All disturbance to aquatic habitat, including riparian vegetation and jurisdictional water would be minimized with the use of ESA fencing and all soil exposed because of project construction would be revegetated using native plant hydroseeding or live planting methods. Restoration would be at a minimum ratio of 1:1 or as agreed upon as part of regulatory permitting.

### 3.05 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. Inspect graded areas after storm 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 Section 14 Environmental Stewardship of these Technical Specifications.

### 3.06 TEMPORARY DIVERSION SYSTEM

#### A. GENERAL

1. Construction, use and removal of the TCDS is restricted to the time period from June 1 to October 31. If the work cannot be completed during the initial restricted time period, remove TCDS, restore the creek to original flow condition, and reconstruct the TCDS after August of the following year. No work is allowed within the stream except during the restricted time period.
2. Do not use motorized equipment or vehicles in areas of flowing or standing water for the construction or removal of the TCDS in compliance with section 13-4.03.

3. Remove vegetation to ground level and clear away debris.
4. Place temporary or permanent fill as allowed by PLACs.
5. Place rock at outlet of diversion pipe under section 72-4.03, except motorized vehicles and equipment must not be used in areas of flowing or standing water.
6. Do not construct or reconstruct TCDS if the 72-hour forecasts predict a 50 percent or greater chance of rain in the project area.
7. Stop all work and remove all material and equipment from the creek between upstream and downstream cofferdams if the 72-hour forecasts predict a 50 percent or greater chance of rain in the project area and the predicted rainfall is estimated to produce a flow rate exceeding the design capacity of the TCDS.
8. If the required freeboard cannot be maintained and overtopping may occur, implement contingency plan to remove all workers, equipment, and potential sources of pollution from the dry working area of the creek bed.
9. The TCDS must be constructed within the temporary impact footprint as described in the environmental commitments.
10. Lap and join joints between the edges of impermeable plastic membrane with commercial-quality waterproof tape with minimum 4-inch lapping at the edges.
11. Seal openings or penetrations through the impermeable plastic membrane with commercial quality waterproof tape.
12. The TCDS must be water tight to keep the work area dry for construction and prevent the creation of pollutants. Maintain all portions of the TCDS and fix leaks as soon as they are discovered.
13. Contact water agencies that discharge to the construction area to ensure that unexpected water is not discharged during construction which could compromise the TCDS.

## B. MAINTENANCE

1. Maintain the TCDS to provide a minimum freeboard of 12 inches between the water surface and the impermeable top of the cofferdams.
2. Do not discharge runoff from existing or proposed drainage systems into the dry work area between the cofferdams. Runoff from these systems may be connected to the diversion pipe or conveyed by pipes downstream of the cofferdam.
3. Prevent leaks in the TCDS. Provide seepage pumps as necessary and keep the work area dry to prevent the creation of sediment-laden water.
4. Repair holes, rips and voids in the impermeable plastic membrane with commercial-quality waterproof tape. Replace impermeable plastic membrane when patches or repairs compromise the impermeability of the material.
5. Repair TCDS within 24 hours after the damage occurs.

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6. Prevent debris from entering the TCDS and receiving water.
7. Remove and immediately replace gravel, gravel-filled bags, impermeable plastic membrane, or plastic pipes contaminated by construction activities.
8. Remove sediment deposits and debris from the TCDS as needed. If removed sediment is deposited within project limits, it must be stabilized and not subject to erosion by wind or water, under sections 19-1.01 and 19-2.03 B.

#### C. REMOVAL

1. When no longer required, remove all components of TCDS. Return the creek bed and banks to the original condition.
2. Do not excavate the native creek material. Backfill ground disturbance, including holes and depressions caused by the installation and removal of the TCDS with gravel. Maintain the original line and grade of the creek bed.

#### 3.06 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.

### **PART 4 – MEASUREMENT AND PAYMENT**

- A. The contract lump sum price paid for the “Storm Water Pollution Prevention Plan” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in this section as specified in this Technical Specifications, as shown on the plans and as directed by the Engineer and no additional compensation will be allowed.
- B. The contract price paid for each “Temporary Drainage Inlet Protection” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in this section as specified in this Technical Specifications, as shown on the plans and as directed by the Engineer and no additional compensation will be allowed.
- C. The contract price paid in linear feet for “Temporary Fiber Roll” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in this section as specified in this Technical Specifications, as shown on the plans and as directed by the Engineer and no additional compensation will be allowed.
- D. The contract price paid for each “Temporary Construction Entrance” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in this section as specified in this Technical Specifications, as shown on the plans and as directed by the Engineer and no additional compensation will be allowed.
- E. The contract lump sum price paid for maintaining and removal of Temporary Creek Diversion System (TCDS) is included in the payment for the TCDS. This includes installation, dewatering, maintenance and removal. Progress payments will be 50% of the item amount upon complete installation of diversion

system and start of dewatering period for the in-water work season. The final 50% will be paid upon removal of the diversion system and complete restoration of channel at the end of the in-water work season.

## 14 ENVIRONMENTAL STEWARDSHIP

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. This Technical Specifications replaces Section 14, “Environmental Stewardship” of the 2018 Caltrans Standard Specifications
- B. This section describes environmental protection measures to be applied throughout the duration of the Work, including the following:
  - 1. Dust Control
  - 2. Noise Control
  - 3. Wildlife Protection
  - 4. Biological Resources
  - 5. Cultural and Prehistoric Resources
  - 6. Hazardous Waste
- C. 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 ground contamination or pollution.
- D. The Contractor shall be responsible for providing a biologist for assessments prior to and during the construction of the project.
- E. Replace *Contractor-supplied Biologist* in Section 14-6.03D with: **Contractor-supplied biologist or Service Approved Biologist**
- F. Work Windows
  - 1. Work with in the Creek shall be performed between June 1 and October 31.
  - 2. Out of water work window (i.e. ground disturbance) shall be performed between April 1 and November 1
    - a. Tree Removal/Trimming activities shall be performed between September 1 and October 15.
    - b. Brush and other Vegetation Removal/trimming (i.e. nesting bird prevention) September 16- November 1st
  - 3. Nighttime construction would only be permitted for select activities on a case-by-case basis, such as a bridge pour, in coordination with a contractor-supplied biologist.

#### 1.02 PERMITS

- A. Environmental document 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 Section 9 “Mobilization” for permits obtained by the County, if any.

## **PART 2 – EXECUTION**

### **1.01 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 Bay Area Air Quality Control District (BAAQCD) published guidelines.
- B. Dust control activities will primarily be associated with soil excavation, 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 Work.
- C. All exposed surfaces (graded areas, staging areas, stockpiles, and unpaved roads) shall be covered or watered twice per day.
- D. All trucks hauling soil, sand and other loose materials shall be covered in accordance with Section 23114 of the California Vehicle Code during transit to and from the site per day.
- E. The site access road and adjacent public roads shall be swept daily with wet power vacuum street sweepers, and if visible soil material is carried/tracked out onto roadways.
- F. All project-related vehicle traffic would be restricted to established roads and construction areas, which include equipment staging, storage, parking, and stockpile areas.
- G. Traffic on unpaved areas and roads shall be limited to 15 MPH and grading and earthmoving activities shall be suspended when winds exceed 25 MPH.
- H. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes and signs clearly indicating this provision shall be installed at all access points.
- I. All construction equipment shall be maintained and properly tuned in accordance with manufacturer’s specifications.
- J. A sign with the telephone number and person to contact at the County of Napa regarding dust complaints and the Air District’s 800-334-6367 phone number shall be visibly posted at the site.
- K. At a minimum, the Contractor shall control dust using the following methods.
  - 1. Limit vehicle speeds to 20 miles per hour (mph) through the construction area.
  - 2. Water all active construction areas and access routes at least twice 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 Work site.
  7. To the extent practicable, equipment shall be selected and operated in a manner that minimizes dust generation. All equipment shall be checked by a certified visible emissions evaluator.
  8. Maintain equipment engines in good condition and properly tuned (in accordance with manufacturer's specifications).
  9. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
  10. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- L. Excessive Watering: Except as required by the Engineer, the Contractor shall not employ dust control methods that result in ponded water, erosion, or an increase of the water content of excavated soil by more than one (1) percent above the water content that existed when excavated.
- M. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.
- N. Best management practices (BMP), such as silt fencing, fiber rolls, weed-free straw bales, or other measures would be implemented during construction to minimize dust, dirt, and construction debris from entering the creek and drainage features, and/or leaving the construction area.

## 1.02 NOISE CONTROL

- A. 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.).
- B. 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 or businesses located near the Work site. See Section 9 of these Special Provisions for work hours.
- C. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five (5) minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of the CCR). Signage shall be provided for construction workers at all access points.

- D. Construction workers shall be cautioned on published risks associated with not using ear protection when around heavy equipment operations.
- E. Stationary noise sources and staging areas shall be located as far from sensitive receptors as possible. Dewatering pumps and generators, if required to operate during the nighttime, will be placed so that the estimated noise level at the nearest residential receptor does not exceed 60 dBA. This can be achieved by locating the pump and generator at least 725 feet from the nearest receptor or incorporation of mufflers and noise barriers to reduce the noise levels.
- F. 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 to track noise complaints.
- G. Construction activities will be limited to daylight hours using properly muffled vehicles and in compliance with the Napa County Code Chapter 8.16.

1.03 WILDLIFE PROTECTION

- A. The Work site and adjacent areas may contain sensitive habitats that could be suitable for special-status wildlife.
- B. Comply with all permit requirements for wildlife protection per California Department of Fish & Wildlife Final Streambed Alteration Agreement and Environmental Documents.
- C. Use orange construction fencing and signage, designated construction limits so that no access by equipment or personnel is allowed into non-construction areas. Disturbance or removal of vegetation outside of the designated construction area is not allowed.
- D. The contractor-supplied biologist will perform pre-construction surveys, inspection of construction limit barrier fencing, environmental training, and monitoring and wildlife relocation as summarized in the table below. The Contractor shall cooperate with the biologist throughout construction and provide adequate notification to the County to allow sufficient time for required activities.
- E. Environmental Sensitive Area fence will be implemented and adjusted per the Biologist recommendations throughout the project.
- F. The Contractor shall cooperate with the Biologist throughout construction and provide adequate notification to the County’s Representative to allow sufficient time for required activities.
- G. Monitor throughout construction and provide adequate notification to the County’s Representative to allow sufficient time for required activities including the following:

Activity	Schedule
<b>Red-legged Frog</b>	
Pre-construction survey	Prior to beginning construction
Environmental training	Prior to beginning construction

Environmental Monitoring	During ground disturbing activities
<b>Yellow-legged Frog</b>	
Pre-construction survey	Prior to beginning construction
Environmental training	Prior to beginning construction
Environmental Monitoring	During ground disturbing activities
<b>California Giant Salamander</b>	
Pre-construction survey	Prior to beginning construction
Environmental training	Prior to beginning construction
Environmental Monitoring	During ground disturbing activities
<b>North American porcupine</b>	
Pre-construction survey	Prior to beginning construction
Environmental training	Prior to beginning construction
Environmental Monitoring	During ground disturbing activities
<b>Bats</b>	
Pre-construction survey	Prior to beginning construction
Environmental training	Prior to beginning construction
Environmental Monitoring	During ground disturbing activities

- H. Prior to the start of construction, the Contractor-supplied biologist will conduct pre-construction wildlife and nesting surveys of the construction site. Provide 10 calendar days' notice to the County prior to mobilizing to the site to coordinate the Biological Monitor. The Contractor shall not start construction until the area has been cleared for wildlife. Results of the pre-construction and nesting survey will be documented in a letter to the California Department of Fish and Wildlife (CDFW). If any special-status species are found, the contractor-supplied biologist shall contact CDFW within two hours at (707) 944-5500.
- I. Pre-construction amphibian surveys must be conducted within 24 hours prior to start of construction by a contractor-supplied biologist.
1. If a California giant salamander is found in the construction area, they would be relocated by a the contractor-supplied biologist upstream or downstream of the construction area to a location with suitable habitat.
  2. If the California red-legged frog and/or foothill yellow-legged frog is found in the construction area, the encounter would be treated on a case-by-case basis in coordination with regulatory agencies, but the general procedure would be as follows:

- c. Work would immediately be suspended in the vicinity of the animal.
  - d. A contractor-supplied biologist would evaluate the animal.
  - e. The animal would not be disturbed if it is not in danger and would be allowed to exit the construction site on its own.
3. If the foothill yellow-legged frog is found in the construction area and the animal is at risk of harm, the animal would be relocated by a contractor-supplied biologist to a secure, upstream or downstream location.
- J. If trimming or removal of vegetation and tress must be conducted during the nesting season (February 1 to September 30), nesting bird surveys must be completed within 500 feet of the construction area by a qualified biologist no more than 48 hours prior to trimming or clearing activities, Nesting bird surveys must be repeated if trimming or removal activities are suspended for five days or more.
- K. If nesting birds are found within 500 feet of the construction area, appropriate buffers consisting of orange flagging/fencing or similar (typically 300 feet for birds and 500 feet for raptors) would be installed and maintained until nesting activity has ended, as determined in coordination with the project biologist and regulatory agencies, as appropriate.
- L. Pre-construction surveys would be conducted for North American porcupine dens within 72 hours prior to start of construction by a contractor-supplied biologist. If a den is found during pre-construction surveys, high visibility ESA protective fencing, would be installed around the den to prevent construction staff or equipment from entering this area, to the extent feasible. If ESA protective fencing around an observed den is not feasible, additional avoidance measures would be implemented based on recommendations of a contractor-supplied biologist.
- M. At least 30 days prior to construction, Contractor supplied biologist will conduct a thorough assessment of all trees and structures to be removed or otherwise impacted during construction for bat roosting habitat. Visual and acoustic surveys would be conducted for at least two nights at all identified roosting habitat to assess the presence of roosting bats. If presence is detected, a count and species analysis would be completed to help assess the type of colony and usage.
- 1. No less than two weeks prior to construction, and during the non-breeding and active season (typically October), bats would be safely evicted from roosts impacted by the project under the direction of a contractor-supplied biologist. Once bats have been safely evicted, exclusionary devices would be installed to prevent bats from returning and roosting in these areas prior to removal. Roosts that would not be impacted by the project would be left undisturbed.
  - 2. Tree removal would be minimized and would be conducted outside of the maternal and non-active seasons for bats (typically October), where feasible.
  - 3. All removal of trees with potential bat habitat would be conducted using a 2-step process over two consecutive days under the supervision of a contractor-supplied biologist. On the first day, any trees that do not contain crevice or cavity roosting habitat, as determined by a contractor-supplied biologist, would be trimmed or removed (only if necessary, for project construction). In addition, limited trimming of trees (branches and small limbs with no potential roosting features) would be completed. Construction crews would only use hand tools (i.e. chainsaws

- or similar). On the calendar day immediately following the trimming, all of trees that were previously trimmed would be removed (only if necessary, for project construction).
4. If the presence or absence of bats cannot be confirmed in potential roosting habitat, a contractor-supplied biologist would be onsite during removal or disturbance of this area. If the biologist determines that bats are being disturbed during this work, work would be suspended until bats have left the vicinity on their own or can be safely excluded under direction of the biologist. Work would resume only once all bats have left the site and/or approval to resume work is given by a contractor-supplied biologist.
  5. In the event that a maternal colony of bats is found, no work would be conducted within 100 feet of the maternal roosting site until the maternal season is finished or the bats have left the site, or as otherwise directed by a contractor-supplied biologist. The site would be designated as a sensitive area and protected as such until the bats have left the site. No activities would be authorized adjacent to the roosting site. Combustion equipment, such as generators, pumps, and vehicles, would not be parked or operated under or adjacent to the roosting site. Construction personnel would not be authorized to enter areas beneath the colony, especially during the evening exodus (typically between 15 minutes prior to sunset and one hour following sunset).
  6. Permanent bat roosting habitat would be incorporated into the new bridge design to replace a portion of the habitat lost from the existing bridge. The new bat roosting habitat will be designed to create habitat with similar width, depth, and thermal properties of habitat on the existing bridge. Plans for the permanent roosting habitat will be reviewed and approved by a qualified bat biologist prior to initiating construction of the new bridge. The permanent roosting habitat will be incorporated into the final plans of the new bridge, and will be monitored monthly for one year following initial verification that a roost is occupied, or up to three years to determine if bats are using the habitat. If no bats are using the permanent roosting habitat within the 3-year monitoring period, alternative mitigation will be developed in coordination with a qualified bat biologist.
- N. Contractor's biologist: The contractor-supplied biologist will be present at the work site until all wildlife surveys, vegetation clearing, and relocation work 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 biologist. The on-site biologist shall notify the County's Representative immediately and halt any action that might result in harm to wildlife. The County will notify USFWS and/or CDFW immediately to determine the required course of action. Any sightings or injuries to special-status species shall be immediately reported to the County's Biological Monitor.
- O. Take or suspected take of listed wildlife species would be reported immediately to a contractor-supplied biologist. A contractor-supplied biologist would be required to report the incident, or suspected incident, to the wildlife agencies within 24 hours.
- P. The Contractor shall include in its construction schedule the time required to allow the contractor-supplied biologist to conduct initial surveys, periodic monitoring, wildlife relocation and other activities to ensure wildlife protection. The permit requirements are in Appendix A.

#### 1.04 WILDLIFE EDUCATION TRAINING

- A. Prior to the initiation of any work, including installation of ESA fencing or clearing and grubbing activities, a contractor-supplied biologist would conduct an environmental worker awareness training for all project personnel. The training would discuss the sensitive habitats and special-status species with the potential to be within the construction site and would review the project's avoidance and minimization measures, and permitting conditions associated with biological resources.
- 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.

#### 1.05 BIOLOGICAL RESOURCES

- A. Prior to construction, a contractor supplied contractor-supplied biologist would conduct rare plant surveys within the construction area. Surveys would be conducted during the appropriate blooming period for species with potential to be in the construction area, to the extent feasible.
  - 1. If a special-status plant species is found during pre-construction surveys, high visibility Environmentally Sensitive Area (ESA) protective fencing would be installed around the special-status plants to prevent construction staff or equipment from entering this area. The ESA protective fencing buffer would be species specific, with a minimum buffer radius based on the guidance from a contractor-supplied biologist. The ESA would be periodically monitored by a contractor-supplied biologist during construction activities to ensure special-status plant species are not directly or indirectly impacted.
  - 2. If surveys cannot be conducted within the appropriate blooming period, if presence for any species cannot be ruled out for any other reason, or if ESA protective fencing around an observed population is not feasible, additional avoidance measures would be implemented based on recommendations of a contractor-supplied biologist, to the extent feasible.
  - 3. If it is determined that special-status plants will be directly impacted by the project, a species-specific mitigation plan will be prepared by a contractor-supplied biologist. The plan may include one or more of the following: plant relocation, seed collection and dispersal, on or off-site restoration, or payment into an agency-approved mitigation bank. The plan will be implemented prior to the completion of the project.
- B. During demolition of the existing road and bridge, all grindings and asphaltic-concrete waste would be immediately removed offsite or be temporarily stored onsite. If the waste is stored onsite, the waste would be placed on an elevated trailer, dumpster or similar so that the waste would not have contact with the ground or risk entering Chiles Creek.
- C. Plastic monofilament netting, or similar material in any form, would not be used at the construction area.

#### CHILES CREEK BRIDGE

- D. Trimming and removal of vegetation and trees would be minimized and performed outside of the nesting season (February 1 to September 30), to the extent feasible.
- E. In the event that trimming, or removal of vegetation and trees must be conducted during the nesting season, nesting bird surveys would be completed within 500 feet of the construction area by a contractor-supplied biologist no more than 48 hours prior to trimming or clearing activities to determine if nesting birds are within the affected vegetation. Nesting bird surveys would be repeated if trimming or removal activities are suspended for five days or more.
- F. Removal of riparian vegetation would be avoided to the maximum extent possible. Prior to construction, high visibility Environmentally Sensitive Area (ESA) protective fencing would be installed at the limits of construction to prevent construction staff or equipment from further encroaching on Chiles Creek or the adjacent riparian community.
- G. Removal of oak woodlands and individual oak trees would be avoided to the maximum extent possible.
  - 1. Prior to construction, high visibility ESA protective fencing would be installed at the limits of construction to prevent construction staff or equipment from further encroaching on oak woodlands.
  - 2. Prior to construction, high visibility ESA protective fencing would be preferentially installed a minimum of two feet beyond the driplines of native oak trees to be protected in place.
  - 3. Demolition and asphalt grinding of the existing road would be completed from within the footprint of the existing roadbed to avoid additional impacts on oak woodlands adjacent to the existing roadbed. This restriction excludes bridge demolition and areas within grading limits.

#### 1.06 MINIMUM WILDLIFE AND BIOLOGY PROTECTION MEASURES

- A. At a minimum, the Contractor shall comply with the following measures for wildlife protection:
  - 1. To prevent attracting wildlife to the construction area, all food trash would be kept in wildlife-proof containers and any non-natural food sources would not be left unattended.
  - 2. Trash and waste material must be properly disposed of in trash receptacles that prevent the access or trapping of native animals. These containers shall be available and used at all times.
  - 3. Trash shall be removed from the site daily.
  - 4. Trenches or pits one foot or deeper that are left unfilled for more than 48 hours would be securely covered with boards or other similar material to prevent entrapment of California red-legged and foothill yellow-legged frogs.
  - 5. 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 County's representative immediately.
  - 6. Materials stored on-site that could provide shelter for California red-legged and foothill yellow-legged frogs, such as on-site storage of pipes, conduits and other materials, would be elevated above ground.

7. Allow any wildlife encountered during the course of construction to leave the construction area unharmed. All reasonable efforts shall be made to capture and move all stranded aquatic life observed in the removed material.
  8. 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.
  9. Erosion control fabric with plastic netting may not be used.
  10. Lighting of the project site by artificial lighting during night time hours should be minimized to the maximum extent practicable.
  11. No rodenticides would be applied within the construction area throughout construction.
  12. Work areas would be reduced to the maximum extent feasible.
  13. Equipment staging and storage areas for vehicles, equipment, material, fuels, lubricants, and solvents would be restricted to designated areas located on the existing roadway.
  14. Appropriate hazardous material BMPs would be implemented to reduce the potential for chemical spills or contaminant releases into the creek and drainage features including any non-stormwater discharge.
  15. All equipment refueling, and maintenance would be conducted in the staging area away from the creek and drainage features. In addition, vehicles and equipment would be checked daily for fluid and fuel leaks, and drip pans would be placed under all equipment that is parked and not in operation. Any leaking vehicle or equipment would not be operated at the project site until repaired. All workers would be informed of the importance of preventing spills and the appropriate measures to take should a spill happen.
  16. Stationary equipment such as motors, pumps, generators, compressors, and welders located within 100 feet of Chiles Creek would be positioned over drip-pans, including when in operation.
- B. Following completion of pre-construction surveys, wildlife exclusion fencing would be erected around the entire construction area, including on the creek banks, to prohibit wildlife from entering the active construction area. Wildlife exclusion fencing would consist of construction grade polypropylene or similar fabric. The exclusion fencing would be a minimum of three feet tall above ground and be buried a minimum of four inches underground, when feasible, with the base folded, so wildlife cannot burrow beneath or create entry points. The exclusion fencing would remain in place throughout the duration of construction activities and would be regularly inspected and maintained in good working order by the construction contractor, under the direction of the Project Engineer and with the guidance of a contractor-supplied biologist. The exclusion fencing would be periodically inspected for trapped wildlife by a contractor-supplied biologist. The fencing would be completely removed following construction.
- C. Initial ground-disturbing activities would be avoided between November 1 and March 31, which is when California red-legged frogs are most likely to be moving through upland areas.



- D. Following completion of daily work activities, any temporary breaks in the wildlife exclusion fencing to allow for construction would be restored. Any temporary breaks in the wildlife exclusion fencing would be conducted under the supervision of the Project Engineer and under the guidance of the contractor-supplied biologist.
- E. No construction activities would be allowed during measurable rainfall or within 24-hours following rainfall with precipitation greater than ¼ inch. Prior to construction activities resuming, a contractor-supplied biologist would inspect the construction area and all equipment/materials for the presence of special-status prens.

#### 1.07 CULTURAL AND PREHISTORIC RESOURCES

- A. The Contractor shall (1) suspend work in the area and (2) notify the Engineer immediately, if evidence of any of the following are items encountered during performance of the Work:
  - 1. Archaeological artifacts
  - 2. Fossils
  - 3. Human remains
- B. If previously unidentified cultural materials are encountered or unearthed during construction, work will be halted in that area until a qualified archaeologist can assess the nature and significance of the find. Additional surveys would be required if the project limits change to include areas not previously surveyed.
- C. In the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, steps would be taken in compliance with the CCR Section 15064.5. All construction activities would cease, and the County Coroner would be contacted if any human remains are discovered, in accordance with 14 CCR Section 15064.5(e). If the coroner determines that the human remains are of Native American origin, the NAHC would be notified to determine the MLD for the area. The MLD would make recommendations for the arrangements for the human remains per PRC Section 5097.98.
- D. Should human remains be encountered, the Napa County Coroner shall be informed to determine if an investigation of the cause of death is required and/or if the remains are of Native American origin.

#### **PART 4 – MEASUREMENT AND PAYMENT**

- A. The contract lump sum price paid for Environmental Stewardship shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work as specified in this section and conforming to the provisions of this section and no additional compensation will be allowed.

## 15 EXISTING FACILITIES

### PART 1 – GENERAL

Protection of Existing Facilities shall conform to Section 15 “Existing Facilities” of the 2018 Caltrans Standard Specifications.

#### 1.01 SUMMARY OF WORK

- A. Removal of existing bridge shall conform to Section 60-2.02 “Bridge Removal” of the 2018 Caltrans Standard Specifications and these Technical Specifications. Removal of existing roadside sign panels and roadside signs shall conform to Section 82-9 “Existing Roadside Signs” of the 2018 Caltrans Standard Specifications and these Technical Specifications.
- B. Removal of existing pavement, cold planning asphalt concrete pavement, traffic stripe and pavement markings, metal beam guardrail, and roadside signs shall conform to Section 15 “Existing Facilities” of the 2018 Caltrans Standard Specifications and these Technical Specifications.
- C. Protect all existing improvements not marked for removal or demolition in place.
- D. Material to be salvaged shall be removed, stored and surrendered as directed by the Engineer.

### PART 2 – PRODUCTS – NOT USED

### PART 3 – EXECUTION

3.01 Materials shall conform to section 15-1.03 “Materials” of the 2018 Caltrans Standard Specifications and These Technical Specifications.

3.02 Add to Section 15-1.03A General:

- A. Existing pavement where shown on the plans to be removed, shall be removed completely to the limits of removal
  - 1. Existing asphalt concrete pavement to be removed may, at the contractor’s option and if agreed to by the Engineer, be reused in the subgrade. The maximum size of pieces of asphalt concrete pavement used in the subgrade shall not exceed 4 inches.
  - 2. Asphalt concrete pavement shall be sawcut neatly at the limits of removal as shown on the plans
- B. All other existing improvement where shown on the plans to be removed must be completely removed and disposed.
- C. The contractor shall comply with all regulations for the removal of asbestos materials identified in the “Asbestos and Lead Based Paint Survey Report” that was prepared by Rincon Consultants and included in the bid documents. The contractor shall Notify the Bay Area Air Quality Management District and dispose of hazardous materials in compliance with regulations.

3.03 Add to the end of section 15-1.03C:

CHILES CREEK BRIDGE

At least 2 business days before hauling the existing masonry stones to the salvaged material stockpile location, notify the Engineer and the County. The removed masonry stones from existing bridge shall be delivered to Napa County Corporation Yard at the following location:

**7292 Silverado Trail  
Napa, CA 94558**

#### **PART 4 – MEASUREMENT AND PAYMENT**

- A. Full compensation for complying with the above provisions shall be considered as included in the contract price for the various bid items, and no separate payment will be made. The contract unit price paid for the various bid items shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved as shown on the plans and as specified in these Special Provisions, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.
- B. The contract price paid per each “Remove Roadside Sign” shall include full compensation for removal and disposal of materials, furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in this section as specified in this Technical Specifications, as shown on the plans and as directed by the Engineer and no additional compensation will be allowed.
- C. The contract price paid per linear feet of “Remove Metal Beam Guard Rail” shall include full compensation for removal, hauling, disposal of materials, furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in this section as specified in this Technical Specifications, as shown on the plans and as directed by the Engineer and no additional compensation will be allowed.
- D. The contract price paid per linear feet of “Salvage Masonry Stone” shall include full compensation for removal, hauling, disposal of materials, furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in this section as specified in this Technical Specifications, as shown on the plans and as directed by the Engineer and no additional compensation will be allowed.
- E. Add payment clause for bid item “removing yellow stripes” from the existing stone arch bridge as specified on plans.

## 16 TEMPORARY FACILITIES AND CONTROLS

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. Temporary facilities shall conform to Section 16, “Temporary facilities” of the 2018 Caltrans Standard Specifications and these Special Provisions.
- B. The section includes: Requirements for installation, maintenance, and removal of temporary utilities, facilities, controls, construction signs, traffic control and construction aids during construction.

#### 1.02 TEMPORARY UTILITIES

- A. General: The Contractor shall provide all necessary temporary utilities required during construction, including all necessary temporary meters, equipment, wiring, piping, fixtures, and connections. The Contractor shall remove the same when they are no longer necessary and at the completion of the Project.

#### 1.03 CONSTRUCTION FACILITIES

- A. Contractor's Field Office: At the Contractor's option, the Contractor may provide and maintain a temporary job office on the site for the Contractor's use. The location of the office shall not interfere with the Work nor with traffic on public roadways
- B. Temporary Storage for Tools, Materials, and Equipment: It is the Contractor's responsibility to 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. The Contractor shall remove the same when they are no longer necessary and at the completion of Work.
- C. Temporary Sanitary Facilities: It is the Contractor's responsibility to provide and maintain adequate toilets, washing facilities, and drinking facilities for workers. Such items shall comply with all governing health and sanitation requirements. The Contractor shall remove the same at the completion of the Work.

#### 1.04 TRAFFIC CONTROL, TEMPORARY BARRIERS AND ENCLOSURES

- A. General Protection: Provide all temporary barricades, fences, caution signs, and warning lights as required for the safety of persons. Operate warning lights during hours from dusk to dawn each day. Take whatever care is necessary to avoid damage to adjacent buildings and property, public right-of-ways, and facilities or utilities to remain, whether on the Work site or adjacent to it, and be liable for any damage thereto or interruption of service due to Contractor's operations.
- B. Temporary Fences and Barricades: Provide and maintain all temporary site fences, tree protection fencing and barricades as required for the Work, and remove the same upon the completion of the Work.

C. Prior to start of work the Contractor shall submit Traffic Control Plans for all project phases for the Engineer's review and approval. Plans shall include all necessary measures to control public traffic and construction traffic entering, exiting, and traveling adjacent to the Work site.

D. Contractor shall keep access to all private properties at all time.

#### 1.05 SITE MAINTENANCE

A. Cleaning During Construction:

1. Control accumulation of waste materials and rubbish; periodically dispose of legally off-site.
2. Clean interior areas prior to start of finish work, maintain areas free of dust and other contaminants during finishing operations.

#### 1.06 PROJECT IDENTIFICATION

A. Project Signs: Provide a project job sign, maximum 30 square feet in size, of wood painted with lettering by a professional sign painter. The content of the sign will be as determined by the County. Obtain approval for location of the sign from the County before installing. Remove the sign on completion of the Work and dispose of legally off the site. Allow no other signs to be displayed.

#### 1.07 REMOVAL

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

B. Clean and repair damage caused by installation or use of temporary facilities. Remove temporary underground lines and installations; grade site as indicated on the Plans. Restore existing facilities used during construction to the original condition when first installed unless specified otherwise by the Engineer.

### **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 release into other areas. Do not discard such materials on the jobsite. Remove empty containers from the Work sites immediately and dispose of in the proper manner.

### **PART 3 – EXECUTION - NOT USED**

#### **PART 4 - MEASUREMENT AND PAYMENT**

- A. The contract lump sum price paid for Mobilization shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for performing all work involved in providing Temporary Facilities as shown on the plans and as specified in these Special Provisions, the Standard Specifications and as directed by the Engineer and no additional compensation will be allowed.

## 17 CLEARING AND GRUBBING

### PART 1 - GENERAL

#### 1.01 SUMMARY OF WORK

- A. Clearing and Grubbing shall conform to Section 17-2, "Clearing and Grubbing" of the 2018 Caltrans Standard Specifications and these Technical Specifications.
- B. The work includes the following:
  - 1. Removal of debris and minor demolition within the limits of work.
  - 2. Removal of trees slated for demolition.
  - 3. Select trimming of tree limbs as needed for equipment access.
  - 4. Legal disposal of removed vegetation and debris off-site.
- C. The Contractor shall protect all native trees and all other native vegetation not slated for demolition. Prior to commencing construction, the Contractor shall install temporary fencing, flagging or equivalent around the perimeter of all vegetated areas and/or individual trees to be preserved, including dead trees (i.e. "snags"), and any other on-site improvements. Prior to commencing work, the Contractor shall review all tree and other protection fencing with the Engineer and field adjust the limits as directed by the Engineer.
- D. The Contractor shall remove debris including timber, rock, concrete, rubble, trash, and other items which may exist within the limits of work for this contract. Rocks and boulders may be reused in the Work as directed by the Engineer. The Contractor shall verify potential for reuse of these potential for reuse of these materials with the Engineer prior to off-haul and disposal activities.
- E. 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 – EXECUTION

#### 3.01 CONSTRUCTION

- A. Work shall conform to Section 17-2.03 "Construction" of the 2018 Caltrans Standard Specifications and these Technical Specifications.

#### 3.02 Add to Section 2.03B Clearing:

- A. Limit clearing to three (3) feet beyond limits of earthwork.
- B. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The top six inches of top soil shall be stockpiled and redistributed as close to its original location as possible, over the construction area before re-vegetation procedures are undertaken.

- C. 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 the drip lines of remaining trees.
- D. The Contractor shall take care to avoid damaging any trees or native herbaceous plants designated to remain.

### 3.03 Add Section 17-2.03E TREE PRUNING

- A. All tree pruning and chipping shall be overseen and approved by a Contractor Supplied State Certified Arborist.
- B. 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.
- C. Make final cuts at the outer edge of the branch collar as approved by the State Certified Arborist.
- D. Perform pruning work in a safe and proper manner, adhering to CAL-OSHA and ANSI Standards.
- E. All pruned material shall be chipped onsite and placed within planting berms during revegetation efforts. Additional pruned material not to be used within planting berms shall be removed from the site and disposed of in an appropriate and legal manner with authorization from the Engineer.

### 3.04 Add Section 17-2.03F ROOT PRUNING

- A. Do not cut tree roots greater than 3-inch in diameter and less than 12-inches below ground level without approval of the Engineer.
- 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 Engineer'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.

### 3.05 Add Section 17-2.03G TREE REMOVAL

- A. The Contractor shall only remove trees slated for removal as shown on the Plans and marked in the field by the Engineer. Trees to be removed from the project site shall be marked with blaze-orange marking paint. All other trees within or adjacent to the project limits shall be retained and surrounded by protection fencing.
- B. Prior to tree removal, the Contractor shall prepare a schedule of trees to be salvaged for habitat structure for the Engineer's approval.
- C. Perform tree removal work in a safe and proper manner, adhering to CAL-OSHA and ANSI Standards.



3.06 Add Section 17-2.03H MINOR DEMOLITION AND DEBRIS REMOVAL

- A. Remove any man-made structures to prevent interference with the work outlined within these specifications. Any demolition of unidentified structures by the Contractor not visible and accounted for during the initial bid walk shall be negotiated as extra work, subject to authorization by the Engineer.
- B. Remove incidental debris encountered during vegetation removal and segregate and dispose of debris off-site. 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 Engineer:
  - 1. Debris that requires special equipment for removal.
  - 2. Hazardous debris that requires special off-site disposal per the County's direction.
- C. Except for materials indicated to remain as the Owner's property, removed vegetation, debris and other materials are the Contractor's property. Remove materials from site and dispose of in a legal manner.

**PART 4 – MEASUREMENT AND PAYMENT**

- A. The contract lump sum paid for “Clearing and Grubbing (Demo)” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work, as shown on the Plans, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer and no separate payment will be made.
- B. The contract lump sum paid for “Tree Removal” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work, as shown on the Plans, as specified in the Standard Specifications and these Technical Specifications, and as directed by the Engineer and no separate payment will be made.

## 19 EARTHWORK

### PART 1 - GENERAL

#### 1.01 SUMMARY OF WORK

- A. Earthwork shall conform to Section 19, “Earthwork” of the 2018 Caltrans Standard Specifications and these Technical Specifications.
- B. Concrete Backfill (Bridge) and Concrete Backfill (Retaining Wall) shall conform to Section 19-3.02H “Concrete Backfill” of 2018 Caltrans Standard Specifications and these Technical Specifications.
- C. Cement Treated Permeable Backfill (Bridge) and Cement Treated Permeable Backfill (Retaining Wall) shall conform to Section 29-3 “Cement Treated Permeable Base” of 2018 Caltrans Standard Specifications and these Technical Specifications. Cement Treated Permeable Backfill includes constructing the geocomposite drain. Geocomposite drain must comply with Section 68-7, "Geocomposite Drain Systems" of the 2018 Caltrans Standard Specifications.
- D. Timber lagging shall conform to Section 57-2.02, “Timber Lagging” of the 2018 Caltrans Standard Specifications.
- E. This section applies to all earthwork required for the Work (embankment, ditch, structure, etc.) and shall include but may not be limited to:
  - 1. Excavation and grading
  - 2. Excavation and replacing unsuitable material
  - 3. Rough grading
  - 4. Roadway excavation
  - 5. Subgrade preparation
  - 6. Backfilling
  - 7. Grading, spreading and compaction
  - 8. Soil testing and off haul of soil containing hazardous material to hazardous waste facility.
  - 9. Sheet piling, Shoring and Bracing
  - 10. Export - Off haul of excess or unsuitable material
  - 11. All other subsidiary work necessary to complete the grading of the slope and roadway areas in conformance with the lines, grades and slopes as shown on the Plans and as specified in the contract documents.
- F. Cultural and Prehistoric Resources - The Contractor shall (1) suspend work in the area and (2) notify the Engineer immediately, if evidence of any of the following are items encountered during performance of the Work:
  - 1. Archaeological artifacts

- 2. Fossils
  - 3. Human remains
- G. Contractor shall provide all materials, equipment and labor necessary to furnish and construct the roadway subgrade and all appurtenant work, complete in place, as shown on the plans and as specified in the Special Provisions.
- H. Engineer
- 1. Where specific reference is made to “Engineer”, this designation shall be understood to include either the County Engineer or their representative, the Geotechnical Engineer.
- I. Roadway Excavation shall conform to Section 19-2, “Roadway Excavation” of the 2018 Caltrans Standard Specifications, unless otherwise specified in these Technical Specifications.
- J. The Class 2 Aggregate Base shall comply with Section 26, “Aggregate Bases” of the 2018 Caltrans Standard Specifications.
- K. Structure Excavation (Bridge) and Structure Excavation (Retaining Wall) shall conform to Section 19-3, “Structural Excavation and Backfill” of the 2018 Caltrans Standard Specifications unless otherwise specified in these Technical Specifications.
- L. Structure Backfill shall conform to Section 19-3 “Structure Excavation and Backfill” of the 2018 Caltrans Standard Specifications unless otherwise specified in these Special Provisions.
- M. Slope construction shall conform to Section 19-2.03G, "Slopes" of the 2018 Caltrans Standard Specifications unless otherwise specified in these Special Provisions.
- N. Embankment Construction shall conform to Section 19-6, "Embankment Construction" of the 2018 Caltrans Standard Specifications unless otherwise specified in these Special Provisions.
- O. Surplus Material shall conform to Section 19-2.03B, "Surplus Material" of the 2018 Caltrans Standard Specifications unless otherwise specified in these Technical Specifications.
- P. Pavement Subgrade Performance Requirements
- 1. Import soils and/or chemically amended import and/or native soils shall be used to establish the subgrade to achieve a minimum R-value of 20. Import soils and/or chemically amended import and/or native soils shall be used to establish the subgrade to achieve a minimum R-value of 20 under the roadway.
  - 2. The contractor shall determine the type and quantity of chemical amendment to be used to achieve a minimum R-value of 20. The contractor shall submit laboratory testing to establish that the soil meets the requirements of the Contract Documents.
- Q. Export – surplus material
- 1. Surplus Material shall conform to Section 19-2.03B, "Surplus Material" of the 2018 Caltrans Standard Specifications unless otherwise specified in these Special Provisions.

2. Surplus material and material deemed not suitable for the project shall be removed from the site and disposed by the contractor. The contractor shall obtain authorization from the Engineer before disposing of surplus or unsuitable material.
3. The contractor shall submit in writing to the Engineer that the soil does not meet the requirements of the Contract Documents. The quantity of soil to be exported shall also be submitted by the contractor. The Engineer shall verify and approve export of unsuitable or surplus soil.
4. Disposal of surplus material prematurely and later finding a material shortage is the contractor responsibility to replace at no cost to the County.

#### 1.02 PROTECTION

- A. In accordance with generally accepted construction practices, the Contractor shall be responsible for the job site, including safety of all persons, the public and property (including adjacent properties) during performance of the work and outside of normal working hours. Protect access to the site from the public.
- B. Excavation, trenching and shoring shall be in accordance with Occupational Safety & Health Administration (OSHA). Attention is directed to Section 8, "Sheeting, Shoring and Bracing," of the Special Provisions.
- C. The Contractor shall excavate the length of trench that can be completed for that day. In the event that trench will remain open it shall be plated and barricaded.
- D. Any construction review of the Contractor's performance conducted by the Engineer or the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on or near the construction site.
- E. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.
- F. Surface drainage and groundwater shall not be discharged to areas outside of the project limits and shall comply with the General Construction Permit.
- G. Implement dust control measures. All exposed surfaces (graded areas, staging areas, stockpiles, and unpaved roads) shall be covered or watered twice per day.

#### 1.03 GEOTECHNICAL REPORT

- A. A Geotechnical Engineering Report has been prepared for this site by Parikh Consultant Inc., 2360 Qume Drive, Suite A, San Jose, CA 95131. A copy of Log of Test Borings is included in the Contract Documents.
- B. The information contained in this report was prepared for design purposes only. The Contractor is responsible for any conclusions he/she may draw from this report; should the Contractor prefer not to assume such risk, he/she should employ their own experts to analyze available information and/or to make additional borings upon which to base their conclusions, all at no cost to the County.

#### 1.04 EXISTING SITE CONDITIONS

- A. The Contractor shall be acquainted with all site conditions. If unknown active utilities are encountered during the work, the Engineer shall be promptly notified for instructions. Failure to notify will make the Contractor liable for damage to these utilities arising from Contractor's operations subsequent to his/her discovery of such unknown utilities.

#### 1.05 SEASONAL LIMITS

Fill material shall not be placed, spread or rolled during unfavorable weather conditions. When heavy rains interrupt the work, fill operations shall not be resumed until field tests indicate that the moisture contents of the subgrade and fill materials are satisfactory.

#### 1.06 SUBMITTALS

- A. Refer to Section 4 “Submittal Procedures” of these Technical Specifications.
- B. Contractor shall submit source and material prepared by a certified laboratory to the Engineer for review and approval.
- C. Submit the name of the TDA supplier and the material data sheet. For additional submittals see Section 2.01.D
- D. Accompanying the material submittal, submit materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceed, specified requirements.
- E. Submit Certificate of compliance for other items.
- F. Operations Plan. The Contractor shall submit a detailed Operations Plan describing the Contractor’s proposed use of the site. The Contractor shall submit the Operations Plan to the County for review and comment. The Contractor shall have a County-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 time schedule of the operations, including specific dates for work.
  - 6. A plan for control, management, and treatment of surface water and groundwater that may enter excavation areas.

The Contractor shall not deviate from the approved Operations Plan unless a revised plan has been approved in writing by the County. Failure to adhere to an approved plan shall be cause for rejection of Contractor's request for payment for Excavation bid items, until the plan has been brought into conformance.

- G. Offsite Disposal Location(s): Prior to transporting any excavated material offsite, the Contractor shall submit the proposed offsite disposal locations for approval by the Engineer.
- H. Perform post-construction survey as described in Section 6 Construction Survey.

**PART 2 – PRODUCTS**

**2.01 MATERIALS**

- A. Materials for Structure Backfill shall conform to Section 19-3.02, “Materials” of the 2018 Caltrans Standard Specifications unless otherwise specified in these Technical Specifications.
- B. Imported borrow shall conform to Section 19-7.02C, “Imported Borrow.” Imported fill materials shall be approved by the Engineer and shall be of three-inch (3”) maximum particle size. Import materials also shall be free of known contaminants and have corrosion characteristics within acceptable limits, with appropriate documentation provided by the contractor. Import fill within the upper 18 inches of the final subgrade shall meet a minimum R-value of 20 or be chemically amended to achieve an R-value of 20.
- C. Local Soils

All fill shall be of approved local materials from required excavations, supplemented by imported fill, if necessary. Approved local materials are defined as local soils free from significant quantities of rubble, rubbish and vegetation, and having been tested and approved by the Engineer prior to use. Local soils within the upper 18 inches of the final subgrade shall meet a minimum R-value of 20 or be chemically amended to achieve an R-value of 20.

- D. Add to section 19-3.01D(2)

1. The wall zones for the Ground Anchor wall at Abutments are as shown in the following table:

Wall zone	Beginning station	End station	Upper elevation (ft)	Lower elevation (ft)
Abutment 1	11+84.50	12+21.00	991.89	991.89
Abutment 3	12+70.00	13+30.00	992.52	992.52

- E. Slotted plastic pipe must comply with section 64-3.
- F. Structural backfill shall be compacted to at least 95 percent of the maximum dry density in accordance with ASTM D-1557, (Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort” and shall have a sand equivalent of at least 20. Reference: ASTM D2419, “Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregates”. Material that does not meet the compaction required shall be scarified, moisture conditioned, and re-compacted to the required density. The limits of this re-work shall be as determined by the Engineer.

- G. Material for pipe bedding shall conform to Section 19-3.02F(2) “Sand Beddings” of the 2018 Caltrans Standard Specifications. Excavated and excess material shall be disposed of in accordance with the Technical Specifications.
- H. Sand bedding shall be free from clay and organics.
- I. Sand bedding shall conform to the grading requirements shown in the following table:

Sieve Sizes	Percentage Passing
No. 4	90 - 100
No. 200	0 - 5

- J. Cement shall be Type II Portland cement
- K. Water for use in subgrade stabilization shall be clean and potable and shall be added during mixing, remixing and compaction operations, and during the curing period to keep the cured material moist until covered.
- L. Aggregate base, asphalt concrete and related asphalt seal coats, tack coat, etc., shall comply with the appropriate provisions of the 2018 Caltrans Standard Specifications.
- M. The site may have soils unsuitable for use on the project. Soils containing organic matter, rubble, or rubbish, or found not suitable for fill, subgrade, or bioretention facilities by the engineer shall be removed from the site by the contractor. Attention is directed to Part 1, 1.01 O, “Export, “of this section.
- N. Dispose of surplus material. Ensure enough material is available to complete the embankments before disposing of it.

**PART 3 – EXECUTION**

**3.01 SEQUENCE OF WORK**

- A. Prior to commencing earthwork, the Contractor shall stake the grading limits of all earthwork items for review and approval by the Engineer. Adjust stakes as instructed by the Engineer to meet the design intent and to provide protection of existing trees to remain.
- 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 Environmental Documents and Appendix A.
- D. See also tentative schedule and sequence requirements listed in Section 1 Summary of Work. Contractor shall submit a construction schedule and sequence of work plan for the Engineer’s approval.

**3.02 CONSTRUCTION**

- A. Add to section 19-3.03A:

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The Geotechnical Engineer of record must be on site during the first day of drilling operations.

B. Replace the 2nd paragraph of section 19-3.03F with:

1. Place slurry cement backfill in 2 foot thick lifts. Wait a minimum of 24 hours after placing previous lift, before to placing additional material.

C. Add to section 19-3.03F:

Install Aquadrain G20 or approved and slotted plastic pipe prior to placing slurry cement backfill.

D. Any required excavation behind the retaining wall to provide the minimum width for the slurry cement backfill shall comply with section 19-2.

### 3.03 CONTROL OF WATER

A. The Contractor shall be aware that surface water and/or groundwater may enter the areas of excavation. The work includes 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 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 surface and 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 from dewatering operations.

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

D. The Contractor can anticipate that earthwork will require equipment to be operated in the active channel. Submit dewatering plan per Section 23 "Dewatering". The plans will have to be approved by the Regulatory Agencies.

### 3.04 SEGREGATING MATERIALS

A. The Contractor should not assume that all earthen fill material needed for the project will be available onsite. Import may be required.

B. The Contractor shall segregate excavated material onsite as needed to meet the project specifications.

C. The Contractor shall segregate debris from earthen and gravel materials for all excavated material. Debris is considered to be all non-earthen material that is unsuitable for reuse onsite and must be disposed offsite of separately from earthen material.

### 3.05 EXCAVATION

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



- B. The County has no knowledge of the existence of artificial obstructions of a size or character that would necessitate the use of special equipment for their removal.
- 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, and 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, an escape ramp shall be placed at each end of any constructed open trench to allow any animals to climb out overnight. Before such holes or trenches are filled, they will be thoroughly inspected for animals. If, at any time, a California red-legged frog is discovered trapped in a trench or pit, notify the Engineer immediately.
- F. For footings at locations with structure excavation (Type D), ground or surface water is expected to be encountered but seal course concrete is not needed.
- G. Structure excavation for footings at locations not shown as structure excavation (Type D) and where ground or surface water is encountered is paid for as structure excavation (bridge).

### 3.06 FILL PLACEMENT AND COMPACTION

- A. Subgrade Grading: The Contractor shall grade and compact subgrade to meet lines and grades for the work. Compacted subgrade shall tie into adjacent native slopes to provide uniform base of construction for rock and habitat structures as shown on the Drawings.
- B. Unless otherwise noted, the Contractor shall place fill for the following items in horizontal, uniform layers not exceeding eight (8) inches in thickness, unless otherwise specified by the Engineer, before compaction. The fill shall be brought up uniformly. Each lift shall be mechanically compacted to the relative compaction (RC) shown on Plans, and to 95% RC if no density is specified on Plans. Fill and compaction for structure backfill shall conform to Section 19-3 "Structure Excavation and Backfill", these Technical Specifications, and as approved by the Engineer.
- C. During all compacting operations the Contractor shall maintain optimum moisture content of the fill so that the specified relative compaction is obtained in each lift. The Contractor shall conduct the necessary moisture conditioning as needed to place fill in accordance with these Technical Specifications. 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 0 to 3 percentage points.
- D. Fill compaction by ponding and jetting will not be permitted.

- E. The County 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 County. As the Contractor nears completion of compaction of each lift, notify the County so that the County is able to test each lift.

### 3.07 FINE GRADING

- A. The Contractor shall finish the work within the grading limits to smooth slopes to the lines and grades shown on the Plans. Backfill and compact soil around edges of new rock and habitat structures in order to produce smooth transitions.
- B. All excavated surfaces shall be graded to drain.

### 3.08 SURPLUS MATERIAL

- A. The 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> paragraphs of Section 19-2.03B, "Surplus Material" of the 2018 Caltrans Standard Specifications shall be replaced with the following:
  - Dispose of surplus material. Ensure enough material is available to complete the slope repair before disposing of it.

### 3.09 SLOPES

- A. Roughen excavation slopes and flat surfaces to receive erosion control materials by scarifying to a depth of two (2) inches.

### 3.10 STRUCTURAL EXCAVATION (BRIDGE)

- B. Excavate for abutment footings such that concrete is placed against firm, undisturbed material on the bottom and sides of the excavation.
- C. Adequately support the excavation using shoring, lagging, casings, liners, or other bracing.
- D. Rock bolts and wire mesh may remain in place.
- E. Steel shoring, steel and timber lagging, steel casings, steel liners, and other steel bracing may remain in place, subject to the following requirements:
  - 1. Bracing remaining in place must be the minimum necessary to safely support the excavation.
  - 2. Place bracing in an open arrangement with enough clearance between braces to permit concrete to flow around the bracing and provide required clearance to reinforcement.
  - 3. Steel casings, liners, and lagging must be outside the neat lines of pier footing.
  - 4. Perforate steel casings and liners with holes of 6-inch minimum diameter or place in an open arrangement so that at least 50% of the area of the casings and liners permits the ready flow of concrete through and around openings.
  - 5. Steel and timber lagging must be in an open arrangement with the area of lagging at most 50% of the area of the sides of the excavation. Lagging must permit ready flow of concrete through and around openings.

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6. Distribute open areas in casings, liners, and lagging uniformly over the sides of the excavation for the full depth of the pier footing.

### 3.11 TOLERANCES AND ACCEPTANCE

- A. The Contractor shall endeavor to excavate and place fill to the finish grade neat lines indicated on the Plans. A tolerance of plus or minus 3 inches (+/- 0.25 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 Plans so that graded areas drain. The County may require the Contractor to conduct additional work at the Contractor's expense to complete excavation and fill to the lines and grades shown on the Plans, within these tolerances. The County may require surveying to demonstrate conformance with the finished grades shown on the Plans.
- C. The Contractor shall perform post-construction surveys as described in Section 6 Construction Survey. Any additional surveying required due to non-conformance shall be performed by the Contractor and at no expense to the County.
- D. The Contractor shall furnish the use of equipment and personnel to the County if requested by the County as may be reasonably necessary for inspection of the work.
- E. Excavation and fill placement that is continuously over or under the finished grade, as determined by the Engineer, is not allowed.
- F. The Contractor shall be responsible for the repair of slope failures that occur during his operations at the Work site.

### **PART 4 – MEASUREMENT AND PAYMENT**

The contract unit price paid for performing all the work involved as shown on the plans and as specified in these Special Provisions, the Standard Specifications and as directed by the Engineer for the various bid items shall include full compensation for furnishing all labor, materials, tools, hauling, unloading, equipment, excavation, placement, compaction and incidentals, and for doing all the work involved as shown on the plans, and as specified in these Special Provisions, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.

- A. The contract price paid per cubic yard of "Roadway Excavation" shall include removal, hauling offsite, and disposal, full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work, as shown on the plans, as specified in the Standard Specifications, these Technical Specifications, and as directed by the Engineer.
- B. The contract cubic yard price for "Structure Excavation (Bridge)" and "Structure Excavation (Retaining Wall)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved (including sheeting, shoring, bracing, etc.) as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.

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- C. The contract cubic yard price for “Structure Backfill (Bridge)” and “Structural Backfill (Retaining Wall)” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.
- D. The contract cubic yard price for “Concrete Backfill (Bridge)” and “Concrete Backfill (Retaining Wall)” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.
- E. Replace item 3 in the list in the 6th paragraph of section 19-3.04 with:
  - Structure excavation more than 1 foot from the depth shown is paid for as a work-character change if you request an adjustment or the Engineer orders an adjustment.
- F. The contract cubic yard price for “Ditch Excavation” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.
- G. The contract cubic yard price for “Imported Borrow” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.

## 20 PLANTING

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. This section describes work necessary for replanting and irrigating the newly graded creek bank slopes with native plant species and shall be performed in accordance with the Standard Specifications, the plans, these Special Provisions and as directed by Engineer. This section includes site preparation, preparation of planting holes, obtaining nursery stock of native plants, planting, irrigating, monitoring, and maintenance during the warranty period. The scope of work for this item includes site preparation, collecting poles cuttings, and planting container plants or rooted cuttings.
- B. Contractor shall provide the following:
1. Provide Irrigation water supply at the project location through the installation of a water meter and water service connection.
  2. The planting program has a 90-day warranty period. Watering at the time of installation, and during the 90-day warranty period (i.e., during a dry winter) is included in this work item. Plants are to be planted as shown on the plans and at the discretion of the Engineer. Contractor shall propose appropriate native riparian plant substitutions and price adjustments to Engineer at the pre-construction meeting for plant materials/sizes not available at the time of planting, if any.
- C. The overall planting strategy is focused on planting pioneer and successional species in a planting design which allows for natural competition and survivorship. Focus shall be given to plant densities, clustering, and layout. This section includes planting procedures and Special Provisions for installation of the following:
1. Soil amendments
  2. Trees
  3. Shrubs
  4. Herbaceous plantings
  5. Pole cuttings
- D. Irrigation work shall consist of installing on-grade temporary automated drip. The system shall utilize the following, but not be limited to, additional water storage and delivery materials: water meter and water service connection, valves, battery powered controllers, piping, fittings, and support posts.
- E. The Contractor, in coordination with the County, shall be responsible for purchasing the water needed for irrigation.
- F. The irrigation systems will support establishment of native plantings. Plants shall be irrigated during the months of May through September. The irrigation system shall be designed to accommodate varying conditions, including wind, slopes and existing vegetation.

- G. The Contractor shall provide all necessary labor, materials, equipment, and services for the work as described in this Section. This Section addresses installation and testing of the following components related to the temporary irrigation system:
6. Control valves,
  7. On-grade PVC lateral lines,
  8. Pressure regulators,
  9. Individual drip irrigation systems,
  10. Overhead spray irrigation systems, and
  11. Irrigation delivery elements (i.e., water meter and water service connection, cam-lock fittings, flexible hose pipeline, and all other connection components). Note: the terms cam-lock and cam coupler are used interchangeably.
- H. The Contractor shall provide all labor equipment, materials, and supplies necessary for maintaining plants, irrigation systems, infrastructure and other associated work to meet the requirement of the Plans and this Special Provision.
- I. Related Work Specified Elsewhere include but not limited to:
1. Section 13 Water Pollution Control
  2. Section 19 Earthwork

## 1.02 DEFINITIONS

- A. Plant Establishment Period: shall extend through the one year for the project site revegetation.
- B. Herbaceous Plug: plug container size shall be 1.25 inches square by 3 inches in depth.
- C. Pesticide: "Pesticide" is used herein as a generic term, which most often refers to herbicides, but also includes insecticides, fungicides, nematocide, rodenticides and miticides. Herbicides shall be the only class of pesticides used during revegetation.
- D. Cutting or Pole cutting: a live stem cut from either willow (*Salix sp.*). Dimensions of the cutting shall be as detailed in Section 2.02, below.
- E. Weeds: Unwanted vegetation, including non-native grasses, forbes, shrubs, and woody plants that compete for environmental and climatic elements, such as, nutrients, soil moisture, and sunlight, necessary for healthy growth of preferred (native) plant species.

## 1.03 SUBMITTALS

- A. Within 15 days of the date of the Notice to Proceed, the Contractor shall provide the Engineer the following:
1. A copy of the Contractor's or Subcontractor's California State Landscape Contractor's (C27) License.

2. Schedule for irrigation system installation.
  3. Three (3) copies of shop drawings of irrigation system (e.g., wiring diagrams, pipe layout, valve connection details, zones dedicated to sprinkler head or drip tubing irrigation, etc.).
  4. Product data as defined in this section.
- B. An inspection report addressing the condition of the root systems and top growth of all herbaceous and woody containerized plants delivered to the site shall be prepared and submitted with delivery slips to the Engineer within two (2) days of receipt of plants on site by the contractor.
- C. A Soils Testing Report including agricultural suitability and fertility soils testing results, recommendations for soil preparation and backfill mix, as well as recommendations for post maintenance fertilization shall be provided to the Engineer at least five (5) days prior to initial plant delivery. Soils testing laboratory and location shall be identified in the report.
- D. Product Certificates for the following:
1. Fertilizer
  2. Inoculants
  3. Mulch
- E. If pole cuttings are generated from off site, the Contractor shall provide to the Engineer proof of permits, approvals for collection, and any associated fees.
- F. Product Data: Contractor shall provide detailed product data including: product descriptions, manufacturer's instructions, manufacturer's cut sheets of all irrigation system materials and equipment, as specified in this Section, to the Engineer for approval before ordering materials. Submit to Engineer for approval certificates from the manufacturer or supplier certifying that the materials including plants and products in this section meet or exceed the requirements of these specifications. Certificate information shall include delivery date, material type, and quantity.
- G. Contractor shall provide to the Engineer manufacturers' cut sheets for the basic standard cam-lock fittings and flexible PVC hose.
- H. Design Calculations: Contractor shall provide the Engineer with design analysis and calculations verifying that the system will provide the requirements specified. In order to do so, the Contractor must determine the static water pressure and volume at each irrigation system point of connection.
- I. Testing Reports: The Contractor shall perform field tests of the irrigation system as specified in this Section. Test results will be submitted to the Engineer.
- J. Operation and Maintenance Data: The Contractor shall provide to the Engineer three (3) sets of Operation and Maintenance (O&M) manuals for the irrigation equipment installed as specified in this Section.
- K. Closeout Submittals: The Contractor shall keep daily construction reports throughout the irrigation system installation. These daily construction reports shall record actions performed as described in this Section, and shall be submitted to the Engineer on a weekly basis.

- L. As-built Plans: Contractor shall provide a record that shows a complete list of all plants by species, size, and quantity installed, by habitat type. The record shall include drawings, sketches, details, tables, and/or notes as necessary to provide accurate documentation of as-built conditions.

#### 1.04 QUALITY ASSURANCE

- A. The Contractor or Subcontractor Qualifications: The Contractor and its irrigation subcontractor must demonstrate that it is a licensed landscape contractor with a valid California C-27 license and a minimum of five (5) years native revegetation and/or wildland planting and irrigation construction experience.
  - 1. Installer's Field Supervision: The Contractor shall maintain an experienced full-time supervisor on the project site while planting and irrigation system installation is in progress.
- B. All nursery stock acquired shall conform to the ANSI Z60.1 (2004), Nursery Stock. Nursery stock may be inspected by the Engineer. All plants shall have a normal habit of growth and shall be sound, healthy, vigorous, and free of insect infestations, plant diseases, excessive abrasions or other objectionable disfigurement. Tree and shrub trunks shall be sturdy and have well hardened systems and vigorous and fibrous root systems, which are not root or pot-bound. Contractor shall comply with Federal, State, and Local laws and regulations pertaining to the inspection for plant diseases and insect infestation at the point of delivery. A Contractor's inspection report must be provided to the County per Section 1.03B.
- C. All plants not conforming to the requirements in these Special Provisions shall be considered defective, removed from the project site, and replaced with conforming plants at the direction and no cost of the County.
- D. Plant size or species substitutions will not be permitted without the County's prior written approval.
- E. The Contractor shall provide a written guarantee against defects resulting from material defects and/or improper installation of the irrigation system to the Engineer. The guarantee shall extend through the three (3) year establishment maintenance period for the project site revegetation and three (3) year establishment maintenance period for the off-site mitigation area.
- F. The Contractor shall field mark all irrigation system component locations for the Engineer's approval prior to start of irrigation system construction.
- G. The Contractor shall field mark the water meter and water service connection location for approval by the Engineer prior to commencement of construction.
- H. The Contractor shall verify the water demand for the designed irrigation system operation and provide the Engineer with a irrigation schedule that matches water demand timing of irrigation applications.
- I. The Contractor shall perform pressure testing for leakage on irrigation supply lines:
  - 1. After providing a minimum of forty-eight (48) hours advance notice to the Engineer,
  - 2. In the presence of the Engineer, and
  - 3. During typical business hours (e.g., 9 a.m. and 4 p.m., Monday through Friday allowing for travel time).



- J. Adaptive Management practices shall be utilized by the Contractor, as needed, to ensure plant survivorship, preparation of record drawings, site cleanup, and mitigation project final acceptance. Remedial actions shall be recommended to correct any problems.
- K. Contractor shall maintain a company logbook, documenting daily maintenance activities. This logbook shall be kept current with written records of date, personnel, irrigation applications (performance, repairs, modifications, etc.), weed control and vegetation management operations, general maintenance notes, detailed plant replacement notes, and general observations on target plant health and vigor. Photo documentation, with photo dates indicated, shall also be kept in the logbook. This book shall be available at the Contractor's office for inspection and evaluation upon request by the Engineer and Project Restoration Ecologist overseeing the maintenance contract performance. These records shall also be incorporated into the Annual Monitoring Report developed by the County.
- L. Storm water pollution preventative Best Management Practices shall be carried out by the Contractor, as necessary, to ensure that the planting areas remain relatively stable and less prone to erosion.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall provide delivery of the nursery stock directly to the work site. The Contractor shall coordinate deliveries with the Engineer and/or nursery stock providers.
- B. The Contractor shall perform an inspection of the condition of the plants at the time of delivery.
- C. The nursery stock shall be the variety and size indicated on the plans. Plants must be individually tagged or tagged in groups identifying the plants by species or variety. Tagging is not required for cuttings.
- D. Care shall be taken to avoid injury to plants. Materials shall be shipped in a manner that protects plant material from windburn and other damage. Materials shall not be dropped from vehicles.
- E. All nursery stock shall be placed in a protected location on site upon delivery. Plants shall be protected from desiccation, harsh weather conditions (including frost and wind) and mechanical damage. Roots of stored nursery stock shall be kept moist at all times until installation.
- F. Fertilizers, inoculants, pesticides and other chemicals shall be delivered to and stored on site in original unopened containers bearing the manufacturer's guaranteed chemical analysis, name, trade-name, trademark and conformance to State law, bearing name and warranty of producer. Such materials shall be made available for inspection by the Engineer and/or Project Restoration Ecologist.
- G. The Contractor shall store irrigation materials and equipment in areas previously approved by the Engineer.
- H. All irrigation materials and equipment delivered to the project site shall be clearly marked to identify the items. The Contractor shall take care in handling of irrigation supplies and ensure that materials are not damaged. All irrigation supplies shall be stored in such a way as to prevent damage from sunlight, moisture, or physical impacts from personnel or equipment.

#### 1.06 TIMING AND CONDITIONS

- A. Planting operations should be performed during desirable weather conditions. When excessive soil moisture, winds, or other unsatisfactory conditions prevail, the work shall be stopped until favorable weather conditions are present.
- B. The period from October 15th through January 15th is the ideal time frame for all plant installation. If planting cannot be achieved within this time period, written approval from the Engineer must be received prior to planting outside the specified time frame. Planting - will occur after the completion of construction.
- C. Locations for installation of woody plants shall be flagged (indicating each individual plant location and species) by the Contractor and approved by the Engineer prior to planting.
- D. Locations for installation of herbaceous plugs shall be marked by species with color-coded non-toxic marking paint and approved by the Engineer prior to planting.
- E. All pole cuttings shall be installed between September and January of the Construction Period.
- F. The Establishment Period begins when all items indicated in these Special Provisions and as shown on the Plans have been satisfactorily completed, As-Built records must be created and submitted to the County as specified on the Plans, and the Engineer has accepted the Installation Phase in writing and provided an Establishment Period start date.
- G. The Establishment Period shall begin after plants have been installed , and shall extend for a period of one year for the project site revegetation.
- H. Maintenance and establishment operations shall be performed only during periods when beneficial results can be obtained. When unsatisfactory conditions prevail; the work shall be stopped. The Contractor shall be prepared to install replacement plants if necessary at the earliest time when all conditions (weather, moisture, temperature, and river flows, etc.) are acceptable.

#### 1.07 WARRANTY

- A. Plants shall be guaranteed to be healthy and in a vigorous growing condition at the time of Plant Installation Acceptance, as determined by the Engineer. Completed documents confirming coverage specified in subpart 1.09 "Warranty."
- B. The warranty period for materials under this section shall be one year. All plant material and infrastructure installed under this Contract shall be guaranteed against material defect, inferior workmanship or improper establishment procedures, as determined by the Engineer. All identified deficiencies shall be remediated by the Contractor at its own expense. Contractor shall conduct a project site inspection with the County to confirm conformance related to plant establishment requirements defined by the project permits. If the project plantings do not conform to the establishment requirements, the Contractor shall be responsible for ongoing maintenance of the plantings at its own cost. The extended period of maintenance of the plantings will be determined in consultation with the County until plant establishment requirements are met.

## **PART 2 - PRODUCTS**

### **2.01 PLANTS**

- A. Plants shall be the species, size, form and quantity as specified on the Plans. The Contractor shall be responsible for verifying quantities prior to arranging for delivery of all plants. Plants must be protected from sun, wind, and dehydration in transport to site. All nursery stock shall meet the approval of the Contractor and the Engineer and Project Restoration Ecologist after it has arrived on the site and prior to planting.
- B. All container plants shall be contract grown from stock obtained within the Napa River Watershed.
- C. Shrubs, and Ground Cover: Quality and size shall conform to the State of California Grading Code of Nursery Stock, No. 1 grade and ANSI Z60.1. Use only nursery-grown stock that has been grown in the containers in which delivered for at least one growing season, but not over two. Obtain Engineer approval of plants prior to any installation.
- D. Appearance: Plants shall be exceptionally heavy, symmetrical, tightly knit, and so trained or favored in development and appearance as to be superior in form for their species, with regard to number of branches, compactness, and symmetry.
- E. Vigor: Plants shall be sound, healthy and vigorous, well branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs, or larvae. They shall have healthy, well-developed root systems. Plants shall be free from physical damage or adverse conditions which would prevent thriving growth.
- F. Condition of Root System: Samples shall prove to be completely free of circling, kinked or girdling trunk surface and center roots, and show no evidence of a pot-bound condition. Upon inspection by Engineer at the job site, if 5% or more of the plants of each species are found to contain kinked, circling, or girdling roots, all plants of that species will be rejected.
- G. Plant label shall identify each species and variety. Substitutions are not desired.
- H. Measurements:
  - I. Measure foliage across mean foliage dimension when branches are in their normal upright position. Foliage origin along main trunk shall be measured from soil line.
    - 1. Height and spread dimensions specified refer to main body of plant and not branch tip to tip. Properly trimmed plants shall measure the same in any direction. If a plant is unevenly grown, it shall be classified in the size category of the smallest dimension.
    - 2. Size Range: If a range of size is given, do not use plant materials less than the minimum size. The measurements specified are the minimum size acceptable and are the measurements after pruning, where pruning is required. Plants that meet the measurements specified, but do not possess a normal balance between height and spread will be rejected.
- A. Provide quantities necessary to complete the work shown on the plans.

- B. Commercial Fertilizer: Slow-release fertilizer tablet, Agriform 21 gram tablets with 20-10-5 (N-P-K); Sierra Grace, Chemical Co., W. R. Grace Co., or equal.
- C. Pre-Emergence Weed Control: Rhone-Poulenc Chemical Co., Chipco "Ronstar G," Dow Elanco "Surflan," or equal.
- D. Root Control Barrier: High density, high impact polystyrene conforming to and complying with ASTM D638, E638, and D246. Minimum wall thickness 0.06 inches by 24 inches high with 1/2 inch (13 mm) high vertical ribs on the inner surface at 6 inches O.C.; Deep Root Corp "UB 24-2," or equal (no known equal).
- E. Wrapping Materials: Quality burlap.

2.02 CUTTINGS

- A. All pole cuttings shall be collected by the Contractor from the Conn Creek or Napa River Watershed, at locations approved by the Engineer. Pole cuttings shall be collected no earlier than one week prior to installation. Pole cuttings shall be collected from mature wood of the parent tree, and stripped of all leaves and small branches using a sharp pruning tool. The bottom of each pole cutting shall be cut to a 45-degree angle directly below the lowest leaf bud. Pole cuttings shall be bundled and soaked, with the lower 1/3 of each cutting, at minimum, immersed in water until the time of installation; cuttings shall not be allowed to dry and wither. Cuttings shall be soaked for a minimum of three (3) days prior to installation.
- B. Willow Cuttings shall be Red Willow (*Salix laevigata*). Cuttings shall be reasonably straight and meet the minimum requirements as shown or listed by placement location in the Table below:

**Live Willow Cutting Stem Specifications by Placement Location**

<b>Placement Location</b>	<b>Diameter (inches)</b>	<b>Length (feet)</b>	<b>Branches</b>
Vegetated RSP	¾ - 1½	10	Unbranched at least half of stem length
Willow Stakes (Poles)	1½ - 2	4	No Branches

2.03 FOLIAGE OR BROWSE PROTECTION

- A. Foliage protection shall consist of:
  1. Fabricated from 1-inch, hexagonal pattern, 20-gauge mesh wire (or approved equal)
  2. Approximately 4 feet high and 2 feet in diameter
  3. Wire edges at the top of the cylinder must be the uncut manufactured finished edge, free of sharp points. Other wire edges that are cut must be free of sharp points.
- A. Foliage protection shall be anchored to the ground via support stakes conforming to the following:

1. 3/4-inch reinforcing steel bar a minimum of 5 feet long with an orange or red plastic safety cap that fits snugly onto the top of the reinforcing steel bar, or
2. 2-inch nominal diameter or 2 by 2-inch nominal size wood stakes a minimum of 5 feet long. Wood stakes must be straight and free of knots greater than 1/3 of the stake diameter.

#### 2.04 SOIL AMENDMENTS

- A. Soil amendments shall consist of fertilizer, inoculants, and organic compost. Soil amendments shall be specified and as required to meet soil suitability for proper plant growth.
1. Fertilizer shall be a slow release 20-10-5 Agriform 21 gram tablet, Sierra Grace, Chemical Co., W. R. Grace Co., or approved equal.
  2. Inoculants shall be endomycorrhizal biological inoculum manufactured by Mycorrhizal Applications or approved equivalent. Plantings, both potted plants and cuttings, shall be inoculated with a mycorrhizal inoculant prior to planting. The inoculant shall be a powder containing a mix of both Endo- and Ecto- types of mycorrhiza. Contractor shall use Bio-Organics "Landscape Inoculant (LA)" (Bio-Organics Corporation, 53606 Bridge Drive, La Pine, Oregon, 97739, Phone: 1-888-332-7676), or equivalent, according to manufacturer's specifications.
  3. Organic Compost shall be certified organic well-cured compost. Proof of certification shall be provided to the Engineer.

#### 2.05 MULCH

- A. Mulch shall be obtained from chipping of material generated on site from the removal of a redwood tree only, no blackberry shrubs that are removed shall be mulched. Mulch may also be obtained from County approved commercial sources. Mulch shall be utilized at all individual planting basin locations.
- B. Trees selected for onsite chipping for mulch shall be approved by a State Certified Arborist.
- C. The areas identified as the Blackberry Treatment Zone shall be managed in accordance with the treatment and removal strategies outlined in the Riparian Restoration Mitigation Monitoring and Reporting Plan for the duration of the one-year Plant Establishment Maintenance Period.
- D. The Blackberry Treatment Zone shall be evaluated for reemerging blackberry plants during the one-year restoration maintenance period.

#### 2.06 IRRIGATION PRODUCTS – GENERAL

- A. All material shall be new and unblemished. The Contractor shall take care in the delivery, handling and storage of all irrigation materials and equipment to ensure that all materials and equipment are fully functional upon installation.

#### 2.07 BASIC STANDARD CAM COUPLER FITTINGS

- A. Male and female basic standard cam coupler fittings, or “cam-locks”, shall be made of aluminum or brass and provided with male NPT threads on the male cam fitting and PT hose shanks on the female cam fitting.

## 2.08 FLEXIBLE HOSE PIPELINE

- A. The flexible hose pipeline shall be made of flexible PVC with ridged PVC helix support and have a smooth bore and smooth outside surface.
- B. The flexible hose shall be capable of operation with a minimum working pressure of 70 psi.

## 2.09 PIPE

- A. PVC pipe shall conform to the requirements listed below:
  - 1. Above grade or on-grade Lateral Pipe or risers shall be 2” – ¾” PVC Schedule 40 denoting non-potable water use, manufactured in accordance with ASTM D 2241.
- B. PVC Pipe fittings shall be Schedule 40 PVC solvent-weld fittings in conformance with ASTM D 1785. For threaded connections, only factory formed threads will be permitted on PVC pipe fittings. All threaded connections shall be made using Teflon tape or virgin Teflon sealing paste.
- C. Solvent Cement shall be a slow set, heavy body gray cement used on all mainline pipe and pipe joints. A solvent weld joint (purple) primer shall be used on all mainline pipe and pipe fittings in accordance with manufacturer’s recommendations.
- D. All lateral pipes and gate valves shall be installed on-grade. On-grade piping shall be held in place with # 3 rebar, cut into 36” lengths, bent into a “U” shape, and driven into the ground over the pipe at 10-feet on center.
- E. The Contractor shall use only the solvent cement supplied and/or recommended by the manufacture to weld the PVC pipe and pipe fittings. The pipe and fittings shall be thoroughly cleaned of dirt, dust, and moisture before applying solvent cement.
- F. The Contractor shall make solvent cement weld joints in the following order:
  - 1. Apply a liberal and even coat of purple PVC primer to the pipe and fitting socket immediately before applying the solvent cement.
  - 2. Apply a liberal even coat of solvent cement to the inside of the fitting socket and then to the outside of the pipe, making sure that the coated area is equal to the depth of the fitting socket.
  - 3. Insert the pipe quickly into the fitting and turn the pipe approximately one-quarter turn to distribute the solvent and remove air bubbles. Hold the joint for approximately thirty (30) seconds so the fitting does not push off the pipe.
  - 4. Use a clean rag and wipe off all excess solvent cement.
- A. On plastic to metal connections, the Contractor shall work the steel connections first. All PVC fitting connections to threaded metal fittings shall be Schedule 80 PVC. For all threaded PVC to threaded

steel connections use thread sealing paste (like “RectorSeal”) with virgin Teflon. No oil base joint compound shall be used on a PVC joint.

## 2.10 WEED CONTROL EQUIPMENT

- A. The use or operation of weeding equipment shall not damage volunteer native woody vegetation or the installed plants. Removal of weeds with power equipment is acceptable provided that all fire restrictive controls are adhered to for both the equipment and its use.

## 2.11 PRESSURE REGULATORS

- A. Pressure Regulating Valves shall be installed accordance with the manufacturer’s recommendations.
- B. Individual drip assemblies shall include an in-line pressure regulator at each Dual Port Drip Assembly.

## 2.12 CONTROL VALVES

- A. Control Valves shall be installed in accordance with manufacturer’s specifications.
  - 1. Valves shall be housed in bolt-down valve box indicating non-potable water use.
  - 2. Valves shall be labeled with the controller station number.
  - 3. Valve boxes or groups of boxes shall be marked with a marking post.
- B. Contractor shall coordinate with the Engineer to establish water meter and water service connection location.

## 2.13 VALVE CONTROLLER

- A. Battery operated valve controllers shall be installed in accordance with manufacturer’s recommendations.
  - 1. Install one (1) Hunter NODE – 100 valve controller or approved equal.

## 2.14 INDIVIDUAL DRIP, DRIP EMITTER, AND TUBING SYSTEMS

- A. On-grade Drip Emitter and Tubing Systems shall be installed in accordance with the manufacturer’s recommendations.
  - 1. Drip Emitters shall be Netafim PCLCNL 4 liters per hour/1.06 gallon per hour drip emitters or approved equivalent. Two (2) drip emitters shall be installed per tree, shrub, and vine.
  - 2. Dual Port Assemblies to supply a regulated flow from the subgrade lateral line to the 1/2” polyethylene tubing shall include a 30 psi Senninger pressure regulator or approved equal, housed in a 4” diameter x 12” long PVC styrene pipe with removable.
  - 3. A 2” diameter pressure treated wood post painted white shall be placed adjacent to each Dual Port Assembly.
  - 4. 1/2” drip polyethylene tubing shall be installed on grade and in the locations indicated on Plans. Standard 6” jute staples placed a maximum of 10’ on center to secure tubing in place.

5. Distribution tubing with barb type connectors will deliver irrigation water from polyethylene tube to drip emitters. Standard 6" jute staples shall be used to secure tubing and spaced at a maximum of four (4) feet on center.
  6. At the end of each run of ½" polyethylene tubing drip end caps shall be installed and secured to a pressure treated post with a minimum of two (2) plastic zip ties. Pressure treated post shall be painted white and set a minimum of 12" deep and 24" above soil surface.
- B. On-grade Drip Emitter and Tubing System shall be maintained and kept operational for the entire establishment and maintenance period. At the end of the Establishment and Maintenance Period the drip emitters and tubing system shall be removed and disposed of off-site in a legal manner by the Contactor.

### **PART 3 - EXECUTION**

#### **3.01 IRRIGATION**

##### **A. GENERAL**

1. The Contractor shall carefully examine all areas which are to receive irrigation systems to check for compliance with requirements and other conditions which might affect installation or system performance. Contractor may proceed with installation only after unsatisfactory conditions have been corrected.
2. The Contractor shall work with the Engineer to determine the precise locations for the water meter and water service connection needed to supply water for the irrigation. No excavation work is to begin until the water meter and water service connection location has been approved by the Engineer.
3. Unsatisfactory Conditions: The Contractor shall report in writing to the Engineer any conditions which do not meet project requirements or that might affect system performance.
4. Acceptance: Beginning of installation of irrigation systems shall constitute acceptance of existing conditions by the Contractor.

##### **B. PREPARATION**

1. The scope of work includes preparation for irrigation system installation throughout the project area as defined by these Special Provisions.
2. All irrigation component locations shall be field marked for approval by the Engineer prior to initiation of installation operations.
3. The Contractor shall follow Underground Service Alert protocols and notify Underground Service Alert (USA 1-800-227-2600) 48 hours prior to any excavation or trenching operation.
4. The Contractor shall be responsible for any damage resulting from its work and shall repair such damage at its own expense.



5. All structures, utilities, roadways, and other facilities shall be protected from damage caused by irrigation system installation activities. The Contractor shall be responsible for repair or restitution for any damage caused by its operations.
6. In the event that underground construction work or obstructions are encountered in any excavation work to be done under this contract, alternate locations may be selected by the Engineer if requested in writing by the Contractor.
7. No irrigation excavation activities shall occur under unfavorable weather conditions as determined by the Engineer.

#### C. OPERATION

1. The Contractor shall ensure that no fuel or oil is spilled on the site during irrigation system operations. If an accidental spill does occur, the Contractor shall immediately take the appropriate steps to minimize the volume of spilled contaminants and prevent any contaminants from moving from the spill containment area to the surrounding area.
2. All accidental spills shall be immediately reported to the Engineer and a report detailing the cause of the spill, its magnitude, and remedial actions taken by the Contractor shall be submitted to the Engineer within one day after the spill.

#### D. 3.03 CLEANUP

1. Upon completion of the installation of the system, the Contractor shall remove all debris and surplus materials resulting from the work from the project site and dispose of it in a legal manner. The Contractor shall be responsible for restoring the finish grade elevations following completion of irrigation system installation. The Contractor shall repair any damage to roadways or other site features damaged during installation of the irrigation systems at no additional expense to the County.
2. At the end of the Establishment and Maintenance period the drip emitters and tubing system, overhead spray, and all other on-grade irrigation components shall be removed and disposed of off-site in a legal manner by the Contractor.

#### E. INSPECTIONS

1. GENERAL INSPECTION:
  - a. Upon completion of the irrigation system installation and after general cleanup has occurred, an inspection will be held. The Engineer shall be informed in writing a minimum of five (5) working days prior to the time the work is ready for inspection in order that they may arrange a suitable time and date for such inspection.
  - b. At the time of inspection, the Contractor shall have all of the irrigation system fully operational with all emitters set in place and properly adjusted.
  - c. Work requiring corrective action, in the judgment of the Engineer, shall be performed within ten (10) working days after the inspection. Corrective work and materials shall be in accordance with the Special Provisions and shall be made by the Contractor at no

additional cost to the County. When corrective work is completed to the satisfaction of the Engineer, the Contractor will be given a written notice that the planting may commence.

## F. DISPOSAL

1. Disposal: Remove any waste materials from the work site including adjacent private lands and legally dispose of them at an appropriate waste handling facility.

## 3.02 PLANTING

### A. SITE PREPARATION AND LAYOUT

1. The Contractor shall stake out the boundaries of the planting zones as depicted on the plans. Individual woody containerized plant locations shall be marked using colored and labeled pin flags (with the colors and labels representing each species). Before planting may begin, the layout must be approved by the Engineer and Project Restoration Ecologist.
2. The Project Restoration Ecologist and Engineer reserve the right to adjust plants to exact locations in the field.
3. Contractor shall remove tags, labels, nursery stakes and ties from all plants prior to installation.
4. Contractor shall not install any plant material prior to irrigation system installation testing and acceptance by the Engineer.
5. Apply pre-emergence weed control treatment to all areas receiving mulch no later than two weeks after planting and in accordance with manufacturer's recommendations. Apply at the rate specified by the manufacturer.

### B. PLANT MATERIAL INSTALLATION

1. Trees and Shrubs:
  - a. Do not deliver disease-infected plant materials to the site. Deliver plant material to the site with the proper label indicating genus/species and name of grower or supplier.
  - b. Plant material shall not be handled by the tops, stems, or trunks at any time. Plant material with broken root balls, upper structure damage, or too overgrown shall be removed from the site and replaced at no additional cost. Do not remove plant from container prior to completion of plant pit preparation.
  - c. Provide products in manufacturer's standard containers bearing original labels clearly showing quantity, analysis, and name of manufacturer.
  - d. Trees, shrubs, and vines shall be planted in multiple species clusters of three (3) to eight (8) plants to create a naturalist mosaic of woody patches and open areas. Locations of plants will be checked in the field and shall be adjusted to exact position before planting begins. Right is reserved to refuse review at this time if, in the Consulting Engineer's opinion, an insufficient quantity of plants is available.

- e. Immediately before planting, Contractor shall dig a planting hole at each previously prepared planting site (area cleared and all weeds eradicated), as shown on the drawings. Contractor shall remove the plant from the container, trim any curled or bent roots, and hold the seedling in the planting hole at the desired planting level. Cut and remove circling roots over 3/8 inch diameter.
- f. Contractor shall excavate or auger planting holes to twice the depth and twice the width of the container. The sides of the planting hole shall be scarified to eliminate smooth edges of the planting hole.
- g. Insert backfill of ¾ native soil and ¼ organic compost into the planting hole. Irrigate plant holes prior to setting in plants to settle any loose soil.
- h. Remove container plants from their containers without damage to the plant or root system. Set plant stock upright in relation to surrounding grade so that the crown is set ½-inch to 1-inch above existing grade. Install plants so that the fertilizer and mycorrhizal inoculum come into contact with the root ball. Backfill carefully, with native soil, and work around the root ball. Air pockets should be eliminated by firming down the mixture, without packing. The planting level shall be at a point where the root crown is level with the original grade. Any roots touching the bottom of the planting hole and bending to the side, back, or upwards shall be trimmed so that the roots no longer bend. While keeping the seedling at the desired planting level, the native soil shall be backfilled. Contractor shall manually compress the soil as it is backfilled to remove air pockets and ensure good root-to-soil contact. Contractor shall ensure that the seedlings are properly positioned. Soil shall be level with the root crown and the seedling shall be centered and pointing straight up.
- i. For trees, backfill plant pit to allow setting crown of tree 2 inches above new finish grade. Thoroughly foot tamp all backfill. Position plant in planting pit, maintaining plumb condition. Maintain throughout all planting operations. When plant pits have been backfilled approximately 2/3 full, water thoroughly and saturate root ball before installing remainder of the backfill mix to top of pit, eliminating all air pockets.
- j. Place fertilizer during backfilling at twice the amount recommended on the manufacturer's label. Place evenly distributed in plant pits in accordance with manufacturer's current specifications.
- k. Each plant shall be watered immediately after the backfilling is completed. If the seedling settles after watering, Contractor shall raise the seedling back to the desired planting level. Watering basins shall be provided for all planted stock.
- l. Construct a 36-inch diameter watering basin, enclosed by a 4-inch watering berm around each plant. Install a 3-inch layer of wood chip mulch in the basin of each watering berm.
- m. Irrigate all plants immediately after installation.
- n. Install vegetation protection at each plant.

## 2. Herbaceous Plugs:

- a. Plugs shall be installed in single species clusters of approximately 35 - 70 individuals. Install plugs approximately 18-inches on-center using triangular spacing. Clusters or patches shall have irregular, naturalistic form.
- b. On slopes where erosion control blankets are installed, it may be necessary to cut a small slit in the fabric to properly install each plug and to ensure the plug has adequate contact with the soil below the fabric.
- c. Irrigate all plants immediately after installation.
- d. Pole Cuttings:
- e. If applicable, install cardboard tube (i.e., Vegetated RSP and Boulder Cross Vane). Fill cardboard tube with soil slurry to ensure soil fills the tube and encases the pole cuttings.
- f. Excavate or auger a hole not greater than twice the diameter of the pole cutting. Place three tablespoons of mycorrhizal inoculum at the base of each hole. Install pole cutting being sure not to scar the outer tissue. Backfill the hole using native soil. Pending approval by the County, the Contractor may drive the pole cuttings into the substrate using a dead blow hammer or approved equivalent.
- g. If driving pole cuttings into substrate results in split or damaged pole tops, remove damaged portions of the pole cutting with a sharp pruning tool such as a lopper.
- h. Irrigate all plants immediately after installation.

## C. INSPECTIONS

### 1. Plant layout Inspections:

- a. Upon completion of layout placement of colored and coded pin flags identifying container plant species to be installed in each planting area, the Contractor shall contact the Engineer and Project Restoration Ecologist to schedule the planting site inspection. Flagged plant species and locations shall be approved in writing by the Project Restoration Ecologist and Engineer prior to plant installation by the Contractor.
- b. Herbaceous plug planting locations shall be marked with color coded (by species) painted dots by the Contractor. The Contractor shall coordinate with the Engineer to schedule an inspection for each planting area. Painted planting locations and species shall be approved in writing by the Project Restoration Ecologist and Engineer prior to plant installation by the Contractor.
- c. Pole cutting installation sites shall be marked by the Contractor with colored and coded pin flags. The Contractor shall then contact the Engineer to schedule an inspection. Flagged planting locations and species shall be approved in writing by the Engineer prior to cutting installation by the Contractor.

### 2. General Inspection:

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- a. Upon completion of all planting operations a general inspection will be held. The Engineer shall be informed in writing a minimum of five (5) working days prior to the time the work is ready for inspection. An as-built project inventory, sketch map, and brief initial letter report shall be prepared and submitted to the Consulting Engineer by Contractor within 90 days of final acceptance. This will begin the effective date of the 90-day plant establishment and maintenance period.
- b. If, after the inspection, the Engineer is of the opinion that all work has been performed as per the Plans and Special Provisions and all plant materials are in a satisfactory growing condition, the Contractor will be given written notice that the 90 day Plant Establishment Maintenance and Monitoring period shall begin.
- c. Work requiring corrective action, in the judgment of the Engineer, shall be performed within ten (10) working days after the general inspection and shall be performed in accordance with the Plans and Special Provisions and shall be made by the Contractor at no additional cost to the County.

### 3.03 MAINTENANCE AND MONITORING

#### A. GENERAL MAINTENANCE

1. The Contractor shall ensure the plants and other site features are maintained in accordance with the Plans and Special Provisions for 90 calendar days and until final acceptance of the entire planting operation. All plants planted under this subcontract shall be healthy and in flourishing condition of active growth for 90 days from date of final acceptance. The Contractor shall conduct a project site visit with the County to assess conformance with the project permit requirements at the end of the maintenance period per the warranty. The items of work listed below are required as part of the maintenance and establishment procedures, and shall be kept current by the Contractor as necessary or as directed by the Engineer.
2. Protect all areas against damage, including erosion and trespass, and provide proper safeguards. Maintain and keep in good repair all temporary barriers erected to prevent trespass. Keep all walks and steps clean. Keep parking areas free from debris resulting from landscape work or maintenance.
3. Maintain adequate moisture depth in soil to ensure vigorous growth.
4. Keep contract areas free of weeds by cultivating, hoeing, or hand pulling. Use of chemical weed killers shall not relieve Contractor of the responsibility of keeping areas free of weeds over 1 inch high at all times.

#### B. IRRIGATION

1. The intent of irrigation during the maintenance period is to establish and maintain healthy, vigorous, and persistent plants that will not be irrigation-dependent at the end of the maintenance period.
2. Installed plants, except as stated otherwise, shall require irrigation as specified. The contractor shall water the plants throughout the Establishment Period. The application shall be as

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approved in the Special Provisions and shall be within the guidelines of these Special Provisions.

3. The irrigation system shall be monitored on a regular basis and adjusted as necessary. Seasonal change shall be considered during the Establishment Period to regulate the duration and frequency of the irrigation system to match plant needs with current climatic patterns.
4. At Project Location, valve controllers shall be set to drip irrigate individual woody plants and herbaceous plant plugs in accordance with the following schedule:
  - a. Establishment Year 1: April irrigate every 2 weeks (6 gal. per plant/application); May – October irrigate every 1 week (5-6 gal. per plant/application)

#### C. WEED MANAGEMENT

1. The Contractor shall remove weeds from within the entire invasive vegetation management zone for the duration of the One-Year Establishment Period.
2. The weeding methods shall not damage volunteer native woody vegetation or the installed plants. The following methods are acceptable for controlling weeds in the planting areas:
  - a. Mechanical Control: Removing weeds with power equipment is acceptable, provided that fire restrictive controls are adhered to for both the equipment and its use. All plants damaged as a result of this method shall be replaced by the Contractor at its own expense.
  - b. Hand Weeding: Hand weeding around each plant is acceptable.
3. The areas identified as the Blackberry Treatment Zone shall be managed in accordance with the treatment and removal strategies outlined on Sheet the Riparian Restoration Mitigation Monitoring and Reporting Plan for the duration of the 1-year Plant Establishment Maintenance Period.
4. The Blackberry Treatment Zone shall be evaluated for reemerging blackberry plants during the one year

#### D. RESETTING PLANTS AT PROJECT SITE

1. The Contractor shall be responsible for resetting installed plants that become dislodged or otherwise unseated from their natural growing conditions. In addition to resetting the plant material, the Contractor shall repair and/or replace all associated planting items such as, but not limited to, plant protection, water basin, mulch, identification tags, etc.

#### E. REPLACEMENT PLANTS AT PROJECT SITE

1. To compensate for container plant mortality, the Contractor is required to acquire and install additional plants in the first (year 1) of establishment if survivorship of the containerized plants fall below 100% of the original number installed. Plants shall be free of dead or dying branches and branch tips, with foliage of normal density, size, and color. Repair and/or replace at no additional cost to the County all plant materials exhibiting conditions which are determined as unacceptable due to workmanship by Contractor. Contractor will not be held responsible for

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failures due to neglect by property owner, vandalism, and acts of God during warranty period. A replacement planting plan shall be prepared by the Contractor and approved by the Project Restoration Ecologist and Engineer prior to implementation. Adaptive Management strategies shall be employed to determine the cause of death and the best suited species for replacement for those plants that perished. Generally, the replacement plants shall be the same species and size as originally installed unless substitutions are recommended by the Project Restoration Ecologist. A “red-lined” planting plan and written documentation recording the time, species and location of all replacement plants shall be submitted in the annual monitoring report to the Engineer for each year of the maintenance period.

2. Delays caused by Contractor in completing planting operations that extend the planting into more than one planting season shall extend the warranty period correspondingly.

#### F. GENERAL SITE CLEANUP

1. Throughout the maintenance period, the Contractor shall be responsible for all trash and debris on the mitigation site. All garbage, construction debris, excess plant material, mulch, straw, and any other discarded materials shall be removed offsite at the contractor’s expense and in accordance with state and local regulations.
2. The Contractor shall maintain the mitigation site in a clean and orderly condition during installation and throughout the Establishment Period. All litter and man-made debris shall be removed and discarded to a State or locally approved facility in accordance with all local laws and regulations.

#### G. ADAPTIVE MANAGEMENT

1. During the course of the project, it may become evident that certain site conditions have changed and some requirements as stated herein may have a negative effect on the intent of the mitigation project. If, in the opinion of the Contractor, this situation occurs, it shall notify the Project Restoration Ecologist, identify the detrimental condition(s), and suggest alternative action(s) to arrest the situation and bring the maintenance approach into harmony with site conditions. Such actions or recommendations shall also be described in the monitoring reports. The Contractor shall take no action contrary to the requirements of this contract, unless prior written approval is provided is given by the Engineer.
2. The management of target invasive plants shall be included in Adaptive Management. Recommendations for the management of target invasive plants shall adhere to the typical procedures identified above for Adaptive Management and as specified in the Plans.

#### H. FINAL INSPECTION

1. Final inspection for acceptance will be made at the conclusion of the maintenance period. Prior to final inspection, weed and rake all planting areas. Repair plant basins and clear the work site of all debris. Present the work of this section in a neat, orderly fashion. All plants stakes shall be plumb.

2. If project improvements and corrective work are not completed, then continue the planting maintenance at no additional cost until all work has been completed and accepted by the Engineer. This condition may be waived by the Engineer, wherein the Consulting Engineer has granted an extension of time to permit the completion of a particular portion of the work.

#### **PART -4 MEASUREMENT AND PAYMENT**

- A. The contract bid price paid for Planting and Irrigation, shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in planting, irrigation, and maintenance, as specified herein and conforming to the provisions of this section and no additional compensation will be allowed therefore. Price includes material, staking, furnishing plants, and planting, and all local excavation and backfill required for their installation, and a 90-day maintenance period.



## 21 EROSION CONTROL

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. The contractor shall provide all labor, materials, and equipment necessary to complete all work required to conduct soil preparation and seeding operations described in this Section. Work described in this Section includes:
  - 1. Soil Amendments
  - 2. Broadcast Seeding
  - 3. Hydraulic Wood/Straw Fiber Mulch
- B. All swales, slopes and other exposed area shall be seeded with specified seed mixes as indicated in this section.
- C. The Contractor shall incorporate soil erosion BMP's and remove debris generated as a result of construction to a Corps approved location outside of Corps jurisdiction.
- D. Temporary or permanent erosion control devices with plastic netting shall not be used.
- E. See related Sections:
  - 1. Water Pollution Control
  - 2. Bioretention Facilities

#### 1.02 DEFINITIONS

- A. For standard products, the manufacturer's analyses guarantee will be acceptable. For all other materials, analyses shall be by a recognized laboratory. Analyses shall be made in accordance with the current methods of the Association of Official Agricultural Chemists, and paid for by Contractor.
- B. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting topsoil layer.
- C. Finish Grade: Elevation of finished surface of topsoil ready for planting.
- D. Establishment Maintenance Period: Until acceptable germination of seeding has occurred and is approved by Engineer.

#### 1.03 SUBMITTALS

- A. Submittals, per Section 4: For each type of product submit product certificates for:
  - 1. Seed
  - 2. Mycorrhizal Inoculant
  - 3. Hydraulic Wood/Straw Fiber Mulch
  - 4. Organic Tackifier

- B. Product Certificates: For each type of manufactured product, signed by product manufacturer, and complying with the following:
  - 1. Manufacturer's certified analysis for standard products.
  - 2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable, and stating source, physical/chemical composition and quantity available.
- C. Mulch: Product certificate for soil amendment showing physical and chemical analysis, certificate of amendment and signed by product manufacturer.
- D. Certification of Grass Seed: The supplier for each seed mix or single species bag shall provide a label attached to each bag with information for each species in the mix stating the botanical and common name and percentage by weight of each species and percentage of purity, germination rate, and percent pure-live-seed as well as weed seed content. The year of production and date of packaging shall be included on the label.
- E. Seed must be tested for purity and germination by a seed laboratory certified by the Association of Official Seed Analysts or by a seed technologist certified by the Society of Commercial Seed Technologists. Seed test must be performed for germination within 12 months before application.
- F. At the option of the Engineer, the Contractor may be required to submit a sample of any materials delivered to the site and analyses of the samples for review and approval by the Engineer.
- G. The following shall be submitted to the Engineer for all fabric, silt fence, and fiber roll 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 plans.
  - 4. 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.
  - 5. Manufacturer's Certificate of Warranty: For each of the materials, including installation.

#### 1.04 QUALITY ASSURANCE

- A. All seeding work shall be performed by personnel familiar with procedures and equipment required for the work and supervised by a qualified foreman with experience in seeding and establishment of native grasses on habitat restoration projects.

- B. The Engineer shall inspect seed upon arrival at the job site for conformity to species and quality as indicated in the Drawings and these Specifications. The Contractor shall provide the Engineer with receipts of the seed purchased and delivered to the site. Contractor shall provide the seed certification information tag from each of the bags of seed used on the project. Seed certification information shall conform to the information listed in Submittals. All seed not conforming to the requirements in these Specifications shall be considered defective, immediately removed from the project site, and replaced with conforming seed at the Contractor's expense.
- C. Immediately prior to commencement of seeding operations, the Contractor shall adjust and calibrate equipment as per manufacturer's specifications and field test in the presence of the Engineer. Seeding equipment shall be thoroughly clean and not contain remnants of seed mixes from previous jobs.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- 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 yard with appropriate temporary security fencing at the staging area(s) shown on the Contract Documents or as designated by the Engineer, 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 them 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, and 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.
- D. Seed shall be stored in a cool, clean location away from moisture, contaminants, and rodents. Seed shall be kept free of other seed sources such as weeds or agricultural products and shall not be stored where temperatures exceed 95 degrees Fahrenheit. The seed mix shall be delivered to the project site in sealed bags with the manufacturer's tag indicating where the seed was purchased from, date purchased, the composition of the seed mix, the percent purity and germination rate. Tags shall be saved and submitted to the Engineer.
- E. Fertilizers, inoculants, pesticides and other chemicals shall be delivered to and stored on-site in original unopened containers bearing the manufacturer's guaranteed chemical analysis, name, trade-name, trademark and conformance to state law, bearing name and warranty of producer.

#### 1.06 TIMING AND CONDITIONS

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- A. Seeding operations should be performed during desirable weather conditions. When excessive moisture, winds, or other unsatisfactory conditions prevail, the work shall be stopped until favorable weather conditions are present.
- B. Prior to seed installation all grading activities as specified in Section 19 Earthwork must be completed and approved by the Engineer. All seeding areas shall be reasonably smooth and conform to the grading plan before seed bed preparation is begun.
- C. Contractor will seed all improvements within 48 hours of completing finished grade and compaction, weather permitting.
- D. All new and disturbed soil surfaces (except for areas to receive aggregate base, asphalt concrete or concrete) shall be seeded.
- E. The seed mix guarantee shall apply to normal growing conditions during which these species would be expected to survive. This guarantee does not apply to mortality resulting from abnormal weather conditions, floods, excessive rains, severe freezing, or drought as defined by the Engineer.

#### 1.07 WARRANTY

- A. All work shall be done by an experienced Contractor familiar with California native grasses and their horticulture and industry methods and standards for grass seeding. The Contractor shall employ modern equipment and state of the art methods and techniques. The Contractor shall have a minimum of five years of applicable on the job experience with native grass seeding and weed control during native grassland establishment periods.
- B. Seed mixes installed shall be guaranteed throughout the Establishment Maintenance period against failure due to defects in materials, installation equipment, and routine maintenance.
- C. The performance standard for successful establishment of seed mixes shall be as indicated on the Drawings.
- D. The seed mix guarantee shall apply to normal growing conditions during which these species would be expected to survive. This guarantee does not apply to mortality resulting from abnormal weather conditions, floods, excessive rains, severe freezing, or drought as defined by the Engineer and the Engineer.

#### 1.08 MAINTENANCE

- A. Maintenance shall begin immediately after each area is seeded and continue until acceptable germination occurs. Maintenance Period will be from date of Substantial Completion and three (3) months from substantial completion. See Section 13 "Water Pollution Control" for additional requirements.

## **PART 2 - PRODUCTS**

#### 2.01 BEST MANAGEMENT PRACTICES (BMPs)

- A. The following is a list of products for typical BMPs that the Contractor shall employ throughout the site for erosion and sediment control.

1. Silt Fence: Woven filter fabric, UV resistant silt fence. Wooden or steel posts three feet high minimum (does not include embedment).
2. Straw/coir Fiber roll: 100% Biodegradable 10-inch minimum diameter straw or coir/straw fiber roll. North American Green Sediment STOP, or approved equivalent.

2.02 SEED MIX

- A. The Contractor shall make every effort to obtain the following commercially grown native grass seed from stock originating from within the Napa River Watershed. If such seed source is not available then the Contractor shall submit alternative sources for the specified mix to the Engineer for approval prior to ordering the seed.

Common Name	Scientific Name	# per acre seed
California brome	<i>Bromus carinatus</i>	3
Blue wildrye	<i>Elymus glaucus</i>	8
Creeping Wildrye	<i>Leymus triticoides</i>	8
California Poppy	<i>Eschscholzia Californica</i>	3
Three Week Fescue	<i>Vulpia (festuca) microstachys</i>	6
Idaho Fescue	<i>Festuca Idahoensis</i>	6
Tidy Tips	<i>Layia platyglossa</i>	2
Pigmy-Leaved Lupine	<i>Lupinus bicolor</i>	4
Bush Lupine	<i>Lupinus arboreus</i>	2
Baby Blue Eyes	<i>Memophila menziesii</i>	3
Purple Needlegrass	<i>Nassella (Stipa) pulchra</i>	8
Tomcat Clover	<i>Trifolium wildenovii</i>	2
<b>TOTAL</b>		<b>55</b>

- B. Seed with a germination rate lower than the minimum rate shown may be utilized if authorized by the Engineer.
- C. State-certified seed of the latest season shall be provided in original sealed packages bearing the producer's guaranteed analysis for percentages of mixture, purity, germination, hard seed, weed seed content, and inert material. Labels shall be in conformance with AMS-01 and applicable state seed laws.

- D. Wet, moldy, insect infested or otherwise damaged seed shall be rejected and removed from the project site.
- E. Substitutions will not be allowed without written request and approval from the Engineer.
- F. Seed mixes shall be state certified seed of specified grass species with no less than 90% purity and 80% germination rate with no more than 1.00% weed seed and guaranteed to be 100% free of prohibited and restricted noxious weeds identified in Section 52332 of the Food and Agriculture Code.
- G. Any temporary erosion control implemented during construction would be completed using non-invasive species. At project completion, all temporarily disturbed areas would be re-contoured to the pre-construction condition and re-vegetated using native species.

#### 2.03 INOCULANTS

- A. Inoculants shall be endomycorrhizal biological inoculum manufactured by Mycorrhizal Applications or approved equivalent. Endomycorrhizal inoculum shall consist of spores, mycelium, and mycorrhizal root fragments of arbuscular fungi in a solid carrier suitable for handling by hydro-seeding or dry-seeding equipment. The rate of application of endomycorrhizal inoculum shall be based on the guarantee of the supplier or the analysis returned by an independent laboratory and shall be a minimum of 3,600,000 propagules per acre.

#### 2.04 HYDRAULIC WOOD/STRAW FIBER MULCH

- A. Hydraulic Wood/Straw Fiber mulch used to cover mechanically broadcast seed and ensure proper erosion protection shall be produced from annually renewable and certified weed-free rice straw, recycled paper, and other natural materials. Fiber mulch shall be free from plastic material, growth inhibiting additives, or other non-biodegradable substances. Fiber mulch shall be of such character that the fiber will disperse into a uniform slurry when mixed with water. Contractor shall use Fiber Wood Hydraulic Straw/Fiber Blend mulch manufactured by Fiber Wood, LLC, or approved equivalent.
- B. Fiber Mulch shall be colored green, and shall not stain concrete or painted surfaces. Fiber shall be free from growth or germination inhibiting materials.
- C. Fiber rolls must be a premanufactured roll filled with rice or wheat straw, wood excelsior, or coconut fiber. Fiber roll must be covered with photodegradable plastic netting secured tightly at each end and must be one of the following:
  - 1. 8 to 10 inches in diameter and at least 1.1 lb/ft
  - 2. 10 and 12 inches in diameter and at least 3 lb/ft
- D. Straw must be certified weed free under the Department of Food and Agriculture.
- E. Straw for fiber roll must be certified weed free under the Department of Food and Agriculture.

#### 2.05 ORGANIC TACKIFIER

- A. Tackifier shall be a concentrated, biodegradable and organic derivative of corn or other organic material. Tackifier shall be non-toxic to plant and animal life, non-corrosive and non-crystalline and be non-staining to concrete or painted surfaces. Tackifier shall conform to Sections 21-2.01 and 21-2.02.

## 2.06 WATER

- A. Water shall be the responsibility of the Contractor, unless otherwise noted. Water shall not contain elements toxic to plant life.

## **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 Plans and as required by these Special Provisions. 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 shown on the Plans and additional measures deemed necessary for the Maintenance Period shall be installed at the time of substantial completion.
- F. Mitigation for permanent impacts on riparian habitat will be accomplished through the purchase of in-lieu fees, on-site mitigation, or purchase of mitigation bank credits. Mitigation will be at a minimum ratio of 2:1 for permanent impacts and 1:1 for temporary impacts; however, the final ratio will be established through consultation and coordination with regulatory agencies during the permitting process.

### 3.02 PREPARATION

- A. All seeding zones shall be broadcast seeded. Prior to broadcast seeding, the seed bed must be scarified to a minimum one (1) inch in depth using a flexible tine harrow or hand tools to create a loose and friable topsoil medium.

### 3.03 BROADCAST SEEDING

- A. Areas shall be broadcast seeded with native seed at appropriate rates specified on the planting palette. Native seed shall be broadcast seeded at the rates specified in the Drawings along with a mycorrhizal inoculant at a rate of 60 pounds per acre. After seeding, all areas shall be harrowed or lightly raked to ensure proper seed to soil contact. The finished soil surface shall be covered where applicable in accordance with the erosion control measures specified on the Drawings and Sections 13 and 21 Water Pollution Control and Erosion Control. After erosion control measures are in place, the Contractor shall hydraulically mulch all disturbed and seeded areas as specified in these Specifications.

- B. The Contractor shall broadcast all seed plus inoculant using cyclone, knapsack hand-operated or other broadcast type seeder whereby dry seed shall be uniformly distributed at the prescribed application rates. All equipment used shall be calibrated to apply the specified pounds per acre of the seed mix for each unique habitat zone. Particular care shall be exercised to ensure that the application is made uniformly and at the prescribed rate, guarding against missed areas and excessive overlaps. Contractor can apply seed using multiple passes on contour. Seed passes shall overlap by one (1) foot within seed mix zone, and may overlap no more than one (1) foot with other seed mix zones.
- C. Contractor shall install erosion control measures and Hydraulic Wood/Straw Fiber Mulch in the areas seeded within 24 hours of broadcast seeding.
- D. Do not incorporate materials within 3 feet of the pavement edge.

#### 3.04 COIR/STRAW FIBER ROLLS

- A. Coir/straw fiber rolls shall be installed in accordance with manufacturer's recommendations and as shown on the Plans.
- B. Coir/straw fiber rolls shall be installed on all areas disturbed during construction, spaced as shown on the Plans, or closer, if needed for adequate erosion control. Risk level 2 projects require that linear sediment controls such as fiber rolls be installed at the toe of slope, face of slope and at grade breaks to comply with sheet flow lengths at a no more than 20-feet apart on slopes less than 25%.
- C. Install all coir/straw fiber rolls subsequent to completion of fine grading in an area, and in all cases by October 15. Maintain coir/straw fiber rolls throughout the maintenance period. Following each rain event inspect coir fiber rolls, and replace anchoring stakes and/or coir fiber rolls as needed.
- D. Install coir fiber roll in accordance with manufacturer's recommendations and the following requirements:
  - 3. Embed the fiber roll a minimum of 4 inches below grade. Install fiber rolls by excavating a 4-inch deep by 10-inch wide trench, placing the fiber roll into the trench, and backfilling with soil or gravel, as needed for proper anchoring (see Fiber Roll detail Sheet C26).
  - 4. Stake the fiber roll at 3 feet on center. Install additional stakes as needed to completely anchor the coir fiber roll.
  - 5. Align coir fiber roll installations along elevation contours. Turn last 10 feet of fiber roll at right angles in upslope direction (in "L" shape), to allow for capture and dispersion of surface runoff.

#### 3.05 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 active channel bank (wet edge) throughout floodplain grading operations.
- C. Silt fence placement and removal shall be coordinated and approved by the Engineer. Install silt fence in accordance with manufacturer's recommendations and as described in the SWPPP.

#### 3.06 HYDRAULIC WOOD/STRAW FIBER MULCH AND TACKIFIER CHILES CREEK BRIDGE



- A. All ties from the straw mulch bales and seed bags are to be removed from the construction site before the start of the mulching operations.
- B. FiberWood Hydraulic Straw/Fiber Blend (hydro-mulch) or approved equal shall be mixed in a hydroseeding machine with organic tackifier and water. Organic tackifier shall be mixed with hydro-mulch to ensure an application rate of 120 pounds per acre (lbs/ac). Hydraulic Wood/straw fiber mulch and tackifier shall be applied over all seeded and disturbed areas at a rate of 3,000 lbs/ac.
- C. Hydraulic Wood/straw fiber mulch and tackifier shall be started on the windward side of relatively flat areas or on the upper part of a steep slope, and continued uniformly until the area is covered. Mulching shall be distributed loosely and evenly, without clumping or piling.

### 3.07 DISPOSAL

- A. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off site.

### 3.08 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. Inspect graded areas and river banks after storm events and monthly at a minimum.
- 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 14 Environmental Protection.

### 3.09 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.

## **PART 4 – MEASUREMENT AND PAYMENT**

- A. The contract price paid for “Storm Water Pollution Prevention Plan” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in this section as specified in this Technical Specifications, as shown on the plans and as directed by the Engineer and no additional compensation will be allowed.
- B. The contract price paid per each “Temporary Drainage Inlet Protection” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in this section as specified in this Technical Specifications, as shown on the plans and as directed by the Engineer and no additional compensation will be allowed.
- C. The contract price paid per linear foot for “Temporary Fiber Rolls” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in this section as specified in this Technical Specifications, as shown on the plans and as directed by the Engineer and no additional compensation will be allowed.

- D. The contract price paid per each “Temporary Construction Entrance” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in this section as specified in this Technical Specifications, as shown on the plans and as directed by the Engineer and no additional compensation will be allowed.
- E. The contract price paid per each “Hydroseed” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in this section as specified in this Technical Specifications, as shown on the plans and as directed by the Engineer and no additional compensation will be allowed.

## **23 DEWATERING**

### **PART I - GENERAL**

#### **1.02 DESCRIPTION**

- A. There may be dewatering activity associated with the Work.
  - 1. Dewatering activity to control ground water during excavation for piers and retaining wall.
- B. The work shall consist of the design, furnishing, installation, operation, maintenance, monitoring, and removal of a dewatering system or systems to control groundwater to achieve proper completion of all work performed under this contract.
- C. Dewatering shall conform to the provisions in the Standard Specifications, these Technical Specifications, the Project Plans and as directed by the Engineer.
- D. The Contractor shall coordinate this activity with the County prior to installation of the dewatering system.

#### **1.03 SUBMITTALS**

- A. Drawings indicating the location and size of berms, dikes, ditches, gravel drains, treatment facilities, discharge lines and points and outfall design. The drawings shall include at a minimum all dewatering system elements.

### **PART 2 – EXECUTION**

#### **2.01 DEWATERING ACTIVITY SUMMARY**

- A. Dewatering activities will comply with the requirements of any required permits issued by the Regional Water Quality Control Board, County, and CAL OSHA.
- B. Dewatering activity to control ground water during excavation for the retaining wall piers:
  - 1. The pier excavations may act as dewatering wells. The diameter and depth of the excavations are as shown on the Plans. Dewatering for control of ground water shall conform to the provisions in the California Stormwater BMP Handbook Construction NS-2.

### **PART 3 – QUALITY ASSURANCE**

#### **3.01 EXPERTISE**

- A. The Contractor shall include, at a minimum, all of the elements necessary for furnishing, installing, operating, and maintaining the dewatering system.

#### **3.02 METHODS, MATERIALS, AND EQUIPMENT**

- B. The Contractor shall employ materials, equipment, and construction methods commonly used and proven as suitable for the duration of construction dewatering. The Contractor shall provide submittals and/or product data that demonstrate the suitability of the materials and equipment proposed for use on

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these systems. The Contractor shall test the dewatering system to the reasonable satisfaction of the Engineer and make operational any deficiency prior to excavation.

### 3.03 CONSTRUCTION

- C. The Contractor shall integrate all dewatering, shoring, and excavation activities to ensure that dewatering, shoring, and excavation activities do not impede or conflict to the detriment of the work. The Contractor shall be responsible for any impacts to the project from conflicts between dewatering, shoring and/or excavation.

### **PART 4 – MEASUREMENT AND PAYMENT**

- A. Full compensation for complying with the provisions of this section shall be considered as included in the contract price for the various bid items, and no separate payment will be made.

## 26 AGGREGATE BASES

### PART 1 - GENERAL

#### 1.01 SUMMARY OF WORK

- A. This section covers the permeable and non-permeable aggregate base for roadway sections, structure backfill, Shoulder backing, bedding, etc., unless modified by the Technical Specifications in the various items of work.
- B. Aggregate bases shall conform to Section 26, "Aggregate Bases," of the 2018 Caltrans Standard Specifications and these Technical Specifications.
- C. The work to be performed includes the preparation of the aggregate base course, the production, stockpiling, transporting, placing, compacting of the aggregate base course and all other required incidental work.

#### 1.02 SUBMITTALS

- A. Contractor shall submit aggregate base source and certified laboratory test results to the Engineer for approval.
- B. Contractor shall submit tickets for each load of aggregate.

### PART 2 – PRODUCTS

#### 2.01 MATERIALS

- A. Aggregate must be clean and consists of any combination of the following:
  - 1. Broken Stone
  - 2. Crushed gravel
  - 3. Natural rough-surfaced gravel
  - 4. Sand
  - 5. Processed reclaimed asphalt concrete, PCC, LCB, or CTB
  - 6. Processed glass
- B. Aggregate base shall be Class 2 with R-Value equal to 78, and  $\frac{3}{4}$  inch maximum aggregate and conform to Section 26.1.02B of the 2018 Caltrans Standard Specifications.

### PART 3 – EXECUTION

#### 3.01 CONSTRUCTION

- A. Construction shall conform to Section 26-1.03, "Construction" of the 2018 Caltrans Standard Specifications and these Technical Specifications.

### 3.02 DELIVERY, STORAGE, AND HANDLING

- A. On Site Storage: Store aggregate-base material on-site covered or in a location where material will not be contaminated. Stockpiles of aggregate base shall be covered with plastic or geotextile, or protected with a linear sediment barrier at all times during the rainy season, and when precipitation is forecast during the non-rainy season.

### 3.03 EXAMINATION AND TESTING

- A. The Contractor shall call for an inspection by the Engineer and obtain written acceptance of the prepared sub grade before proceeding with the placement of the aggregate base course.
- B. The sub grade to receive aggregate base course, immediately prior to spreading, shall conform to the compaction and elevation tolerances indicated and shall be free of standing water and loose materials.

### 3.04 PLACEMENT AND COMPACTION

- A. Subgrade shall be prepared and compacted per Section 19 and 26 of the 2018 Caltrans Standard Specifications and the Technical Specifications.
- B. Spreading and compactions of Aggregate base shall conform to Section 26 of the 2018 Caltrans Standard Specifications. Compact each layer to at least 95% relative compaction under California Test 231.
- C. The compacted thickness of anyone layer must not exceed 0.5 ft.

## **PART 4 – MEASUREMENT AND PAYMENT**

- A. The contract price paid per cubic yard of “Class II Aggregate Base” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.

## **29 TREATED PERMEABLE BASES**

### **PART I - GENERAL**

#### **1.01 DESCRIPTION**

Cement Treated Permeable Backfill shall conform to section 29-3 “Cement Treated Permeable Base” of the 2018 Caltrans Standard Specifications and these Technical Specifications.

### **PART 2 – PRODUCTS**

2.01 Materials shall conform to Section 29-3.02 “Materials” of the 2018 Caltrans Standard Specifications and these Technical Specifications.

2.02 Add to Section 3.02A General

Structure backfill includes constructing the geocomposite drain. Geocomposite drain must comply with Section 68-7, "Geocomposite Drain Systems" of the 2018 Caltrans Standard Specifications.

### **PART 3 – EXECUTION**

3.01 Construction shall conform to Section 29-3.03 “Construction” of the 2018 Caltrans Standard Specifications and these Technical Specifications.

### **PART 4 – MEASUREMENT AND PAYMENT**

A. The contract unit price per cubic yard of “Cement Treated Permeable Backfill (Bridge)” and “Cement Treated Permeable Backfill (Retaining Wall)” shall include full compensation for furnishing all labor, reinforcement and appurtenant materials, tools, equipment and incidentals, and for doing all the work involved in execution as specified in this section and conforming to the provisions of this section and no additional compensation will be allowed. “Cement Treated Permeable Backfill (Bridge)” and “Cement Treated Permeable Backfill (Retaining Wall)” includes constructing the geocomposite drain system. The systems must comply with section 68-7.

## 39 ASPHALT CONCRETE

### PART 1 - GENERAL

#### 1.01 SUMMARY OF WORK

- A. This section applies to all hot mix asphalt (HMA) for the road pavement section.
- B. Hot mix asphalt shall be Type A and conform to Section 39, "Asphalt Concrete," of the 2018 Caltrans Standard Specifications and these Technical Specifications.
- C. Hot mix asphalt shall be Type A and conform to Section 39-2, "Hot Mix Asphalt," of the 2018 Caltrans Standard Specifications and these Technical Specifications.
- D. Asphalt Concrete (AC) and HMA may be used interchangeably on the plans and specifications.
- E. The work to be performed includes the preparation of the aggregate base course, application of tack coat, micro-surface, the production, transporting, placing, compacting of the HMA and all other required incidental work.
- F. Asphalt grinding shall comply with Section 39-2.01C(3)(e) of the 2018 Caltrans Standard Specifications and these Special Provisions.
- G. Sawcut of existing asphalt pavement where shown on the plans.

#### 1.02 SUBMITTALS

- A. The Contractor shall submit HMA source and mix design prepared by a certified laboratory to the Engineer for review and approval.
- B. Accompanying mix design, submit materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceed, specified requirements.
- C. The Contractor shall submit tickets for each load of asphalt concrete.
- D. Submit certificate of compliance for tack coat per Section 94, "Asphaltic Emulsions," of the 2018 Caltrans Standard Specifications.

### PART 2 – PRODUCTS

#### 2.01 DESCRIPTION

- A. HMA
  - 1. HMA for the road overlay shall be Type A, ½ inch maximum aggregate.
  - 2. HMA for the road pavement section shall be Type A, placed in two layers, ½ inch maximum aggregate for the final layer and ¾ inch maximum aggregate for the bottom layer.
- B. Asphalt Binder shall be Steam-refined paving asphalt Grade PG 64-10 per Section 92, "Asphalt Binder" of the 2018 Caltrans Standard Specifications.



- C. Tack Coat shall be applied to the finished surfaces of the aggregate base prior to placement of the HMA, between HMA layers, and to vertical surfaces of curbs, gutters, construction joints per Section 39-1.09C. Tack Coat shall be slow setting asphalt emulsion SS1h per Section 94, "Asphaltic Emulsions," of the 2018 Caltrans Standard Specifications.

### **PART 3 – EXECUTION**

#### **3.01 GENERAL**

- A. Placement of HMA shall be in accordance with Section 39 of the 2018 Caltrans Standard Specifications and these Technical Specifications.
- B. A tack coat treatment shall be applied to finished surfaces of aggregate and concrete surfaces where HMA will meet and shall be applied per Section 39-2.01C (3) (f), "Subgrade, Tack Coat, and Geosynthetic Pavement Interlayer" of the 2018 Caltrans Standard Specifications.
- C. Total HMA thickness shall be as specified on the plans.
- D. Apply a slow-setting asphaltic emulsion as a prime coat to AB areas designated by the Engineer and at a spread rate from 0.15 to 0.40 gal/sq yd. Do not apply more prime coat than can be absorbed completely by the AB in 24 hours. You may modify the prime coat application rates if authorized. Close areas receiving prime coat to traffic. Do not allow tracking the prime coat onto pavement surfaces beyond the job site.

#### **3.02 ROADWAY**

- A. The 2nd, 3rd, and 4th paragraphs of Section 39.11B(1) of the Revised Standard Specifications shall be replaced with the following:
  - 3. Place HMA on adjacent traveled way lanes so that at the end of each work shift the distance between the ends of HMA layers on adjacent lanes is from 5 to 10 feet. Place additional HMA along the transverse edge at each lane's end and along the exposed longitudinal edges between adjacent lanes. Hand rake and compact the additional HMA to form temporary conforms. You may place Kraft paper or another authorized bond breaker under the conform tapers to facilitate the taper removal when paving operations resume.

#### **3.03 TAPERED NOTCHED WEDGE**

- A. Section 39-1.11B (2) of the Revised Standard Specifications shall be deleted.

#### **3.04 SHOULDERS, MEDIANS, AND OTHER ROADWAY CONNECTIONS**

- A. Add the following to Section 39.11D of the Revised Standard Specifications:
  - 1. Pave shoulders and median borders adjacent to the lane before opening a lane to traffic.
  - 2. Place shoulder conform tapers concurrently with the adjacent lane's paving.

3. Place additional HMA along the pavement's edge to conform to road connections and driveways. Hand rake, if necessary, and compact the additional HMA to form a smooth conform taper.

#### **PART 4 – MEASUREMENT AND PAYMENT**

- A. The contract unit price for ton of “Hot Mix Asphalt (Type A)” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the Plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.

Tack Coat will be included in the cost of HMA and no additional compensation will be allowed.

#### **Place Asphalt Concrete Dike (Type A) & Cold Plane Asphalt Concrete Pavement (2” Grind)**

- B. The contract unit price per ton of Asphalt Grinding shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved, including storage and disposal, as shown on the Plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.
- C. Tack coat will be included in the cost of “Hot Mix Asphalt (Type A)” and no additional compensation will be allowed.
- D. The contract linear foot paid for Hot Mix Asphalt Overside Drain bid item shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Special Provisions, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.

## 46 GROUND ANCHOR AND SOIL NAILS

### PART 1 - GENERAL

#### 1.01 SUMMARY OF WORK

- A. Construction of ground anchors shall conform to Section 46 of 2018 Caltrans Standard Specifications and these Technical Specifications.
- B. The Contractor shall be responsible for the Seat Assembly, as show on the plans.
- C. Ground Anchors shall be provided to Soldier Pile Walls under the bridge abutments, as shown on the plans. After the removal of the existing bridge per Section 60, "Existing Bridge" of these Technical Specifications, the ground anchors shall be installed, jacked and stressed prior to construction of the new cast-in-place concrete deck.
- D. Ground Anchor shall not extend beyond the County's Right-of-Way.

#### 1.02 SUBMITTALS

- A. You may submit calculations and details for furnishing an alternative number of ground anchors that provide the same horizontal and vertical components and distribution of the design force as provided by the anchors shown. Include alternative structure details. Alternative design calculations and details must be sealed and signed by an engineer who is registered as a civil engineer in the State of California.
- B. You shall submit 3 copies of calculations and plans for the Seat Assembly sealed and signed by the registered Civil Engineer in the state of California.

### PART 2 – PRODUCTS

#### 2.01 MATERIAL

- A. Replace 3<sup>RD</sup> paragraph of Section 46-2.02B of 2018 Caltrans Standard Specification with:
  - Permanent bearing plate must be effectively distribute the factored test load uniformly to the Seat Assembly such that:
    - 1. The Seat Assembly bearing stress does not exceed 30,000 psi.
    - 2. Bending Stress of the plate does not exceed:
      - c. 0.90 of the yield strength for the steel
      - d. 0.55 of the yield strength for the cast steel or cast iron

### PART 3 – EXECUTION

#### 3.01 GENERAL

- A. Stressing of ground anchor tendons shall be performed prior to construction of the bridge deck.

### 3.02 EXAMINATION AND TESTING

- A. Performance test a minimum of 3 ground anchors. The Engineer determines which anchors are to be performance tested.
- B. Creep movement measured from 1 to 10 minutes is less than 0.04 inch.

### **PART 4 – MEASUREMENT AND PAYMENT**

- A. The contract unit price each of “Ground Anchor (Subhorizontal)” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the Plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.

## 49 PILING

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Piling, including 24” Drilled Hole (Bridge), 36” Cast-in-Drilled-Hole Concrete Piling, and 36” Cast-in-Drilled-Hole Concrete Piling (Rock Socket) shall conform to section 49 “Piling” of the 2018 Caltrans Standard Specifications and these Technical Specifications.
- B. Steel Soldier Piling at Retaining Walls and Abutment Walls shall comply with Section 49-4 Steel Soldier Piling of 2018 Caltrans Standard Specifications and these Technical Specifications.
- C. This section includes specifications for furnishing and drilling piles.
- D. Corrosion protection measures include using Type II cement.
- E. Rock subsurface foundation material is anticipated at the soldier pile retaining wall location. Conventional drilling equipment for drilling in soils may not be suitable for drilling holes for the steel soldier piling.

#### 1.02 SUBMITTAL

- A. Submit a work plan for constructing the soldier pile wall at retaining walls and at the abutments. Include procedures, details, and sequences for constructing the soldier pile wall and removing the existing walls in front and adjacent to the abutments.

### PART 2- PRODUCTS

#### 2.01 MATERIALS

- A. Steel soldier piles shall conform to the provisions of Section 49-2.03, “Structural Shape Steel Piles” of the Standard Specifications and these Technical Specifications.
- B. Concrete anchors must comply with the specifications for studs in clause 7 of AWS D1.5.
- C. Surfaces of the steel soldier piles that will be exposed to the ground or air shall be painted in conformance with Section 59-9, “Painting Steel Soldier Piles” of the Standard Specifications. Paint shall be rust inhibiting paint for steel applications and shall be approved by the Engineer.
- D. Add to section 49-3.02B(6)(c):

The synthetic slurry must be one of the materials shown in the following table:

Material	Manufacturer
SlurryPro CDP	KB INTERNATIONAL LLC 735 BOARD ST STE 209 CHATTANOOGA TN 37402 (423) 266-6964
Super Mud	PDS CO INC 105 W SHARP ST EL DORADO AR 71731 (870) 863-5707
Shore Pac GCV	CETCO CONSTRUCTION DRILLING PRODUCTS 2870 FORBS AVE HOFFMAN ESTATES IL 60192 (800) 527-9948
Terragel or Novagel Polymer	GEO-TECH SERVICES LLC 220 N. ZAPATA HWY STE 11A-449A LAREDO TX 78043 (210) 259-6386
BIG FOOT	MATRIX CONSTRUCTION PRODUCTS 50 S MAIN ST STE 200 NAPERVILLE IL 60540 (877) 591-3137
POLY-BORE	BAROID INDUSTRIAL DRILLING PRODUCTS 3000 N SAM HOUSTON PKWY EAST HOUSTON TX 77032 (877) 379-7412

Use synthetic slurries in compliance with the manufacturer's instructions. Synthetic slurries shown in the above table may not be appropriate for a given job site.

Synthetic slurries must comply with the Department's requirements for synthetic slurries to be included in the above table. The requirements are specified in the following tables and available from the Offices of Structure Design, P.O. Box 168041, MS# 9-4/11G, Sacramento, CA 95816-8041.

SlurryPro CDP synthetic slurry must comply with the requirements shown in the following table:

CHILES CREEK BRIDGE

**SlurryPro CDP**

Quality characteristic	Test method	Requirement
Density	Mud weight (density),	
During drilling (pcf)	API RP 13B-1,	≤ 67.0 <sup>a</sup>
Before final cleaning and immediately before placing concrete (pcf)	section 4	≤ 64.0 <sup>a</sup>
Viscosity	Marsh funnel and cup.	
During drilling (sec/qt)	API RP 13B-1, section 6.2	50–120
Before final cleaning and immediately before placing concrete (sec/qt)		≤ 70
pH	Glass electrode pH meter or pH paper	6.0–11.5
Sand content, percent by volume	Sand,	
Before final cleaning and immediately before placing concrete (%)	API RP 13B-1, section 9	≤ 1.0

NOTE: Slurry temperature must be at least 40 °F when tested.

<sup>a</sup>If authorized, you may use slurry in a salt water environment. The allowable density of slurry in a salt water environment may be increased by 2 pcf.

Super Mud synthetic slurry must comply with the requirements shown in the following table:

**Super Mud**

Quality characteristic	Test method	Requirement
Density During drilling (pcf) Before final cleaning and immediately before placing concrete (pcf)	Mud weight (density), API RP 13B-1, section 4	$\leq 64.0^a$ $\leq 64.0^a$
Viscosity During drilling (sec/qt) Before final cleaning and immediately before placing concrete (sec/qt)	Marsh funnel and cup. API RP 13B-1, section 6.2	32–60 $\leq 60$
pH	Glass electrode pH meter or pH paper	8.0–10.0
Sand content, percent by volume Before final cleaning and immediately before placing concrete (%)	Sand, API RP 13B-1, section 9	$\leq 1.0$

NOTE: Slurry temperature must be at least 40 °F when tested.

<sup>a</sup>If authorized, you may use slurry in a salt water environment. The allowable density of slurry in a salt water environment may be increased by 2 pcf.



Shore Pac GCV synthetic slurry must comply with the requirements shown in the following table:

**Shore Pac GCV**

Quality characteristic	Test method	Requirement
Density During drilling (pcf) Before final cleaning and immediately before placing concrete (pcf)	Mud weight (density), API RP 13B-1, section 4	$\leq 64.0^a$ $\leq 64.0^a$
Viscosity During drilling (sec/qt) Before final cleaning and immediately before placing concrete (sec/qt)	Marsh funnel and cup. API RP 13B-1, section 6.2	33–74 $\leq 57$
pH	Glass electrode pH meter or pH paper	8.0–11.0
Sand content, percent by volume Before final cleaning and immediately before placing concrete (%)	Sand, API RP 13B-1, section 9	$\leq 1.0$

NOTE: Slurry temperature must be at least 40 °F when tested.

<sup>a</sup>If authorized, you may use slurry in a salt water environment. The allowable density of slurry in a salt water environment may be increased by 2 pcf.

Terragel or Novagel Polymer synthetic slurry must comply with the requirements shown in the following table:

**Terragel or Novagel Polymer**

Quality characteristic	Test method	Requirement
Density	Mud weight (density),	
During drilling (pcf)	API RP 13B-1,	$\leq 67.0^a$
Before final cleaning and immediately before placing concrete (pcf)	section 4	$\leq 64.0^a$
Viscosity	Marsh funnel and cup.	
During drilling (sec/qt)	API RP 13B-1, section 6.2	45–104
Before final cleaning and immediately before placing concrete (sec/qt)		$\leq 104$
pH	Glass electrode pH meter or pH paper	6.0–11.5
Sand content, percent by volume	Sand,	
Before final cleaning and immediately before placing concrete (%)	API RP 13B-1, section 9	$\leq 1.0$

NOTE: Slurry temperature must be at least 40 °F when tested.

<sup>a</sup>If authorized, you may use slurry in a salt water environment. The allowable density of slurry in a salt water environment may be increased by 2 pcf.

BIG-FOOT synthetic slurry must comply with the requirements shown in the following table:

**BIG-FOOT**

Quality characteristic	Test method	Requirement
Density During drilling (pcf) Before final cleaning and immediately before placing concrete (pcf)	Mud weight (density), API RP 13B-1, section 4	$\leq 64.0^a$ $\leq 64.0^a$
Viscosity During drilling (sec/qt) Before final cleaning and immediately before placing concrete (sec/qt)	Marsh funnel and cup. API RP 13B-1, section 6.2	30–125 55-114
pH	Glass electrode pH meter or pH paper	8.5–10.5
Sand content, percent by volume Before final cleaning and immediately before placing concrete (%)	Sand, API RP 13B-1, section 9	$\leq 1.0$

NOTE: Slurry temperature must be at least 40 °F when tested.

<sup>a</sup>If authorized, you may use slurry in a salt water environment. The allowable density of slurry in a salt water environment may be increased by 2 pcf.

POLY-BORE synthetic slurry must comply with the requirements shown in the following table:

**POLY-BORE**

Quality characteristic	Test method	Requirement
Density	Mud weight (density),	
During drilling (pcf)	API RP 13B-1,	62.8-65.8 <sup>a</sup>
Before final cleaning and immediately before placing concrete (pcf)	section 4	62.8-64.0 <sup>a</sup>
Viscosity	Marsh funnel and cup.	
During drilling (sec/qt)	API RP 13B-1, section 6.2	50–80
Before final cleaning and immediately before placing concrete (sec/qt)		50-80
pH	Glass electrode pH meter or pH paper	7.0–10.0
Sand content, percent by volume	Sand,	
Before final cleaning and immediately before placing concrete (%)	API RP 13B-1, section 9	≤ 1.0

NOTE: Slurry temperature must be at least 40 °F when tested.

<sup>a</sup>If authorized, you may use slurry in a salt water environment. The allowable density of slurry in a salt water environment may be increased by 2 pcf.

**PART 3 - EXECUTION**

3.01 First, construct piling with steel soldier piles as shown on plans. After, construct secant piles below creek OG, as shown on plans. Construction of secant pile will require drilling through the structural concrete backfill in steel soldier pile.

3.02 Add to the end of section 49-4.01:

Coating for steel soldier piles shall comply with section 59-1 and 59-2.

3.03 Replace Reserved in section 49-3.02A(3)(a) with:

Submit as an informational submittal the proposed drilling equipment operational capacities or descriptions for:

1. Downward force in lb
2. Torque in ft-lb

3. Rotational speed in rpm
4. Rate of penetration in ft/hr
5. Number and type of drilling cutters or drilling teeth on drilling tool

3.04 Add to section 49-3.02C(1):

If the piling center-to-center spacing is less than 4 pile diameters, do not drill holes or drive casing for an adjacent pile until 24 hours have elapsed after concrete placement in the preceding pile and your prequalification test results for the concrete mix design show that the concrete will attain at least 1800 psi compressive strength at the time of drilling or driving.

Drilling equipment must be equipped with instrumentation to measure accurately the actual downward force in pounds. Instrumentation must be visible for reading.

3.05 Replace “Reserved” in Section 49-4.03A General with:

A. Construction sequencing for Soldier Pile Walls supporting the abutments:

1. Drill holes, Install Steel Soldier Piles, and construct Secant Piles prior to demolition of existing structure. Utilize existing structure to drill holes and install piles.
2. After the installation of secant piles and steel soldier piles, remove the existing bridge.
3. Prior to construction of new abutments and the bridge, install, jack and stress the ground anchor per Section 46, “Ground Anchors and Soil Nails” of these Technical Specification.
4. After the stressing the ground anchors, construct the Cast-in-Place Concrete facings as shown in plans.

B. Construction sequencing for Soldier Pile Walls supporting the abutments For Retaining Walls:

1. For all retaining walls except Retaining Wall 4, Drill holes, Install Secant Piles and Install Steel soldier piling prior to demolition of existing structure. Utilize existing structure to drill holes and install piles. Use the slope near proposed Retaining Wall 4 to access the creek.
2. Cast-in-Place concrete facing may be constructed prior or after the demolition of the existing structure.
3. Construct Retaining Wall 4 after the construction of Retaining Walls 1 to 3 and the bridge have been completed.

3.06 Add to the end of section 49-4.03B:

Rock subsurface foundation material is anticipated at the soldier pile retaining wall location. Conventional drilling equipment for drilling in soils may not be suitable for drilling holes for the steel soldier piling.

3.07 Add to the 2nd paragraph of section 49-4.03B with:

Plumb and align the pile before placing concrete backfill and cement treated permeable backfill. The pile shall be at least 3 inches clear of the sides of the hole for the full length of the hole to be filled with concrete backfill and cement treated permeable backfill. Ream or enlarge holes that do not provide the clearance around steel piles.

#### **PART 4 – MEASUREMENT AND PAYMENT**

- A. The contract lineal foot price for “Steel Soldier Piling, Bridge (W14x74)” and “Steel Soldier Piling, Retaining Wall (W12x106)” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.
- B. The contract lineal foot price for 24” Drilled Hole shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.
- C. The contract lineal foot price for 36” Cast-in-Drilled-Hole Concrete Piling and 36” Cast-in-Drilled-Hole Concrete Piling (Rock Socket) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.

## **50 PRESTRESSING CONCRETE**

### **PART 1 - GENERAL**

#### 1.01 SUMMARY OF WORK

A. This section applies to concrete used for the following applications:

1. Furnish Cast-in-Place Concrete Slab

B. Prestressing Concrete shall conform to Section 50, "Prestressing Concrete" of the 2018 Caltrans Standard Specifications and these Special Provisions.

#### 1.02 SUBMITTALS

A. Contractor shall submit Concrete source and mix design prepared by a certified laboratory to the Engineer for review and approval.

B. Accompanying mix design, submit materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceed, specified requirements.

C. Contractor shall submit tickets for each load of piles and girders.

D. Replace the 2nd paragraph of section 50-1.01C(3) with:

For initial review, submit:

1. 6 copies of shop drawings

### **PART 2 – PRODUCTS**

#### 2.01 Materials

A. Material shall conform to section 50-1.02, "Materials" of 2018 Caltrans Standard Specifications.

### **PART 3 – EXECUTION**

#### 3.01 CONSTRUCTION

A. Construction shall conform to Section 50-1.03, "Construction" of 2018 Caltrans Standard Specifications.

### **PART 4 – MEASUREMENT AND PAYMENT**

A. The contract unit price for "Prestressing Cast-in-Place Concrete" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Special Provisions, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.

## 51 CONCRETE STRUCTURES

### PART 1 - GENERAL

#### 1.01 SUMMARY OF WORK

- A. This section applies to concrete used for the following applications:
  - 1. Structural Concrete, Bridge including abutment, abutment walls, slab and geocomposite drains
  - 2. Structural Concrete, Bridge (Polymer Fiber)
  - 3. Structural Concrete, Retaining wall
  - 4. Concrete barrier
- B. Concrete Structures shall conform to Section 51, “Concrete Structures” of the 2018 Caltrans Standard Specifications and these Technical Specifications.
- C. Joint seal (Type A, MR 1”) shall conform to Section 51-2 “Joints” of the 2018 Caltrans Standard Specifications.
- D. Falsework shall conform to Section 48 “Temporary Structures” of the 2018 Caltrans Standard Specifications and these Technical Specifications. The contractor shall submit a falsework plan. Falsework is not allowed in the creek per regulatory permits.
- E. Elastomeric bearing pads shall conform to Section 51-3.02 “Elastomeric Bearing Pads” of the 2018 Caltrans Standard Specifications.
- F. The curing of the bridge deck shall conform to Section 51-1.03H “Curing Concrete Structures” of the 2018 Caltrans Standard Specifications.

#### 1.02 REFERENCE STANDARDS

- A. ASTM C494 - Standard Specifications for Chemical Admixtures for Concrete
- B. ASTM C979 - Standard Specifications for Pigments for Integrally Colored Concrete
- C. ASTM C309 – Standard Specifications for Liquid Membrane-Forming Compounds for Curing Concrete
- D. ACI 302.1R - Guide for Concrete Floor and Slab Construction
- E. ACI 305R – Guide to Hot Weather Concreting
- F. ACI 306R – Guide to Cold Weather Concreting
- G. ACI 318 - Building Code Requirements for Reinforced Concrete
- H. NRMCA CIP5 - Plastic Shrinkage Cracking

#### 1.03 SUBMITTALS

- A. Contractor shall submit Concrete source and mix design prepared by a certified laboratory to the Engineer for review and approval.

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- B. Accompanying mix design, submit materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceed, specified requirements. Concrete for concrete bridge decks must contain polymer fibers. Each cubic yard of concrete must contain at least 1 pound of microfibers and at least 3 pounds of macrofibers.
- C. Concrete for concrete bridge decks must contain a shrinkage reducing chemical admixture. Each cubic yard of concrete must contain at least 3/4 gallon of a shrinkage reducing admixture. If you use the maximum dosage rate shown on the Authorized Material List for the shrinkage reducing admixture, your submitted shrinkage test data does not need to meet the shrinkage limitation specified.
- D. The Contractor shall submit a deck placement plan for concrete bridge decks to the Engineer for review and approval. Include in the placement plan the method and equipment for ensuring that the concrete bridge deck is kept damp by misting immediately after finishing the concrete surface.
- E. The Contractor shall submit structural calculations and details to the Engineer for review and approval for the deck forms and for the falsework to support the bridge deck pour.
- F. Contractor shall submit tickets for each load of concrete.
- G. Submit manufacturer's tech-data sheets and certificates of compliance to applicable ASTM requirements.
- H. Submit applicators/contractors resume of successful projects utilizing specified Architectural concrete color system with a minimum requirement of 3 years related experience.

### 1.03 QUALITY ASSURANCE

- A. Replace 1<sup>st</sup> paragraph of Section 51-1.01D(3)(b)(ii) with:

Contractor shall test the surface of the following in the presence of the Engineer:

- B. Delete 2<sup>nd</sup> paragraph of Section 51-1.01D(3)(b)(ii).
- C. Add to Section 51-1.01D(3)(b)(ii):

Contract shall provide the bridge profilograph for testing.

- D. Replace 1<sup>st</sup> paragraph of Section 51-1.01D(3)(b)(iii)

After deck surfaces and approach slabs have been textured, you shall test the coefficient of friction of the concrete surfaces under California Test 342.

## **PART 2 – PRODUCTS**

### 2.01 MATERIALS

- A. Materials shall conform to Section 51-1.02, “Materials” of the 2018 Caltrans Standard Specifications.
- B. Add to Section 51-1.02B: Concrete for concrete bridge decks must contain polymer fibers. Each cubic yard of concrete must contain at least 1 pound of microfibers and at least 3 pounds of macrofibers.

Fibers must comply with ASTM D7508. Microfibers must be from 1/2 to 2 inches long. Macrofibers must be from 1 to 2 – 1/2 inches long.

- C. Concrete for concrete bridge decks must contain a shrinkage reducing chemical admixture. Each cubic yard of concrete must contain at least 3/4 gallon of a shrinkage reducing admixture.

### **PART 3 – EXECUTION**

#### **3.01 CONSTRUCTION**

- A. Materials shall conform to Section 51-1.03, “Construction” of the 2018 Caltrans Standard Specifications.

- B. Add to Section 51-1.03C(2)(a):

Forms that are within the Chiles Creek are only permitted from June to October of any year. Forms that remain from June to October of any year must comply with the minimum required freeboard shown on the plans.

- C. Add to Section 51-1.03C(2)(a):

Form removal that would involve work within the Chiles Creek is only permitted from June to October of any year.

- D. Replace the 2<sup>nd</sup> paragraph of Section 51-1.03F(5)(a) with:

The Contractor sets deck elevation control points for use in establishing the grade and cross section of the deck surface. The grade established by the deck elevation control points includes all camber allowances. Elevation control points will not be closer together than approximately 8 feet longitudinally and 24 feet transversely to the bridge centerline

### **PART 4 – MEASUREMENT AND PAYMENT**

- A. The contract cubic yard price for various structural concrete bid items (bridge deck, barriers, retaining walls, etc.) shall include full compensation for furnishing all labor, materials, concrete color, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.
- B. The contract linear foot price for “Joint Seal (MR = 1.0”) shall include full compensation for furnishing all labor, materials, concrete color, tools, equipment, and incidentals and for performing all the work for Joint Seal as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.

## 52 REINFORCEMENT

### PART I - GENERAL

#### 1.01 DESCRIPTION

Reinforcement shall conform to section 52 “Reinforcement” of the 2018 Caltrans Standard Specifications and these Technical Specifications.

#### 1.02 SUBMITTALS

Contractor shall submit reinforcement material submittal to the Engineer for review and approval.

### PART 2 – PRODUCTS

#### 2.01 DESCRIPTION

- A. Reinforcing bars must be shall conform to Section 52-1.02B, “Bar Reinforcement” of the Caltrans Standard Specifications for deformed bars, plain bars will not be allowed.
- B. All reinforcement shall be Grade 60 unless otherwise approved by the engineer.

### PART 3 – EXECUTION

#### 3.01 PLACEMENT, CLENGING AND BENDING

- A. Placement, cleaning and bending shall conform to Section 52-1.03, “Construction” of the Standard Specifications.
- B. All reinforcement shall be Grade 60 unless otherwise approved by the engineer.

#### C. PART 4 – MEASUREMENT AND PAYMENT

- A. The contract unit price per pound of “Bar Reinforcing Steel (Bridge)” and “Bar Reinforcing Steel (Retaining Walls)” shall include full compensation for furnishing all labor, reinforcement and appurtenant materials, tools, equipment and incidentals, and for doing all the work involved in execution as specified in this section and conforming to the provisions of this section and no additional compensation will be allowed.

## **56 ROADSIDE SIGNS**

### **PART 1 - GENERAL**

#### 1.01 SUMMARY OF WORK

A. Work shall conform to Section 82, “Signs and Markers” of the 2018 Caltrans Standard Specifications.

#### 1.02 SUBMITTALS

A. Contractor shall submit roadside signs submittal to the Engineer for review and approval.

### **PART 2 – PRODUCTS**

Materials shall conform to Section 82-2.02, “Materials” of the 2018 Caltrans Standard Specifications.

### **PART 3 – EXECUTION**

#### 3.01 CONSTRUCTION

A. Construction shall conform to Section 82-2.03, “Construction” of the 2018 Caltrans Standard Specifications.

### **PART 4 – MEASUREMENT AND PAYMENT**

A. The contract price paid per unit of “Roadside Sign – One Post” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work, as shown on the plans, as specified in the Standard Specifications, these Technical Specifications, and as directed by the Engineer.

## **59 STRUCTURAL STEEL COATINGS**

### **PART 1 – GENERAL**

#### **1.01 SUMMARY**

- A. Structural steel coatings shall conform to section 59 “Structural Steel Coatings” of the 2018 Caltrans Standard Specifications and these Technical Specifications.

#### **1.02 SUBMITTAL**

- A. Replace Reserved in section 59-2.01A(3)(b) with:

Submit proof of each required SSPC-QP certification as specified in section 8-1.04C of 2018 Caltrans Standard Specifications. Required certifications are:

1. SSPC-QP 1
2. SSPC-QP 2, Category A
3. AISC-420-10/SSPC-QP 3, enclosed shop

Instead of submitting proof of the certification complying with SSPC-QP 1, you may submit documentation with the painting quality work plan showing compliance with the requirements in section 3 of SSPC-QP 1.

### **PART 2 – PRODUCTS**

- 2.01 Materials shall comply with Section 59-2.01B Materials of 2018 Caltrans Standard Specifications and these Technical Specifications.

### **PART 3 – EXECUTION**

- 3.01 Clean and Paint the structural steel pile per Section 59-2.01C Construction of 2018 Caltrans Standard Specifications and these Technical Specifications.

### **PART 4 – MEASUREMENT AND PAYMENT**

- A. Full compensation for complying with the above provisions shall be considered as included in the contract price for the various bid items, and no separate payment will be made. The contract unit price paid for the various bid items shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved as shown on the plans and as specified in these Special Provisions, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.

**60 EXISTING STRUCTURES**

**PART 1 – GENERAL**

1.01 SUMMARY

A. Bridge Removal shall conform to Section 60-2.02 “Bridge Removal” of 2018 Caltrans Standard Specifications and these special provisions.

B. Remove the following Structure:

Bridge no./Structure name	Description of work
21C-0074/ Chiles Pope Bridge	Remove existing bridge, including the existing arch bridge and the existing retaining wall, up to 3' below the existing grade. The removed masonry stones from existing bridge shall be delivered to Napa County Corporation Yard at the following location:  7292 Silverado Trail Napa, CA 94558

**PART 2 – PRODUCTS – NOT USED**

**PART 3 – EXECUTION – NOT USED**

**PART 4 – MEASUREMENT AND PAYMENT**

A. The contract price paid lump sum unit of “Bridge Removal” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work, as shown on the plans, as specified in the Standard Specifications, these Technical Specifications, and as directed by the Engineer

## **65 REINFORCED CONCRETE PIPE**

### **PART 1 - GENERAL**

- A. Reinforced concrete pipe work shall conform to the provisions of Section 65 “Concrete Pipe,” of the Standard Specifications and these Technical Specifications.
- B. Work shall include, but not be limited to, structure excavation, structure backfill, and furnishing and installing circular reinforced concrete pipe segments as shown on the Plans and as directed by the Engineer.

### **PART 2 - MATERIALS**

- A. Reinforced concrete pipe shall be Class III.

### **PART 3 - EXECUTION**

- A. If the Contractor encounters solid rock or other unyielding material at the planned elevation of the bottom of the bedding shown, remove the material below the bottom of the bedding to a depth of not less than 6 inches or more than 12 inches. Backfill the resulting trench below the bottom of the bedding with structure backfill material under section 19-3.03E of the Standard Specifications. Do not compact the outer bedding before pipe placement.
- B. The excavation and backfill below the planned elevation of the bottom of the bedding shown is change order work.
- C. All pipes, culverts, or similar structures, that are stored at the construction site vertically or horizontally for one or more overnight periods shall be securely capped on both ends prior to storage and thoroughly inspected by an Engineer designated personnel for wildlife prior to placement.

### **PART 4 - MEASUREMENT AND PAYMENT**

- A. The contract price paid lump sum unit of “12inch Reinforced Concrete Pipe” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work, as shown on the plans, as specified in the Standard Specifications, these Technical Specifications, and as directed by the Engineer.
- B. The contract price paid lump sum unit of “18inch Reinforced Concrete Pipe” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work, as shown on the plans, as specified in the Standard Specifications, these Technical Specifications, and as directed by the Engineer

## **68 SUBSURFACE DRAINS**

### **PART 1 - GENERAL**

#### **1.01 DESCRIPTION**

- A. This section applies to subsurface drains used for the following applications:
  - 1. Geocomposite drain systems behind abutments.
  - 2. Geocomposite drain systems behind retaining walls.
- B. Geocomposite drain systems shall conform to Section 68-7, "Geocomposite Drain Systems" of the 2018 Caltrans Standard Specifications and these special provisions.

#### **1.02 SUBMITTALS**

- A. Contractor shall submit source to the Engineer for review and approval.
- B. Contractor shall submit tickets for each delivery of Geocomposite drain systems.

### **PART 2 - PRODUCTS**

#### **2.01 MATERIAL**

- A. All products subject to this section shall be in accordance with Section 68-7.02 "Materials" of the Caltrans Standard Specifications and these Special Provisions.

### **PART 3 - EXECUTION**

#### **3.01 PLACEMENT**

- A. Placement shall be in accordance with Section 68-7.03 "Construction" of the 2018 Caltrans Standard Specifications and these Special Provisions.

### **PART 4 – MEASUREMENT AND PAYMENT**

- A. Full compensation for complying with the above provisions shall be considered as included in the contract price for the various bid items, and no separate payment will be made. The contract unit price paid for the various bid items shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved as shown on the plans and as specified in these Special Provisions, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.



## **70 MISCELLANEOUS DRAINAGE FACILITIES**

### **PART 1 – GENERAL**

#### 1.01 DESCRIPTION

- B. This section shall apply to **36” Precast Concrete Pipe Inlet & 12” Concrete Flared End Section.**

### **PART 2 – PRODUCTS**

#### 2.01 DESCRIPTION

- A. GDOM Drainage Inlet shall be in accordance with Section 70-1.02 of the Standard Specification.
- B. Inlet Grate shall be in accordance with Section 75-2.02 of the Standard Specification.
- C. Concrete Apron be in accordance with Section 70-5.04B(3) of the Standard Specification.

### **PART 3 – EXECUTION**

#### 3.01 CONSTRUCTION

- A. GDOM Drainage Inlet shall be in accordance with Section 70-1.03 of the Standard Specification.
- B. Concrete Apron be in accordance with Section 70-5.04C of the Standard Specification.

### **PART 4 – MEASUREMENT AND PAYMENT**

- A. The contract unit price paid for the “GDOM Drainage Inlet with Concrete Apron” bid items shall include drainage inlet, drainage inlet frame, concrete apron, and inlet marker and full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Special Provisions, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed therefore.

## 72 ROCK SLOPE PROTECTION

### PART 1 – GENERAL

#### 1.01 DESCRIPTION

Section 72-1 includes general specifications for constructing slope protection.

### PART 2 – PRODUCTS

#### 2.01 MATERIAL

A. Construct slope protection or slope paving using minor concrete. Unless otherwise specified, fabric must be Class 8 RSP fabric.

#### 2.02 ROCK

For method A and B placement and the class of RSP described, comply with the rock gradation shown in the following table:

**Rock Gradation**

Nominal RSP class by median particle diameter <sup>b</sup>		Nominal median particle weight W <sub>50</sub> <sup>c,d</sup>	d <sub>15</sub> <sup>c</sup> (inches)		d <sub>50</sub> <sup>c</sup> (inches)		d <sub>100</sub> <sup>c</sup> (inches)	Placement
Class <sup>a</sup>	Diameter (inches)		Min	Max	Min	Max	Max	Method
I	6	20 lb	3.7	5.2	5.7	6.9	12.0	B
II	9	60 lb	5.5	7.8	8.5	10.5	18.0	B
III	12	150 lb	7.3	10.5	11.5	14.0	24.0	B
IV	15	300 lb	9.2	13.0	14.5	17.5	30.0	B
V	18	1/4 ton	11.0	15.5	17.0	20.5	36.0	B
VI	21	3/8 ton	13.0	18.5	20.0	24.0	42.0	A or B
VII	24	1/2 ton	14.5	21.0	23.0	27.5	48.0	A or B
VIII	30	1 ton	18.5	26.0	28.5	34.5	48.0	A or B
IX	36	2 ton	22.0	31.5	34.0	41.5	52.8	A
X	42	3 ton	25.5	36.5	40.0	48.5	60.5	A
XI	46	4 ton	28.0	39.4	43.7	53.1	66.6	A

<sup>a</sup>For RSP Classes I–VIII, use Class 8 RSP fabric. For RSP Classes IX–XI, use Class 10 RSP fabric.

<sup>b</sup>Intermediate or B dimension (i.e., width) where A dimension is length and C dimension is thickness.

<sup>c</sup>d%, where % denotes the percentage of the total weight of the graded material.

<sup>d</sup>Values shown are based on the minimum and maximum particle diameters shown and an average specific gravity of 2.65. Weight will vary based on specific gravity of rock available for the project.

Rock material must comply with the requirements shown in the following table:

**Rock Material Requirements**

Quality characteristic	Test method	Requirement
Apparent specific gravity (min)	California Test 206	2.5
Absorption (max, %)	California Test 206	4.2

Durability index (min)	California Test 229	52
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Notes:

Durability absorption ratio (DAR) = course durability index/(percent absorption + 1)

If the DAR is greater than 10, the absorption may exceed 4.2 percent.

If the DAR is greater than 24, the durability index may be less than 52.

Select rock such that the shapes provide a stable structure for the required section. If the slope is steeper than 2:1, do not use rounded boulders and cobbles. Angular shaped rock may be used on any planned slope. Flat or needle-shaped rock must not be used unless the individual rock thickness is greater than 0.33 times the length.

### 2.03 FABRIC

Fabric must be RSP fabric that complies with the class shown in the following table:

**Fabric Class**

Class	Largest rock gradation class used in slope protection
8	Classes I–VIII
10	Classes IX–XI

## PART 3 – EXECUTION

### 3.01 GENERAL

- A. Excavate the footing trench along the toe of the slope.
- B. Local surface irregularities of the RSP must not vary from the planned slope by more than 1 foot as measured at right angles to the slope.
- C. At the completion of slope protection work, fill voids in the footing trench with excavated material. Compaction is not required.
- D. Earthwork must comply with section 19.
- E. If placement of fabric is required, place the fabric before placing slope protection, slope paving, and gabions.
- F. Before placing the fabric, the surface of the slope must be free of loose or extraneous material and sharp objects that may damage the fabric.
- G. Handle and place the fabric under manufacturer's instructions. Place the fabric loosely on the slope such that it conforms to the surface without damage to the fabric when the cover material is placed.
- H. Join the edges of the fabric with either overlapped joints or stitched seams.
- I. If the fabric is joined with overlapped joints, the adjacent borders of the fabric must be overlapped by at least 24 inches. Overlap in the same direction that the cover material is placed.
- J. If the fabric is joined by stitched seams, stitch with contrasting colored yarn. Use the size and composition of yarn that is recommended by the fabric manufacturer. Use 5 to 7 stitches per inch of

seam. The strength of a stitched seam must be the same as that specified for the fabric, except if the stitched seams are oriented up and down a slope, the strength may be reduced to a value that it is at least 80 percent of that specified for the fabric.

- K. Do not operate equipment or drive vehicles directly on the fabric.
- L. If the fabric is damaged and the Engineer determines that it cannot be repaired, replace the fabric.
- M. If the Engineer determines that the fabric can be repaired, then repair it by covering the damaged area with new fabric. If the repair is made using overlapped joints, the overlap must be at least 3 feet.

### 3.02 PLACEMET METHOD A

- A. Do not place rocks by dumping.
- B. Place larger rocks in the footing trench.
- C. Place rocks on the slope such that their longitudinal axis is normal to the face of the embankment. Place foundation course rocks such that they are in contact with the ground surface.
- D. For rocks above the foundation course, place them such that each rock has a 3-point bearing on underlying rocks; do not bear them on smaller rocks which may be used for chinking voids.

### 3.03 PLACEMET METHOD B

Rocks may be placed by dumping and may be spread in layers by bulldozers or other suitable equipment. Place rocks such that:

- A. There is a minimum of voids
- B. Larger rocks are in the toe course and on the outside surface of the slope protection

## **PART 4 -- MEASUREMENT AND PAYMENT**

- A. The County does not pay for additional fabric used for overlaps.
- B. Payment for rock slope protection fabric is not included in the payment for rock slope protection.
- C. If RSP is paid by the ton, the payment quantity is the weight determined from scale weighings.
- D. If RSP is paid by the cubic yard, the payment quantity is the volume determined from the dimensions shown or ordered.
- E. The contract unit price shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work, as shown on the plans, as specified in the Standard Specifications, these Technical Specifications, and as directed by the Engineer.

## **82 SIGNS AND MARKERS**

### **PART 1 – GENERAL**

#### **1.01 SUMMARY**

- A. This section shall apply to Object Markers used in the project. The proposed Midwest Guardrail System (MGS) components and the Concrete Barrier shall have markers installed a minimum of every 20 feet for their entire length.
- B. Refer to Section 82 “Signs and Markers” of the 2018 Caltrans Standard Specification and these special provisions.

#### **1.02 SUBMITTALS**

- A. Submittals shall be made for the review and approval of the Engineer.
- B. Submit Certificate of Compliance.

### **PART 2 – PRODUCTS**

#### **3.01 DESCRIPTION**

- A. Object Markers for the MGS components shall be Pexco Type S-Flex or approved equal.

### **PART 3 – EXECUTION**

#### **4.01 CONSTRUCTION**

- A. Install Object Markers according to manufacturer’s instructions. Markers shall be installed a minimum of every 20 feet for the entire length of the MGS/ Barrier system.

### **PART 4 -- MEASUREMENT AND PAYMENT**

Full compensation for complying with the provisions of this section shall be considered as included in the contract price for the various bid items, and no separate payment will be made

## 83 RAILINGS AND BARRIERS

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. This section shall apply to the Concrete Barrier Type 85, Tubular Handrailings, and Midwest Guard Rail System used in the project.
- B. Concrete Barrier Type 85 shall conform to Section 83-3 “Concrete Barriers” of the 2018 Caltrans Standard Specifications and these Technical Specifications.
- C. Replace sixth paragraph of Section 83-3.01A Summary with:

For Type 85 concrete barriers:

#### 1.02 SUBMITTALS

- A. Product submittals shall be made to the Engineer for review and approval.
- B. Submit certificate of compliance.
- C. Replace last paragraph of Section 83-3.01C Submittals with:

For the tubular handrailing on a Type 85 concrete barrier, submit 2 copies of the threaded rod layouts before placing the barrier reinforcement.

### PART 2 – PRODUCTS

- A. Materials for cable railings and MGS shall conform to Section 83-1.02, “Materials” of the 2018 Caltrans Standard Specifications.
- B. Add to the end of section 83-3.02A:
  - Delineators with retroreflective sheeting must comply with section 82 and California MUTCD.
- C. Add to the end of section 83-2.02C(1)(a):
  - Install guardrail delineators with retroreflective sheeting in conformance with section 81 and California MUTCD.
- D. Replace the first paragraph of 83-2.07B with:
  - Concrete for the post footings shall comply with the specifications for minor concrete in section 90-2.
- E. Add to the end of section 83-2.07B:
  - Glare screens shall be TRANSPRO screen-safe glare screens or approved equal.
- F. Mortar must comply with Section 83-1.02C of 2018 Caltrans Standard Specifications.

### PART 3 – EXECUTION

#### 3.01 CONSTRUCTION

- A. Construction of MGS shall conform to Section 83-2.02C, “Construction” of the 2018 Caltrans Standard Specifications.
- B. Add to section 83-2.07C:

Install debris barriers after modified cable railings have been installed and tensioned per manufacturer’s recommendations.
- C. Replace the first paragraph of section 83-3.03A(8) with:

Cure the exposed surfaces of concrete barriers under section 90-1.03B by the curing compound method using curing compound no. 6. The curing compound shall not affect the color, shade, or general appearance of the colored concrete.
- D. Prior to applying the curing compound to the barrier, apply the curing compound to the mock-up panel of colored concrete for approval by the Engineer.
- E. Replace last paragraph of Section 83-3.03A(8)Curing with:

For Type 85 series concrete barriers, keep the forms in place for at least 36 hours after placing the concrete.
- F. Replace Section 83-3.03A(10) Installing Tubular Handrailings with:

For a tubular handrailing mounted on a Type 85 concrete barrier, drill and bond the threaded rods under the specifications for drilling and bonding dowels in section 51-1.

#### **PART 4 – MEASUREMENT AND PAYMENT**

- A. The contract lineal foot price for Concrete Barrier (Type 85) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.
- B. The Contract lineal foot price for “Midwest Guardrail System (Steel Post)” shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals and for doing all work associated with this item as shown on the Plans, as specified in the Standard Specifications, these Technical Specifications, and as directed by the Engineer.
- C. The Contract price per unit of “MGS Transition Railing (Type WB-31)” shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals and for doing all work associated with this item as shown on the Plans, as specified in the Standard Specifications, these Technical Specifications, and as directed by the Engineer.
- D. The contract lineal foot price for “Tubular Handrailing” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Technical Specifications, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.

## **84 MARKINGS**

### **PART I - GENERAL**

#### 1.01 DESCRIPTION

- A. This section shall apply to all pavement markings and striping.
- B. Refer to Section 84 “Markings” of the 2018 Caltrans Standard Specifications for all pavement markings and striping.
- C. Thermoplastic Traffic Striping and Pavement Markings shall conform to the requirements of Section 84-2 “Thermoplastic Traffic Striping and Pavement Markings” of the 2018 Caltrans Standard Specifications.

#### 1.02 SUBMITTALS

- A. Submittals shall be per Section 84-2.01B “Submittals” of the 2018 Caltrans Standard Specifications.

### **PART 2 – PRODUCTS**

#### 2.01 DESCRIPTION

- A. All pavement markings and striping shall be thermoplastic and must comply with Section 84-2.02 of the 2018 Caltrans Standard Specifications.
- B. All centerline striping shall have pavement markers applied per Details 21 and 27B of the 2018 Standard Plans.

### **PART 3 – EXECUTION**

#### 3.01 PLACEMENT

- A. Placement shall be in accordance with Section 84-2.03 of the Standard Specification

### **PART 4 – MEASUREMENT AND PAYMENT**

- A. The contract price paid per Lineal Foot of “Thermoplastic Traffic Stripe” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work, as shown on the plans, as specified in the Standard Specifications, these Technical Specifications, and as directed by the Engineer.



## 90 CONCRETE

### PART I - GENERAL

#### 1.01 DESCRIPTION

- A. Structural concrete, Retaining Wall shall conform to section 90 “Concrete” of the 2018 Caltrans Standard Specifications and these Technical Specifications.
- B. Add to section 90-5.01A:
  - You may use SCC for concrete at the cast-in-place concrete facing.

#### 1.02 SUBMITTAL

- A. Contractor shall submit Concrete source and mix design prepared by a certified laboratory to the Engineer for review and approval.
- B. Accompanying mix design, submit materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceed, specified requirements.
- C. Contractor shall submit tickets for each load of concrete.

### PART 2 – PRODUCTS

#### 2.01 DESCRIPTION

- A. Concrete shall be Portland cement concrete (PCC) unless otherwise stated.
- B. All concrete subject to this section shall be in accordance with Section 90 of the Caltrans Standard Specifications and these Special Provisions.
- C. Minimum cement content shall be 6-sack per cubic yard.
- D. Minimum compressive strength shall be 3,600 psi at 28 days.

### PART 3 – EXECUTION

#### 3.01 PLACEMENT

- A. Placement shall be in accordance with Section 73 of the Caltrans Standard Specifications.
  - 1. Broom finish sidewalks, gutter depressions, curb ramps, and driveways.
  - 2. Broom finish to be perpendicular to path of travel if used by pedestrians.
- B. Formwork per Section 73 of the Caltrans Standard Specifications.
- C. Reinforcement shall be per Section 52 of these Special Provisions and Section 52 of the Caltrans Standard Specifications.

### PART 4 – MEASUREMENT AND PAYMENT

- D. Full compensation for complying with the above provisions shall be considered as included in the contract price for the various bid items, and no separate payment will be made. The contract unit price

paid for the various bid items shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved as shown on the plans and as specified in these Special Provisions, the Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed.

### **Attachment 'A' – Submittal List**

THE REQUIRED SUBMITTALS FOR THE PROJECT SHALL INCLUDE, BUT MAY NOT BE LIMITED TO, THE FOLLOWING:

1. PROJECT SCHEDULE AND PROGRESS SCHEDULE
2. UPDATED SUBMITTAL LIST AND SCHEDULE
3. SCHEDULE OF VALUE FOR LUMP SUM ITEMS
4. TRAFFIC CONTROL PLAN
5. EMERGENCY CONTACT LIST
6. BEST MANAGEMENT PRACTICE PLAN
7. DEWATERING PLAN
8. MATERIAL ORDER
9. IMPORT FILL SOURCE AND TEST RESULTS
10. CL 2 AGGREGATE BASE SOURCE AND TEST RESULTS
11. HOT MIX ASPHALT SOURCE AND MIX DESIGN
12. PCC MIX FOR CIDH PILE
13. CIDH PILE PLACEMENT PLAN
14. PCC MIX FOR CONCRETE BRIDGE COMPONENTS
15. PCC MIX FOR CONCRETE RETAINING WALL
16. PCC MIX FOR CEMENT TREATED PERMABLE BACKFILL
17. BEARING PAD SHOP DRAWINGS
18. JOINT SEAL
19. EXPANDED POLYSTYRENE MATERIAL
20. REBAR SHOP DRAWINGS FOR PCC BRIDGE
21. REBAR SHOP DRAWINGS FOR PCC RETAINING WALL
22. EROSION CONTROL MATERIALS SUBMITTAL
23. WORK PLAN FOR CONSTRUCTING THE BRIDGE AND REMOVING THE EXISTING BRIDGE
24. WORK PLAN FOR CONSTRUCTING THE SOLDIER PILE WALL AND REMOVING THE EXISTING WALL
25. WORK PLAN FOR CIDH PILE PLACEMENT AND CONSTRUCTION
26. PILE HANDLING WORK PLAN OF MEASURES TO BE USED TO PROVIDE FOR THE SAFETY OF TRAFFIC AND THE PUBLIC

27. MATERIAL TEST REPORT AND CERTIFICATE OF COMPLIANCE FOR STEEL SECTIONS IN CIDH PILES
28. MANUFACTURER'S TECHNICAL DATA SHEETS AND CERTIFICATES OF COMPLIANCE FOR CONCRETE STRUCTURES.
29. MANUFACTURER'S TECHNICAL DATA SHEETS AND CERTIFICATES OF COMPLIANCE FOR COLORED CONCRETE.
30. APPLICATORS/CONTRACTORS RESUME
31. CERTIFICATE OF COMPLIANCE FOR EACH SHIPMENT OF REBARS
32. SUBMITTAL FOR INORGANIC ZINC-RICH COATINGS
33. QUALITY CONTROL WORK PLAN FOR STEEL PAINTING
34. SSPC-QP CERTIFICATION SUBMITTAL FOR STRUCTURAL STEEL COATING
35. CERTIFICATE OF COMPLIANCE FOR CEMENTITIOUS MATERIALS
36. CONCRETE TRIAL BATCH RESULTS
37. SLUMP FLOW AND VISUAL STABILITY INDEX TESTS RESULTS
38. WARRANTIES
39. RECORD DRAWINGS