

# SPECIFICATION NO. 14-11

CONTRACT NO. C51492  
BID, CONTRACT AND SPECIFICATIONS

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## DROUGHT EMERGENCY – TEMPORARY ROCK BARRIERS

SUTTER SLOUGH, STEAMBOAT SLOUGH AND  
WEST FALSE RIVER – SACRAMENTO RIVER DELTA

State Water Facilities  
Sacramento, Yolo, and Contra Costa Counties  
California



**CONFIRMED**

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2014

CALIFORNIA NATURAL RESOURCES AGENCY  
DEPARTMENT OF WATER RESOURCES  
STATE OF CALIFORNIA

DOCUMENT 00003

NOTICE OF INSPECTION TRIP

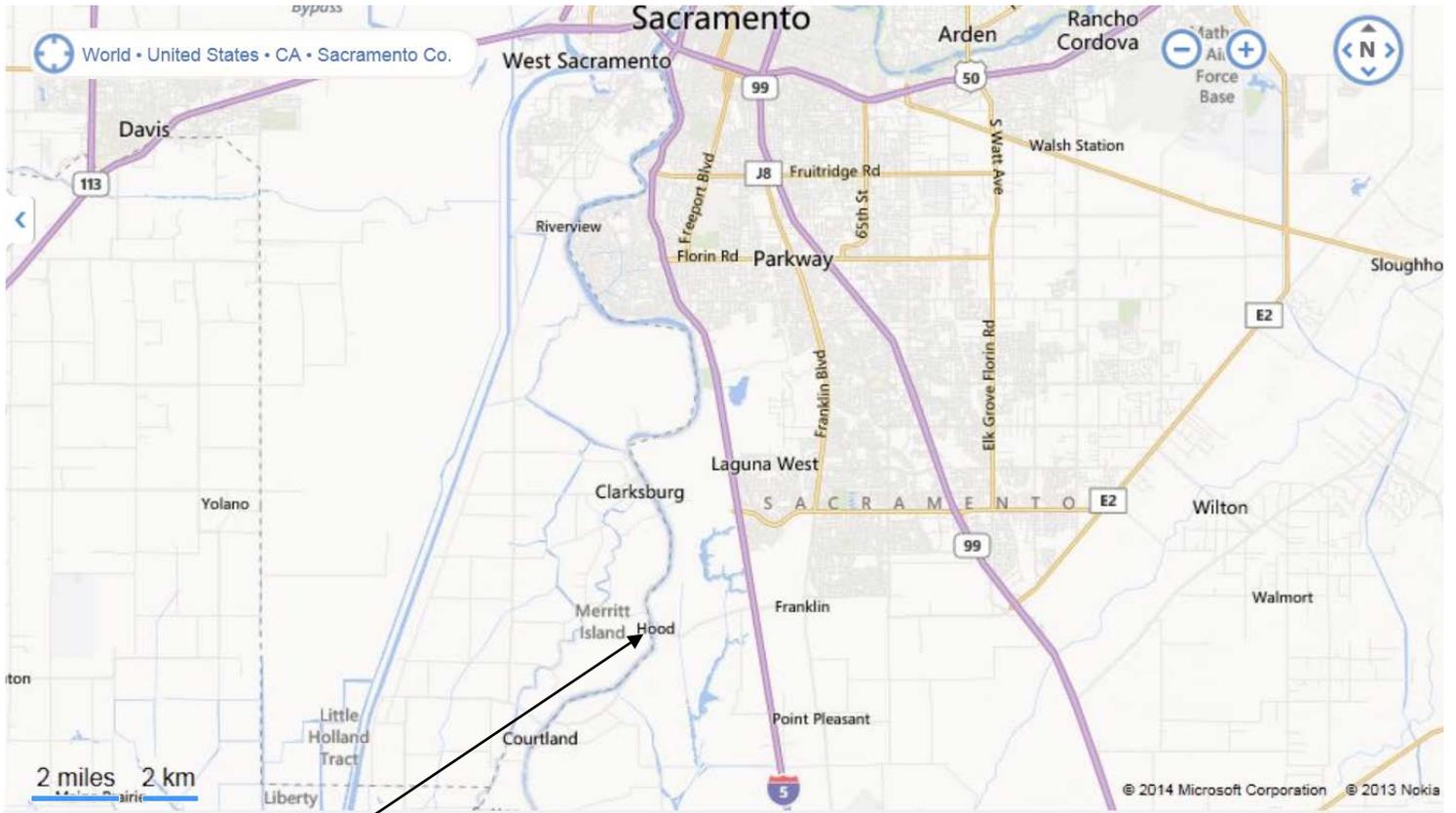
DROUGHT EMERGENCY –  
TEMPORARY ROCK BARRIERS  
SUTTER SLOUGH, STEAMBOAT SLOUGH AND WEST FALSE RIVER –  
SACRAMENTO RIVER DELTA  
STATE WATER FACILITIES  
CALIFORNIA AQUEDUCT  
SACRAMENTO, YOLO, AND CONTRA COSTA COUNTIES  
CALIFORNIA  
SPECIFICATION NO. 14-11  
CONTRACT NO. C51392

An inspection trip for prospective bidders will be conducted at the work site. The inspection trip is expected to take about 3 hours. Interested parties are requested to schedule their time so as to make the trip on the same day.

Interested parties are requested to meet **WEDNESDAY, MARCH 26, 2014** at **9:00 A.M.** in the parking lot at DWR's Hood Yard at the 01741 River Road (CA-160), Sacramento, CA 95639. Access to the meeting location is via Interstate 5. Exit Interstate 5 at exit 504 and take ramp to Hood Franklin Road. Go west on Hood Franklin road to the end. Turn right (north) on River Road (CA-160). Turn left and go through the open gate at the north end of the property. After signing in and an overview of the contracting requirements, we plan to caravan down to the Sutter Slough, Steamboat Slough and False River worksites. (See map on following pages.)

Please call the Department of Water Resources at (916) 653-4867 2 days in advance of the inspection trip if you plan to attend or have questions.

Notice Of Inspection Trip



MEETING LOCATION – 10741 River Road, Sacramento, CA 95639

VICINITY MAP



MEETING LOCATION – 10741 River Road, Sacramento, CA 95639

END OF DOCUMENT

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(WREM) NO. 55b

END OF DOCUMENT

DOCUMENT 00410

BID SCHEDULE

**CONTRACT TITLE:** Drought Emergency Temporary Rock Barriers  
Sutter Slough, Steamboat Slough, and West False River –  
Sacramento River Delta

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**DWR CONTRACT NO.:** C51492

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**DWR SPECIFICATION NO.:** 14-11

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**BIDDER'S NAME:**  
(Name style as recorded on CA Contractor's License)

**NOT TO BE USED FOR BIDDING PURPOSES**

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Item No.	Section*	Item	Estimated Quantity	Unit	Unit Price (In Figures)	Total (In Figures)
1	02205	Mobilization and Demobilization	1	JOB	LUMP SUM	
2	02300	Road Repair at West False River	600	LF		
3	02360	Drive Steel Sheet Piles	35,500	SF		
4	02370	Embankment Rock at Steamboat Slough	24,500	TON		
5	02370	Embankment Rock at Sutter Slough	16,500	TON		
6	02370	Embankment Rock at West False River	130,500	TON		
7	02370	Crushed Rock Gravel at Steamboat Slough	1,500	TON		
8	02370	Crushed Rock Gravel at Sutter Slough	850	TON		
9	02380	Install Department Furnished Culverts at Steamboat Slough	1	JOB	LUMP SUM	
10	02380	Install Department Furnished Culverts at Sutter Slough	1	JOB	LUMP SUM	
11	02380	Install Department Furnished Boat Docks With Anchors at Steamboat Slough	1	JOB	LUMP SUM	

\*Section where contract item is defined

Bid Schedule

Item No.	Section*	Item	Estimated Quantity	Unit	Unit Price (In Figures)	Total (In Figures)
12	02380	Install Department Furnished Articulated Concrete Mats at Steamboat Slough	1	JOB	LUMP SUM	
13	02380	Install Department Furnished Warning Signs, Buoys, And Lights at Steamboat Slough	1	JOB	LUMP SUM	
14	02380	Install Department Furnished Warning Signs, Buoys, And Lights at Sutter Slough	1	JOB	LUMP SUM	
15	02380	Install Department Furnished Warning Signs, Buoys, And Lights at West False River	1	JOB	LUMP SUM	
16	02455	Drive King Pipe Piles	480	LF		
17	02720	Aggregate Base at Steamboat Slough	160	TON		
18	02720	Aggregate Base at West False River	60	TON		
19	02820	Chain link fence	1050	LF		
20	02820	Double Drive Gate	5	EA		
21	05500	Miscellaneous Metal	24,000	LB		
TOTAL						

END OF DOCUMENT

\*Section where contract item is defined

SECTION 01110

SUMMARY OF WORK

PART 1 GENERAL

1.01 DESCRIPTION

- A. The term project is defined in Document 00701 – Abbreviations and Definitions, Paragraph 2. This project consists of the following:
  - 1. Construction of rock barriers at Sutter Slough, Steamboat Slough, and West False River in the Sacramento River Delta.
  - 2. The Contractor shall procure and place materials as follows:
    - a. Embankment rock to form the embankments of each barrier.
    - b. Crushed rock gravel around culverts and under the articulated concrete mats and the aggregate base at Steamboat Slough.
    - c. Aggregate base materials.
    - d. Chain link fence and gates.
    - e. Whalers and attachments between the king pipe piles and sheet piles.
  - 3. The Contractor shall pick up and install Department furnished materials as follows:
    - a. Corrugated Metal Pipe (CMP) culverts, frames, and sluice gates.
    - b. Boat docks with anchors.
    - c. Articulated concrete mats.
    - d. Warning signs, buoys, and lights.
    - e. King pipe piles.
    - f. Steel sheet piles.

1.02 RELATED SECTIONS

- A. Supplementary General Conditions, General Conditions, other Division 1 sections, and Drawings apply to this section.

### 1.03 LOCATION AND ACCESS

- A. Sutter Slough: The work site is located in Sutter Slough, at the northwest end of Sutter Island, on the Sacramento-Yolo County boundary and approximately 20 miles south of the city of Sacramento, California.
- B. Steamboat Slough: The work site is located on the right (northwest) bank of Steamboat Slough, on the east side of Ryer Island (east of Prospect Island), Solano County, California.
- C. West False River: The West False River work site is located near the west end of False River between San Joaquin River and Franks Tract, and between Bradford Island on the north and Jersey Island on the south. There is poorly maintained road access to either side of the work site. Bradford Island is only accessible by ferry. Jersey Island is accessible by a bridge on the south side of the island.

### 1.04 TIME OF COMPLETION

- A. Pursuant to Document 00705 – Prosecution of Work, Paragraph 1.A, the Contractor shall begin work within  

2 DAYS

from date of receipt of notice to begin work.
- B. The Contractor shall complete Sutter Slough rock barrier and culverts before the expiration of  

15 DAYS

from the date of receipt of notice to begin work.
- C. The Contractor shall complete Steamboat Slough rock barrier, culverts, boat docks with anchors, boat ramps, and articulated concrete mats before the expiration of  

20 DAYS

from the date of receipt of notice to begin work.
- D. The Contractor shall complete West Fall River rock barrier, sheet piling, king pipe piles, and whaler connections before the expiration of  

30 DAYS

from the date of receipt of notice to begin work.

E. and complete the balance of the work before the expiration of

45 DAYS

from the date of receipt of notice to begin work.

#### 1.05 LIQUIDATED DAMAGES

A. Pursuant to Document 00705 – Prosecution of Work, Paragraph 2:

1. Liquidated damages for failure to complete the work specified in Paragraph 1.04 B within the time specified will be \$ [REDACTED] per day.
2. Liquidated damages for failure to complete the work specified in Paragraph 1.04 C within the time specified will be \$ [REDACTED] per day.
3. Liquidated damages for failure to complete the work specified in Paragraph 1.04 D within the time specified will be \$ [REDACTED] per day.
4. Liquidated damages for failure to complete the work specified in Paragraph 1.04 E within the time specified will be \$ [REDACTED] per day.
5. The maximum sum per day for liquidated damages for which the Contractor will be liable will be \$ [REDACTED] per day.

#### 1.06 PROSECUTION OF WORK

A. Pursuant to Document 00705 – Prosecution of Work, Paragraph 3.B, the time of completion specified in Paragraph 1.04 is considered insufficient to complete the project working a normal number of hours per day or week on a single-shift basis. It is expected that overtime operations and/or additional shifts will be necessary to achieve completion of work within the time specified. The contract prices shall include full compensation for costs incurred for compliance with time of completion specified.

#### 1.07 FACILITIES AND SERVICES TO BE FURNISHED BY THE DEPARTMENT

A. The Department will furnish equipment and materials to be incorporated into each rock barrier as listed in Section 01640 – Department Furnished Equipment and Materials.

#### 1.08 RESTRICTIONS

A. Rock materials for each barrier shall be delivered by barge. Other materials and equipment may access each barrier location over existing roads.

- B. Contractor shall procure encroachment permits from Sacramento County and Contra Costa County.

#### 1.09 DIVING

- A. The work may require the use of commercial divers. All diving operations shall comply with the latest version of the Department Diving Procedures, Water Resources Engineering Memorandum No. 55b in Appendix II, and with the latest edition of the ADCI International Consensus Standards for Commercial Diving and Underwater Operations. Prior to starting diving operations, the Contractor shall fulfill all dive submittal requirements referenced in Paragraph 2 of the Department Diving Procedures.

#### PART 2 PRODUCTS

Not Used

#### PART 3 EXECUTION

Not Used

#### PART 4 PAYMENT

##### 4.01 PAYMENT

- A. The contract prices shall include full compensation for all costs incurred under this section.

END OF SECTION

SECTION 01260

MEASUREMENT OF MATERIALS BY TON

PART 1 GENERAL

1.01 RELATED SECTIONS

- A. Supplementary General Conditions, General Conditions, other Division 1 sections, and Drawings apply to this section.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. Materials to be paid for by the ton shall be weighed on sealed scales furnished by the Contractor or on other sealed scales regularly inspected by the State Division of Measurement Standards. Scales shall be suitable for the purpose intended and shall conform to the tolerances and specifications of the State Division of Measurement Standards.
- B. The Contractor shall have scales inspected and sealed by the State Division of Measurement Standards or its authorized representatives, as often as Engineer may determine necessary to ascertain the accuracy of such scales.
- C. Platform scales shall be of sufficient size to permit the entire vehicle or combination of vehicles to rest on the scale platform while being weighed. Combinations of vehicles may be weighed as separate units provided they are disconnected while being weighed.
- D. Scales shall be operated by a weighmaster licensed in accordance with the provisions of the California Business and Professions Code, Division 5, Chapter 7. The form of weighmaster certificate shall be as prescribed by Sections 12714, 12714.5, and 12715.

## Measurement of Materials by Ton

- E. The Engineer may be present to witness the weighing. If the weighing is not witnessed by the Engineer, the Contractor shall furnish a Public Weighmaster's certificate, or a certified daily summary weigh sheet.
- F. The operator of each vehicle weighed shall obtain a weight slip or load slip from the weigher and deliver the slip to the Engineer at the point of delivery of the material or as directed.
- G. Vehicles used for hauling materials shall be weighed empty daily and at such additional times as directed.
- H. If material is shipped by rail, the car weights will be accepted, provided that the actual weight of material only will be paid for and not minimum car weights used for assessing freight tariff. Car weights will not be acceptable for material passed through mixing plants.

### 4.02 WEIGHT MEASUREMENT

- A. The weight(s) of aggregate base to be paid for by the ton will be determined by deducting from scale weights the weight of water in excess of one percentage point more than the optimum moisture content required for compaction. The Engineer will take samples at the point of placement.

### 4.03 PAYMENT

- A. The contract prices shall include full compensation for all costs incurred under this section.

END OF SECTION

SECTION 01310  
PROJECT MEETING

PART 1 GENERAL

1.01 PRECONSTRUCTION MEETING

- A. The Contractor shall attend a preconstruction meeting at Sacramento Project Headquarters as scheduled by the Engineer within 5 days from the date of receipt of notice to begin work.
- B. Agenda: The meeting agenda will include, but not be limited to, the following:
  - 1. Construction schedules.
  - 2. Submittal schedules.
  - 3. Certified small business/micro business participation.
  - 4. Discussion of specification requirements.
  - 5. Environmental protection.
  - 6. Progress pay estimates.
  - 7. Inspectors.
  - 8. Quality control/quality assurance plan.
  - 9. Safety.
  - 10. Listing of subcontractors and suppliers.
  - 11. Addressing of letters.
  - 12. Weekly progress meetings.

1.02 RELATED SECTIONS

- A. Supplementary General Conditions, General Conditions, other Division 1 sections, and Drawings apply to this section.

### 1.03 WEEKLY PROGRESS MEETINGS

- A. Weekly progress meetings will be held with the Contractor by one or more of the following as determined by the Engineer:
1. Via teleconference.
  2. At the work site.
  3. At the Sacramento Project Headquarters.

### PART 2 PRODUCTS

Not Used

### PART 3 EXECUTION

Not Used

### PART 4 PAYMENT

#### 4.01 PAYMENT

- A. The contract prices shall include full compensation for all costs incurred under this section.

END OF SECTION

SECTION 01321

CONTRACTOR'S SCHEDULE

PART 1 GENERAL

1.01 CONTRACTOR'S SCHEDULE

- A. Related Sections: Supplementary General Conditions, General Conditions, other Division 1 sections, and Drawings apply to this section.
- B. The Contractor shall submit to the Engineer a schedule for orderly completion of the project. The schedule shall show the Contractor's planned sequence of operations and dates for commencement of salient features of the work.
- C. Time of Completion: Contractor's time of completion shall adhere to the time of completion specified in Section 01110 – Summary of Work, Paragraphs 1.04 and 1.05, unless revised as provided in Document 00705 – Prosecution of Work, Paragraph 3.A. Any such revisions will be formalized by change order.
- D. Detailed Schedule:
  - 1. The Contractor shall submit to the Engineer a Detailed Schedule.
    - a. The Detailed Schedule shall be orderly, realistic and comprehensive and shall show:
      - 1) On-site activities.
      - 2) Working drawings, data, and samples as activities, showing submittal and review.
      - 3) The sequences for performing the work, including the logical link between work activities.
      - 4) Mobilization of equipment.
      - 5) Specified project phasing, milestones, and completion dates.
      - 6) Testing, inspection, hold-points, and notice to the Department for Department-related work.

2. At the time the schedule is submitted, the Contractor shall submit an estimate of earnings by months.
3. The Contractor shall submit to the Engineer a monthly updated Detailed Schedule on a day of the month as determined by the Engineer.
4. Upon Engineer's acceptance of the first Detailed Schedule, it will become the Baseline Schedule for the project. Such acceptance will be based upon the schedule's compliance with the contract requirements.
5. If there are significant changes, as determined by the Engineer, the Contractor shall revise the Detailed Schedule and submit it to the Engineer within 5 days.
6. Each updated Detailed Schedule shall reflect the status of the work for the previous month showing:
  - a. Actual start dates.
  - b. Actual Finish Date.
  - c. Estimated duration and finish date for activities in progress.
  - d. Physical percent complete for activities in progress.
  - e. Nonworking days if granted by the Engineer.
  - f. Changes to the original Detailed Schedule (Baseline) caused by change orders or any other changed conditions.
  - g. The current critical path.
7. Acceptance of the Detailed Schedule or any updates by the Engineer does not relieve the Contractor of responsibility for scheduling, sequencing, and prosecuting the work to comply with the requirements of the contract.
8. The Engineer reserves the right to require that the Contractor adjust, revise, or clarify any portion of the schedule which may later be discovered to be insufficient for monitoring of the work.
9. Submittal of the Detailed Schedule and subsequent updated Detailed Schedules will be the Contractor's representation that the submitted schedule meets all of the requirements of the contract and that work will be executed in the sequence indicated on the submitted schedule.

10. The Detailed Schedule and each revision thereof shall conform to the requirements in Paragraphs 1.01 F and 1.01 G, Schedule Deliverables and Schedule General Requirements, and Section 01330 – Submittals, Paragraph 1.01.
11. Each change of the schedule in logic, work sequence, and activity duration must be documented in detail and justified and be part of the submittal. The Contractor shall provide a report showing all the changes between the previous Detailed Schedule update and the current Detailed Schedule update.
12. As part of the updated Detailed Schedule, the Contractor must prepare a Schedule Progress Narrative. The narrative shall describe the physical progress during the report period, the current critical path, any changes in the critical path since the previous month, Contractor's plans for continuing the work during the forthcoming report period, and actions planned to correct work that is behind schedule. The narrative shall also provide a discussion of potential delays and problems and their impact on performance and the overall project completion date.

E. Weekly Two Week Look-Ahead Schedule:

1. Each week the Contractor shall update the Detailed Schedule and submit a two week look-ahead schedule two days prior to the weekly progress meeting. Look-ahead schedules shall be the same format and extracted from the latest updated Detailed Schedule.
2. Look-ahead schedules shall include activities in progress and activities that are scheduled to start during the indicated two weeks.

F. Schedule Deliverables:

1. The following shall be delivered with the Detailed Schedule and monthly updated Detailed Schedules:
  - a. Computer files of the schedule which shall be submitted on CD-ROM as required in Paragraph 1.01 G.1.
  - b. Schedule Narrative or Schedule Progress Narrative as described in Paragraph 1.01 G.2 and Paragraph 1.01 D.9.
  - c. Hard copy Gantt chart report ("D" size, 22 inch by 36 inch) sorted by activity identifier showing activity description, early and late start/finish, original duration, remaining duration, float, predecessors/successors, and calendar ID, or as directed by the Engineer. The Gantt chart report should also show a title

block containing the schedule title, project description, contract number, data date, and the computer file name of the schedule.

G. Schedule General Requirements:

1. The Detailed Schedules shall conform to industry standard Critical Path Method (CPM) scheduling in precedence diagram format utilizing Microsoft Project 2007, or Primavera P6 Release 7 or later. Schedule submittals with negative float will be rejected.
2. The Contractor must submit a Schedule Narrative as part of the schedule submittal explaining the general approach to the schedule preparation. The narrative shall include: general work plan, work breakdown structure, activity coding structure, construction phases, subcontractors, work hours, holidays, and nonworking days.
3. Errors or omissions in the schedule including failure of the schedule to include any element of the work shall not relieve the Contractor from responsibility for accomplishing the work in accordance with the contract requirements.
4. The project calendar shall be a normal workweek that excludes weekends and national and union observed holidays. Special calendars for overtime, additional shifts, or access restrictions may also be defined at the Contractor's option. All calendars shall be project specific (not global), and the calendar name shall begin with the project specification number.
5. No constraints shall be allowed on activities other than those specified in Section 01110 – Summary of Work, Paragraph 1.04. "Finish On or Before" constraints shall be used for completion milestones. All completion milestones must be shown at the end of the string of activities leading to the milestones.
6. All activities shall have a minimum of one predecessor and one successor, except for the notice to begin work and project completion milestones.
7. The critical path is defined as those activities with total float less than or equal to zero.
8. Each activity shall include a description of the work, work location, calendar ID, and responsibility code to identify who will perform the work.

## 1.02 SCHEDULE REVISION AND RECOVERY SCHEDULE

- A. Contractor shall not submit monthly updated schedule projecting a delay of more than five working days considering all granted time extensions. The Contractor shall submit a revised schedule or Recovery Schedule showing a detailed and realistic plan to complete the project on time. The approval process, contents, and deliverables shall be the same as for the Detailed Schedule.

## 1.03 TIME IMPACT EVALUATION AND TIME EXTENSION

- A. Any written documentation or analysis submitted in accordance with Document 00705 – Prosecution of Work, Paragraph 4.A shall include a Time Impact Evaluation (TIE) which includes both a written narrative and a schedule diagram (fragnet) depicting how the changed work or delay affects the critical path. An electronic copy of the schedule in the required format, including a layout to illustrate the fragnet, shall be provided with the TIE.
- B. The TIE must use the accepted schedule that has a data date closest to and before the date the delay occurred. If the Engineer determines that the accepted schedule used does not appropriately represent the conditions before the delay, the accepted schedule must be updated to the day before the delay being analyzed.
- C. If the Contractor does not submit a time extension request along with a TIE for any occurrence, the Contractor will waive all rights for a time extension for that occurrence.
- D. The Department will not be liable to the Contractor for any constructive acceleration or other impacts from failure to grant time extensions if caused in whole or in part by the failure of the Contractor to comply with the submission requirements for time extension requests.

## PART 2 PRODUCTS

Not Used

## PART 3 EXECUTION

Not Used

PART 4 PAYMENT

4.01 PAYMENT

- A. The contract prices shall include full compensation for all costs incurred under this section.

END OF SECTION

SECTION 01330

SUBMITTALS

PART 1 GENERAL

1.01 SUBMITTAL REQUIREMENTS

A. Description:

1. This section covers the submittal requirements. The Contractor shall provide submittals as described in this section. The types of submittals are listed in the Submittal Register in Paragraph 3.01.
2. Supplementary General Conditions, General Conditions, other Division 1 sections, and Drawings apply to this section.

B. General:

1. Pursuant to Document 00704 – Contractual Relationship of Parties, Paragraph 2, and Document 00706 – Control of Work, Paragraph 4, the Contractor shall furnish submittals as are required for control of the work.
2. Neither the review nor lack of review of submittals shall waive the requirements of the contract or relieve the Contractor of any obligations thereunder.
3. The Contractor shall check, correct, and sign submittals prior to submission, whether they are prepared by the Contractor or others.

C. Identification of Submittals:

1. Submittals shall be plainly identified by the Department file number, the Contractor's name, contract number, project name and location, specification number, and description and location of applicable portions of the project.
2. The features shall be referenced to the specification number, bid item numbers and contract drawing number.
3. Resubmittals shall also include the Department file number, modified to distinguish revision number.

D. Time of Submission:

1. The Contractor shall furnish submittals as specified and in such manner and sequence that they may be inspected in an orderly manner prior to performance of the work.
2. The Contractor shall submit all related information necessary for such inspection.

E. Method of Transmittal:

1. Submittals shall be sent to the Engineer by certified mail or by approved delivery service.
2. The Engineer will return submittals by certified mail or by delivery service.

F. Definition of Received and Returned:

1. Submittals and resubmittals will be considered received by the Engineer on the date the Department receives them by mail or delivery service.
2. Submittals will be considered returned to the Contractor on the date the Engineer mails or dispatches them to the Contractor.
3. Submittals will be considered received by the Contractor on the date the Contractor receives them by mail or delivery service.

1.02 CERTIFIED SMALL BUSINESS/MICRO BUSINESS (SB/MB) PARTICIPATION

- A. It is the Department's intent to promote the participation of certified Small Business/Micro Business (SB/MB) enterprises in construction projects and to achieve the Department's SB/MB Enterprises goal of 25 percent.
- B. Information that pertains to work expected to be done by certified SB/MB subcontractors or suppliers will be required from the awarded Contractor only. This information is not required as part of the bid package.
- C. The information shall be submitted within 2 days from the date of receipt of the notice to begin work. The information includes the following:
  1. Where applicable, the Contractor shall include all certified SB/MB subcontractors or suppliers that contribute to contract performance

and may include proportionate share of products and services that are normally allocated as indirect costs.

2. Names and addresses of the certified SB/MB subcontractors or suppliers.
  3. The amounts estimated to be paid to the certified SB/MB subcontractors or suppliers.
  4. Description of the work to be done by the certified SB/MB subcontractors or suppliers.
- D. The information provided is intended to be a best estimate of certified SB/MB participation for the contract. Submittal of this information will not obligate Contractor to provide these amounts or percentages to certified SB/MB Businesses except as would otherwise be required by law.
- E. The Contractor, upon completion of work, shall report to the Department the actual percentage of Small Business/Micro Business (SB/MB) participation that was achieved.
- F. Submit the information to:

Department of Water Resources  
PO Box 942836-0001  
Sacramento, California 94236-0001  
Attention: Contract Coordinator  
1416 Ninth Street, Room 418  
Sacramento, California 95814

### 1.03 INJURY AND ILLNESS PREVENTION PROGRAM

- A. Injury and Illness Prevention Program: Pursuant to Document 00703 – Applicable Laws and Regulations, Paragraph 9, and Document 00706 – Control of Work, Paragraph 4:
1. The Contractor shall prepare, submit to the Engineer, and disseminate among those performing work at the work site a written program for injury and illness prevention. The Engineer will review the program for safety of the Department employees and the public, and the Contractor shall promptly revise the program to correct defects noted.
  2. Within the specified period and periodically thereafter the Contractor shall meet with the Engineer to review injury and illness prevention practices at the work site, as they affect the Department employees and the public. Promptly after each meeting, revisions

of the injury and illness prevention program shall be prepared, submitted and disseminated, as specified for the original program.

B. Accident Reports:

1. The Contractor shall submit to the Engineer on Department furnished forms, reports of injury and illness incidental to work at the work site which result in death, injury, damage to property, or cases of occupational disease.
2. Reports will be considered confidential to the extent permitted by law and will be used solely to develop information for use in prevention of future injury and illness.

C. Summary Report:

1. The Contractor shall submit to the Engineer as of the 20th of each month on Department furnished forms, a summary report showing:
  - a. The number of employees,
  - b. Employee-hours of work exposure,
  - c. Number of lost-time injuries,
  - d. And number of days lost.

1.04 WORKING DATA

A. General:

1. Each submittal of data in the form of reproducible prints and optional electronic media shall be accompanied by a letter containing a list of titles and numbers of the data submitted as specified in Paragraph 1.01 C, Identification of Submittals. A title shall be included on each working data sheet identifying the feature or features shown on the data sheet.
2. Data:
  - a. Data on materials and equipment may include, without limitation, materials and equipment lists, parts list, instruction sheets, catalog data sheets, performance curves, diagrams, samples and similar descriptive material. Data on materials and equipment shall contain the name and location of the supplier or manufacturer, telephone number, trade name, catalog reference, model number and all other pertinent data.

3. The Contractor shall submit:
  - a. Two legible transparent reproducible prints and
  - b. Six legible copies of data.

B. Inspection and Revision:

1. The Engineer will inspect and return working data within 2 days after receipt thereof, or within 2 days after receipt of all related information necessary for such inspection, whichever is later. Two copies of data will be returned, marked "NO APPARENT DEFECTS", "DEFECTS NOTED", "DEFECTS NOTED, RESUBMITTAL WAIVED", or "REJECTED". Defects discovered on inspection will be indicated on the data, or otherwise communicated to the Contractor in writing.
2. Data designated "REJECTED" or "DEFECTS NOTED" shall be revised or corrected and resubmitted in its entirety to the Engineer within 2 days after its receipt by the Contractor, unless revision or correction is waived by the Engineer. Resubmittal of just the corrections and not the entire submittal will not be accepted unless directed.
  - a. Such resubmittals will be reinspected and returned in the same manner as original data within 2 days after receipt thereof, or within 2 days after receipt of all related information necessary for such reinspection, whichever is later.
  - b. Any revised data designated "DEFECTS NOTED" or "REJECTED" and any corrected sample so designated shall be further reinspected or corrected in accordance with the foregoing procedures.
3. The Contractor may proceed with any work covered by a working data designated "NO APPARENT DEFECTS" or "DEFECTS NOTED, RESUBMITTAL WAIVED" provided the Contractor complies with the comments noted. The Contractor may also proceed with the unaffected portions of the work covered by a working data designated "DEFECTS NOTED"; and, if resubmittal is expressly waived in writing, may proceed with any work covered by such working data, provided that the Contractor proceeds in accordance with the Engineer's notes and comments.
4. The Contractor shall not begin any work covered by a working data designated "REJECTED", or any portion of work noted as defective on a working data designated "DEFECTS NOTED" if resubmittal is not expressly waived in writing.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 SUBMITTAL REGISTER

- A. The Contractor shall coordinate the Submittal Register with the requirements of the specification, and the listing of the submittals in the Submittal Register shall not relieve the Contractor from providing additional submittals specified.

SUBMITTAL REGISTER

SPEC PARA. NO.	DESCRIPTION OF SUBMITTAL	TYPE OF SUBMITTAL							CONTRACTOR SCHEDULED DATES	REMARKS
		WORKING DRAWINGS	SAMPLE	MFR'S DATA CERT.	TEST REPORT	OTHER AS SPECIFIED	SUBMIT BY No. of days			
	00206 – INSTRUCTIONS FOR DVBE GOAL AND INCENTIVE									
6	DVBE Monitoring and Reporting						X			
Doc. 00206-1	DVBE Quarterly and Final Report						X	Quarterly and after completion (prior to acceptance)		
Doc. 00206-2	Certification of DVBE Participation Upon Contract Acceptance						X	Upon acceptance of the contract		
Doc. 00206-3	DVBE Percentage Achieved and Certification of Total Payment to Prime Contractor						X	After receipt of final contract payment		
	01321 – CONTRACTOR'S SCHEDULE									
1.01 D	Detailed Schedule						X	5		
	01330 – SUBMITTALS									
1.02	Certified Small Business/Micro Business (SB/MB) Participation						X	5		
1.02 E	SB/MB Participation							At completion		
	01570 – ENVIRONMENTAL PROTECTION									
1.04	Submittals	X					X	5	Air Quality Control Plan Water Quality Control Plan Storm Water Pollution Prevention Plan Fire Prevention and Control Plan Traffic Control Plan Noise Control Plan Testing Plan	
	01640 – DEPARTMENT FURNISHED EQUIPMENT AND MATERIALS									
1.04	Submittals						X		Inspection reports	
	02205 – MOBILIZATION AND DEMOBILIZATION									
1.04	Submittals						X	5		

SUBMITTAL REGISTER

SPEC PARA. NO.	DESCRIPTION OF SUBMITTAL	TYPE OF SUBMITTAL							CONTRACTOR SCHEDULED DATES	REMARKS
		WORKING DRAWINGS	SAMPLE	MFR'S DATA CERT.	TEST REPORT	OTHER AS SPECIFIED	SUBMIT BY No. of days			
	02300 – EARTHWORK									
1.04	Submittals						X	5		
	02360 – SHEET PILES									
1.04	Submittals									
	02370 – ROCK BARRIERS									
1.04	Submittals				X		X	5	Rock source, certification, placement plans	
	02380 – INSTALL DEPARTMENT FURNISHED EQUIPMENT AND MATERIALS									
1.04	Submittals							5		
	02455 – KING PIPE PILES									
1.04	Submittals				X		X	5		
	02720 – AGGREGATE BASE									
1.04	Submittals							5		
	02820 – CHAIN LINK FENCE AND GATES									
1.04	Submittals	X		X	X			5		
	05500 – MISCELLANEOUS METAL									
1.04	Submittals	X						5		

PART 4 PAYMENT

4.01 PAYMENT

- A. The contract prices shall include full compensation for all costs incurred under this section.

END OF SECTION

SECTION 01570

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.01 DESCRIPTION

- A. This section describes the requirements for the conservation and protection of environmental resources at the work site during and as the result of construction activities, except as otherwise specified. State and federal environmental statutes, rules, regulations, and policies have been enacted to protect environmental resources by ensuring that significant environmental impacts of projects are identified and adequate mitigation measures are incorporated into the project. Environmental protection affects several resources areas, including biological resources, hydrology and water quality. Potential impacts may occur through the generation of dust emissions, discharges of pollutants, disturbances to terrestrial and aquatic areas, additional traffic, and degradation of resources. Construction activities shall be in accordance with environmental and regulatory permits issued for the project, and the Contractor may be held responsible for any violations as prescribed by law.
- B. The Department is required by the regulatory agencies to suspend work and recertify the Contractor's employees if there are environmental noncompliance infractions. If the Contractor's actions cause infractions, then the Engineer may suspend work. Contractor's personnel failing or refusing to carry out requirements of this section in the opinion of the Engineer shall be removed from the work site if ordered.
- C. Responsible for the sequence and control of construction activities, selection and maintenance of equipment, and the conduct of the Contractor's employees at the work site to ensure that specific mitigation measures to reduce or eliminate identified environmental impacts are implemented.
- D. Minimize construction activities causing disturbances to vegetation or wildlife. Construction activities may be restricted in various ways that include, but are not limited to, the environmental protection and/or mitigation measures specified.

1.02 RELATED SECTIONS

- A. Supplementary General Conditions, General Conditions, other Division 1 sections, and Drawings apply to this section.

### 1.03 DEFINITIONS AND ENVIRONMENTAL DOCUMENTS

- A. CEQA – California Environmental Quality Act. Notice of Exemption.
- B. Lake and Streambed Alteration Agreement – California Department of Fish and Wildlife.
- C. Clean Water Act, Section 401 – Regional Water Quality Control Board, Water Quality Certification.
- D. Clean Water Act, Section 404 – Corps Regulatory Permit.
- E. Clean Water Act Section 402, NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, also known as the State Water Resources Control Board Order No. 2009-0009-DWQ, Construction General Permit (CGP).
- F. California Stormwater Quality Association (CASQA) – 2009 Construction BMP Handbook and SWPPP Preparation Manuals. Caltrans Storm Water Quality Handbooks – Construction Site Best Management Practices (BMPs) Manual, 2003.
- G. Caltrans Storm Water Quality Handbooks – SWPPP/WPCP Preparation Manual, 2007.

### 1.04 SUBMITTALS

- A. Develop and submit detailed plans for implementing the permits obtained by the Department and requirements of this section. The plans shall include but not be limited to the following:
  - 1. Name of Contractor's supervisor responsible for implementing the plans.
  - 2. Working drawings and data for implementing the requirements of the plan.
  - 3. Air Quality Control Plan.
  - 4. Water Quality Control Plan and a Storm Water Pollution Prevention Plan (SWPPP).
  - 5. Fire Prevention and Control Plan.
  - 6. Traffic Control Plan.
  - 7. Construction Debris Recycling and Diversion Plan.

- B. Submit the above plans including data in accordance with the requirements specified in Section 01330 – Submittals.
- C. Copies of all of the above plans shall be maintained at the work site throughout the construction period.

#### 1.05 DELIVERY, STORAGE, AND HANDLING OF HAZARDOUS MATERIALS

##### A. Construction Sites and Equipment:

1. The storage, transportation, transfer, containment, and disposal of hazardous materials, such as fuel, oil, and lubricants, have potential to impact water quality and contaminate soil. Fuel, oil and other petroleum products shall be stored only at designated sites. The use of hazardous materials shall be avoided or minimized where possible. Each hazardous material containment container shall be clearly labeled with its identity, handling and safety instructions, and emergency contact. Similar information shall be clearly available and visible in the storage areas. Storage and transfer of such materials shall not be allowed within 100 feet of streams or sites known to contain sensitive biological resources except with the permission of California Department of Fish and Game. Storage or use of hazardous materials in or near wet or dry streams shall be consistent with the Fish and Game Code and other State laws. Material Safety Data Sheets (MSDS) shall be made readily available to the Contractor's employees and other personnel at the work site. The accumulation and temporary storage of hazardous wastes shall not exceed 90 days. Soils contaminated by spills or cleaning wastes shall be contained and shall be removed to an approved disposal site. Disposal of hazardous wastes shall be in compliance with all applicable laws and regulations.
2. Petroleum drippings on equipment have potential to result in water pollution and contaminate soil during construction. Maintain construction equipment to minimize petroleum drippings. Stationary power equipment such as engines, pumps, generators, welders, and air compressors shall be positioned over drip pans. Equipment shall be checked and maintained daily to keep the equipment exteriors clean.
3. Petroleum products shall be stored in nonleaking containers at impervious storage sites from which runoff is not permitted to escape.
4. Personnel stationed at or near these sites shall be trained in emergency response and spill containment techniques. An ample

supply of absorbent pads, pillows, socks, booms, and other spill containment materials shall be maintained at the hazardous materials storage sites for use in the event of spills. Contaminated absorbent pads, pillows, socks, booms, and other spill containment materials shall be placed in nonleaking sealed containers until transport to an appropriate disposal facility. The Contractor shall furnish to the Engineer a contact person and telephone number for a company experienced in emergency response for vacuuming and containing spills of oil or other petroleum products. Contractor shall notify the Engineer immediately of an oil spill.

5. Fuel may be transferred from the storage areas to construction equipment by tanker trucks. Fuel transfers shall take place at least 100 feet from exclusion zones, drainages, and streams.
6. Fuel transfer vehicles shall have absorbent pads, pillows, socks, booms or other spill containment materials placed under the fueling operation (between the fuel truck and the equipment being serviced). A trained service attendant shall monitor the filling of equipment and shall stop the fuel flow immediately if any spill occurs. Fuel transfer shall not resume until the problem is resolved to the satisfaction of the Engineer. The service attendant shall be trained in emergency response, fire extinguisher use, and spill containment techniques.
7. No storage or use of hazardous materials or other construction activities in or near streams or wetlands.
8. When transferring oil or other hazardous materials from trucks to storage containers, absorbent pads, pillows, socks, booms or other spill containment material shall be placed under the transfer area.

#### 1.06 BIOLOGICAL RESOURCES (PLANTS AND ANIMALS)

- A. The construction activities have potential for affecting the biological resources by physical destruction, disturbance, and displacement.
- B. Listed or sensitive species known or suspected to occur on or very near portions of the project include nesting birds, salmon and steelhead trout species, western pond turtles, and rare plants.
- C. A Department-approved biological monitor will be made available if necessary to rescue and/or relocate State and federally listed species encountered during construction activities.
- D. Wildlife will be given an opportunity to escape during construction activities or a biological monitor will rescue and relocate wildlife if needed.

- E. Every attempt will be made by the Contractor and the Contractor's employees (including subcontractors) to avoid harming wildlife within the construction site.
- F. In the event wildlife is harmed or killed a Department-approved biological monitor will be informed of the incident and will be allowed to collect the specimen and all pertinent information associated with the incident.
- G. If the specimen is a State or federally listed species the appropriate agency will be informed.

#### 1.07 ENVIRONMENTAL TRAINING SESSION

- A. Prior to beginning work, the Department will conduct a worker education program for the Contractor and the Contractor's employees (including subcontractors) who will be at the work site during construction activities. The program will be given near the work site. Construction inspectors as well as supervisors and employees of contracting and subcontracting companies are required to attend the course. The program will consist of a briefing session and written materials both of which will be developed by biologists familiar with biological resources at the work site, particularly sensitive species.
- B. The training meeting will include but not be limited to the following topics:
  - 1. Biological resources at the work site particularly sensitive species and locations of exclusion zones established for their protection.
  - 2. No disking work site areas, even for fire protection, without prior approval.
  - 3. No pets, camping, fishing, firearms, or any other use of the work site area will be allowed. Harassment, killing, or destruction of dens or burrows of wildlife species is strictly prohibited. Contractor's employees shall not be allowed at the work site during nonworking hours. Security shall be allowed during nonworking hours.
  - 4. Food-related trash, such as wrappers, cans, bottles and scraps, shall be placed in closed containers and removed daily from the work sites. Trash or garbage shall be removed to a county approved disposal site at least weekly by the Contractor. The work sites shall be policed daily by Contractor's personnel and monitored by inspectors or environmental personnel.

5. Vehicles and equipment use shall be restricted to existing roads to the maximum extent possible. Off-road work areas shall be inspected and approved by the Engineer prior to use. No off-road driving or parking shall be allowed in areas not previously approved by the Engineer.
6. Construction-related vehicles shall not exceed 20 mph on straight and level roads, with a 10 mph speed limit in areas of steepness or with curves.
7. Follow-up meetings will be scheduled as needed.

#### 1.08 CULTURAL RESOURCES

- A. The construction activities have potential for affecting cultural resources such as historically significant resources, local land uses, commercial establishments, or the activities of local landowners, residents, or recreationalists.
- B. Reduce potential adverse impacts to cultural resources that may be associated with construction by implementing the preservation of culturally significant resources in accordance with the National Historic Preservation Act of 1966, (16 U.S.C.470).
- C. If any potential paleontological, archaeological or historic sites are uncovered, the Engineer will be notified prior to proceeding with the work affected. If necessary the Engineer will suspend work as specified in Document 00705 – Prosecution of Work, Paragraph 7, Suspension of Work. The Engineer will provide for an initial field evaluation of the site within seventy-two (72) hours after receiving notification of Contractor's discovery.
- D. If human remains are exposed, all construction activities shall be halted in the immediate vicinity until the County Coroner has assessed the remains.

#### 1.09 AIR QUALITY CONTROL PLAN

- A. The construction activities have potential for resulting in localized, fugitive dust and combustion emissions from construction equipment, and trucks for hauling. Excessive emissions from equipment used for construction, transportation of personnel and materials to the work site, portable pumps and generators, etc., have potential to increase atmospheric greenhouse gases (GHG) and adversely affect climate change.
- B. Reduce these effects by submitting and implementing an Air Quality Control Plan. Generally evaluate project characteristics to determine if

specific equipment, procedures, or material requirements are feasible and efficacious for reducing GHG emissions from the project. Also, the following components shall be included in the plan.

- C. Fugitive dust shall be minimized by watering, applying chemical suppressant, or implementing other dust control measures as approved. Increased application of control measures shall be required whenever conditions cause fugitive dust. The Contractor shall control fugitive dust by:
1. Minimizing areas cleared to facilitate dismantling and removal, such as storage areas, staging areas, stockpile areas and vehicle parking.
  2. Limiting construction vehicle speeds on dirt roads to no greater than 20 miles per hour.
  3. Covering haul vehicles or complying with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.
  4. Installing wheel washers or other similar methods where vehicles exit the construction site onto paved roads.
- D. The Contractor shall control other air pollutant emissions by:
1. Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high-efficiency technologies are appropriate and feasible for the project or specific elements of the project.
  2. Prohibiting trucks and construction vehicles from idling in excess of 5 minutes when not in use.
  3. Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an Air Quality Control Plan prior to commencement of construction.
  4. Implement a tire-inflation program on the work site to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site

weekly for correct tire inflation. Procedures for the tire-inflation program shall be documented in an Air Quality Management Plan prior to commencement of construction.

5. When materials are handled, loaded, unloaded, or transported on the work site, the work shall be performed by equipment using on-road rated engines to the extent feasible. On-road rated engines shall be equipped with the most recent engine pollution control equipment required by the California Air Resources Board (CARB).
6. Schedule material transportation over public roadways during off-peak hours when possible. Off-peak hours shall be evaluated for each location and for the roadways intended for use. Such evaluation shall be included in the Traffic Control Plan.
7. Limit deliveries of materials and equipment to off-peak traffic congestion hours to the extent feasible.
8. For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty Class 7 or Class 8 semi-truck or 53-foot or longer box type trailer is used for hauling, a SmartWay<sup>2</sup> certified truck will be used to the maximum extent feasible.
9. Develop a project-specific construction debris recycling and diversion program to achieve a documented 50 percent diversion of construction waste.
10. Develop a project-specific ride-share program to encourage carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.
11. Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible.
12. Reduce electricity use in temporary construction offices by using high-efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business when possible.
13. Using only coatings and solvents in the proposed project that are consistent with Air Quality Management District rules and all other applicable laws and regulations.

### 1.10 WATER QUALITY CONTROL PLAN AND SWPPP

- A. The construction activities have potential for resulting in localized, short-term impacts to water quality due to fuel or oil leaks or spills at fuel or oil transfer areas, erosion and runoff.
- B. The Contractor shall prepare a general Water Quality Control Plan indicating intent to follow all provisions for water quality protection of the Clean Water Act Section 401, 402, and 404 permits obtained by the Department for the project. Some, but not all, of the provisions in these permits are:
  - 1. Settleable solids, oils, grease, concrete wash water, excess concrete and grout shall be contained to prevent their release into the environment. Flocculents may be used on solids that do not readily settle, as long as they do not degrade water quality.
  - 2. Use Best Management Practices (BMPs) for on-site erosion control and sediment capture during construction. BMPs described by Caltrans Storm Water Quality Handbooks, Construction Site Best Management Practices Manual dated March 2003 are generally acceptable to the Department.
  - 3. Minimize erosion during stormy weather at the work site by using BMPs.
  - 4. Use BMPs for post construction erosion control, such as seeding.
  - 5. Areas of disturbance with slopes toward a stream or drainage shall be stabilized to reduce erosion potential.
  - 6. Exposed areas shall be stabilized with temporary mulching, or other methods during and after land disturbance activities to control erosion.
  - 7. Construction activities are allowed in dry stream channels and drainages. Construction activities shall not be conducted in stream channels or drainages during a rain event or in flowing or standing water.
  - 8. All waste water or wash water shall be clean before discharging into the environment.
  - 9. Spoil and spoil piles shall be graded to minimize water induced erosion from the piles and adjacent native soil material.
- C. The Department will designate a Legally Responsible Person and file a Notice of Intent as required by the SWRCB's Construction General

Permit (CGP). The Contractor shall also comply the CGP with as follows:

1. Submit a Storm Water Pollution Prevention Plan (SWPPP) prepared by a SWRCB-certified Qualified SWPPP Developer (QSD), in accordance with requirements of the CGP, as necessary to contain construction activity pollutants such as wastes, erosion, and sediments. This submittal must be approved by the Department prior to the start of construction. SWPPPs developed in accordance with the most recent CASQA Construction BMP Handbook or Caltrans Storm Water Quality Handbooks are generally acceptable and shall include provisions for implementing BMPs to contain and minimize construction activity storm water pollutants.
2. Provide the services of a SWRCB-certified Qualified SWPPP Practitioner (QSP), in accordance with requirements of the CGP, to make recommendations for implementation of BMPs, perform monitoring and water quality sampling, and prepare reports as required by the SWPPP and CGP. The QSP shall submit copies of all recommendations, sampling results, and reports to designated Department personnel.
3. In the event of a dispute between Contractor's QSD or QSP and Department personnel regarding SWPPP content or requirements for BMP implementation during construction, Contractor shall defer to the opinion of a SWRCB-certified QSD or QSP designated by the Department.

#### 1.11 FIRE PREVENTION AND CONTROL PLAN

- A. Prepare an emergency fire plan acceptable to the Engineer. The fire plan shall include emergency procedures to be followed, current emergency telephone numbers, and an area map. The following components, if applicable, shall be included in the plan, and if not applicable the Contractor shall explain in the plan why that component or a portion thereof is not included in the plan:
  1. Procedures and policies for controlling any fires that are on the work site, and other related fire prevention and control procedures developed in consultation with resource agencies and fire protection agencies.
  2. No fires will be allowed at the work site. Smoking will be allowed only in areas designated for smoking which shall be cleared of vegetation or in enclosed vehicles. Cigarette butts are to be

disposed of in car ashtrays or other approved disposal containers and dumped daily in a proper receptacle off the work site.

3. The Contractor shall be responsible for maintaining appropriate fire suppression equipment at the work site including an all-wheel drive water truck or fire truck with a water tank of at least 3,000 gallon capacity. The truck's water tank shall be maintained full and shall not be used as a source of construction water without prior written approval by the Engineer. Fire extinguishers, shovels and other fire fighting equipment shall be available at work sites and on construction equipment. Each vehicle on the right of way shall be equipped with a minimum 20-pound (or two 10-pound) fire extinguisher(s) and a minimum of 5 gallons of water in a fire fighting apparatus (e.g., bladder bag).
4. At the work site, a sealed fire toolbox shall be located at a point accessible in the event of fire. This fire toolbox shall contain: one back-pack pump-type extinguisher filled with water, two axes, two McLeod fire tools, and enough shovels so that each employee at the work site can be equipped to fight fire.
5. Gasoline powered construction equipment with catalytic converters shall be equipped with shielding or other acceptable fire prevention features. Internal combustion engines shall be equipped with spark arrestors.
6. Welding sites shall include fire prevention provisions.
7. Maintain contact with local fire fighting agencies throughout the fire season for update on fire conditions, and such fire conditions shall be communicated to the Contractor's employees and the Engineer daily.
8. Vehicles are restricted to the work site unless otherwise allowed for fire control procedures.
9. Disturbance to the terrestrial or aquatic environment through the use of heavy construction equipment shall be kept to a minimum. If a fire should start, the appropriate fire protection agencies responsible shall be contacted immediately. Hand crews, fire fighting water trucks or other fire control measures may be used as a first defense. Only as required, heavy construction equipment shall be utilized to contain the fire or protect a structure from damage.

## 1.12 TRAFFIC CONTROL PLAN

- A. Impacts of construction traffic may impact road use by the public because construction traffic will be entering public roadways. Prepare a traffic control plan in consultation with the Engineer and the Sutter County Public Works Department, and State transportation agencies. The Contractor shall minimize traffic impacts as much as possible as follows:
1. Measures to minimize traffic impacts where construction traffic will be entering and exiting public highways.
  2. Provide temporary gates and fences, barricades, traffic control signs and other temporary measures to prevent unauthorized public access to the work site.
  3. Provide traffic control signs where construction traffic uses public roads and highways.
  4. Provide traffic control signs for trail users (hikers, bikers, and horse riders) at the off-hour access points shown. The signs at these access points shall display that access is prohibited to the public during construction.
  5. Provide flag persons to assist in maintaining traffic flow and in preventing collisions during construction hours, especially along the steep and winding portions of the access roads, and in places where vehicles are traveling along a single-lane road in opposite directions.
  6. The traffic plan should provide a ride-share program. Employees should be encouraged to participate in the program and be provided incentives.
  7. The traffic plan shall provide parking plans denoting employee parking locations and work staging areas.
  8. Selected haul routes shall minimize noise impacts to residential neighborhoods and other sensitive receptors. Local planning jurisdictions shall be consulted in selection of haul routes.

### 1.13 NOISE ABATEMENT

- A. Construction activities have the potential for resulting in localized, short-term noise impacts from construction equipment. The Contractor shall implement measures to minimize noise and vibration impacts, including those described in the MMRP. These measures include, but are not limited to:
1. Performing preventive maintenance on equipment and devices to control, prevent and minimize noise.
  2. All equipment, fixed or mobile, shall be equipped with properly operating and maintained exhaust and intake mufflers, consistent with manufacturers' standards.
  3. Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used. External jackets on the tools themselves shall be used where feasible.
  4. Quieter procedures, such as use of drills rather than impact tools, shall be used whenever feasible.

### PART 2 PRODUCTS

Not Used

### PART 3 EXECUTION

Not Used

### PART 4 PAYMENT

#### 4.01 PAYMENT

- A. The contract prices shall include full compensation for all costs incurred under this section.

END OF SECTION

SECTION 01640

DEPARTMENT FURNISHED EQUIPMENT AND MATERIALS

PART 1 GENERAL

1.01 DESCRIPTION

- A. The Department will furnish the following equipment and materials:
1. Corrugated Metal Pipe (CMP) culverts, frames, and sluice gates.
  2. Boat docks with anchors.
  3. Articulated concrete mats.
  4. Warning signs, buoys, and lights.
  5. King pipe piles.
  6. Steel sheet piles.

1.02 RELATED SECTIONS

- A. Supplementary General Conditions, General Conditions, other Division 1 sections, and Drawings apply to this section. This section may require direct correlation with the following sections of the contract:
1. Section 02380 – Install Department Furnished Equipment and Materials.

1.03 PICKUP, STORAGE, AND HANDLING

- A. Pickup:
1. The Department will provide the Contractor 2 days' advance notice of exact date of availability of each item of Department furnished equipment and materials specified in this section.
  2. Contractor shall load, transport, offload and protect equipment from the point of pickup to points of installation in accordance with the referenced section.
  3. The Department furnished equipment and materials will be available for pickup by the Contractor at the Weber Street complex-warehouse. The complex is near the intersection of Interstate 5 and Highway 4 in Stockton. To access the site take Interstate 5 south from Sacramento and exit on the Highway 4 East. Then, turn

## Department Furnished Equipment and Materials

right on S. Fresno Avenue, then right on W. Washington Street, then turn left on West Weber Avenue. The warehouse is on the left on 1404 W. Weber Avenue.

4. The Contractor and Engineer shall perform a joint inspection and inventory of the condition of the equipment and materials at the time the Contractor takes delivery of the equipment and materials.

### B. Storage:

1. Pursuant to Document 00706 – Control of Work, materials and equipment shall be stored on blocking at a height sufficient to protect against damage. Materials and equipment stored outdoors shall be protected and in fenced enclosures.

### C. Handling:

1. The Contractor shall use lifting machines and equipment, slings, hoists, and other means as necessary to safely load, transport, and offload the Department furnished equipment. Department furnished equipment shall not be dragged, dropped, or skidded into position.
2. Equipment and materials shall be handled in accordance with the related sections. Pursuant to Document 00706 – Control of Work, Paragraph 8.C, the Contractor shall be responsible for such materials and equipment from the point of pickup to points of installation, until acceptance of the installation by the Department.

## 1.04 SUBMITTALS

### A. Submit the following:

1. After pickup, submit inspection, inventory and receiving records of the condition of the equipment and materials at time of pickup.

## PART 2 PRODUCTS

Not Used

## PART 3 EXECUTION

Not Used

PART 4 PAYMENT

4.01 PAYMENT

- A. The contract prices shall include full compensation for all costs incurred under this section.

END OF SECTION

## SECTION 02205

### MOBILIZATION AND DEMOBILIZATION

#### PART 1 GENERAL

##### 1.01 DESCRIPTION

- A. This section covers the contract item Mobilization and Demobilization.

##### 1.02 RELATED SECTIONS

- A. Supplementary General Conditions, General Conditions, Division 1 sections, and Drawings apply to this section.

##### 1.03 DEFINITIONS

- A. Mobilization and Demobilization: The contract item Mobilization and Demobilization includes:
  - 1. Transporting to the work site and setting up the equipment required for the performance of the work.
  - 2. Removing from the work site, the equipment mobilized in Paragraph 1.03 A.1.
- B. The contract item Mobilization and Demobilization does not include:
  - 1. Staff support vehicles, service trucks, fuel trucks, and transport trucks.

##### 1.04 SUBMITTALS

- A. Submit a list of equipment to be included in the mobilization and demobilization process as specified Section 01330 – Submittals.

#### PART 2 PRODUCTS

Not Used

## PART 3 EXECUTION

### 3.01 MOBILIZATION AND DEMOBILIZATION

- A. Notify the Engineer 2 days prior to mobilization or demobilization for the project.
- B. The equipment shall be complete with accessories and support materials. The equipment shall be completely functional and in good working order.
- C. The mobilization portion of the contract item will be 80 percent of the total item for the purposes of payment calculation.
- D. The demobilization portion of the contract item will not be paid until the contract work has been completed and equipment has been removed from the work site. The demobilization portion of the contract item will be 20 percent of the total item for the purposes of payment calculation.

## PART 4 PAYMENT

### 4.01 PAYMENT

- A. The contract price will be paid for MOBILIZATION AND DEMOBILIZATION; which price shall include full compensation for all costs incurred under this contract.

END OF SECTION

SECTION 02300

EARTHWORK

PART 1 GENERAL

1.01 DESCRIPTION

- A. This section covers the contract item Road Repair at West False River.
- B. This contract item applies where it is necessary to excavate a trench in the existing roadway at West False River to allow the sheet piling to be driven in the roadway. This contract item includes:
  - 1. Excavating a trench in the roadway, transporting and stockpiling the material for use as roadway base to reconstruct the roadway. The materials may be windrowed adjacent to the trench as approved. The trench shall be deep enough to allow the sheet piling to be cut off one foot below finished grade as shown.
  - 2. After the sheet piling has been driven and cut off the Contractor shall transport the materials from the stockpile location back to the roadway location to prepare to reconstruct the roadway.
  - 3. The materials shall be spread and compacted to form a reconstructed roadway base.
- C. After the trench has been backfilled to form a reconstructed base aggregate base may be spread to form a new roadway surface conforming to Section 02720 – Aggregate Base.
- D. This section also covers the earthwork testing requirements and the test procedures for the earthwork materials to be incorporated in the work. Engineer shall conduct quality assurance testing described in this section to verify the finished products comply with the plans and specifications.

1.02 RELATED SECTIONS

- A. Supplementary General Conditions, General Conditions, Division 1 sections, and Drawings apply to this section. This section may require direct correlation with the following sections of the contract:
  - 1. Section 02360 – Sheet Piles.
  - 2. Section 02720 – Aggregate Base.

## 1.03 REFERENCES

- A. The following publications form a part of this specification to the extent referenced. Application of these publications shall conform to Document 00702 – Interpretation of the Contract, Paragraph 2:
1. American Society for Testing and Materials (ASTM):
    - a. ASTM D 422 – Standard Test Method for Particle-Size Analysis of Soils.
    - b. ASTM D 698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
    - c. ASTM D 1556 – Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
    - d. ASTM D 1557 – Standard Test Method for Laboratory Compacting Characteristics of Soil Using Modified Effort.
    - e. ASTM D 2216 – Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.
    - f. ASTM D 2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
    - g. ASTM D 4253 – Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
    - h. ASTM D 4318 – Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
    - i. ASTM D 4643 – Standard Test Method for Determination of Water (Moisture) Content of Soil by the Microwave Oven Method.
    - j. ASTM D 5080 – Standard Test Method for Rapid Determination of Percent Compaction.
    - k. ASTM D 6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

#### 1.04 SUBMITTALS

- A. Submit the following:
  - 1. Compaction equipment specifications.
  - 2. Excavation and placement methods.

#### 1.05 DEFINITIONS

- A. Percent compaction is the ratio, expressed as a percent, of the field dry density to the maximum dry density, as determined by the appropriate method.
- B. Rock sizes are maximum dimensions.
- C. Non-Free Draining Soils: Includes cohesive and noncohesive soils that generally contain more than 15 percent fines passing No. 200 sieve size.
- D. Free Draining Soils: Includes granular soils, such as sands and gravels that generally contain less than 15 percent fines passing No. 200 sieve size.

#### 1.06 TESTING

- A. The Contractor shall take samples during placement of materials and test for moisture content, density, compaction, gradation, and classification to ensure conformance with these specifications.
- B. The Engineer may take samples during placement of materials and test for moisture content, gradation, plasticity, compaction, density, and classification. The Contractor shall provide material as directed and shall provide necessary assistance for sampling and testing.
- C. Gradation shall be determined using ASTM D 422.
- D. Plasticity index shall be determined using ASTM D 4318.
- E. Classification shall be determined using ASTM D 2487.
- F. Field dry density of nonfree draining soils shall be determined using either ASTM D 1556 or ASTM D 6938. In case of differing results, ASTM D 1556 shall govern.
- G. Field dry density of free draining soils shall be determined using ASTM D 6938.

- H. Moisture content shall be determined using ASTM D 2216, ASTM D 6938, or ASTM D 4643. In case of differing results, ASTM D 2216 shall govern.
- I. Maximum dry density of free draining soils shall be determined using ASTM D 4253.
- J. Maximum dry density of nonfree draining soils shall be determined using either ASTM D 1557 or ASTM D 5080 as modified in Paragraphs K and L. In case of differing results, the higher value obtained from the two methods shall be used.
- K. Optimum water content of nonfree draining soils shall be determined using ASTM D 1557 or ASTM D 5080, as modified in Paragraphs K and L. In case of differing results, ASTM D 1557 shall govern.
- L. ASTM D 1557 using a 10 pound hammer and 18 inch drop is modified as follows:
  - 1. Compact the specimen in 3 layers instead of 5.
  - 2. 15 blows per layer shall be used for the 4 inch diameter mold and 33 blows per layer shall be used for the 6 inch diameter mold to produce a compactive effort of 20,000 ft-lb/ft<sup>3</sup>.
- M. ASTM D 5080, with reference to ASTM D 698, is modified as follows:
  - 1. A 10 pound hammer shall be used in place of the 5.5 pound hammer specified.
  - 2. A drop height of 18 inches shall be used instead of the 12 inches specified.
  - 3. 15 blows per layer shall be used for the 4 inch diameter mold to produce a compactive effort of 20,000 ft-lb/ft<sup>3</sup>.
  - 4. 33 blows per layer shall be used for the 6 inch diameter mold to produce a compactive effort of 20,000 ft-lb/ft<sup>3</sup>.

## PART 2 PRODUCTS

### 2.01 MATERIALS

- A. Materials used for road repair shall be obtained from required trench excavation. The material shall be compacted to the same density as the surrounding roadway.

## 2.02 EQUIPMENT

### A. Compaction Equipment:

1. Compaction equipment shall be of suitable type for the material being compacted and adequate to obtain the compaction specified. If inadequate compaction is obtained, larger or different types of equipment shall be provided.
2. In restricted spaces, small compaction equipment such as: hand-held power tampers, power tampers on wheels, walk-behind rollers, vibrating plates, or other compaction equipment, shall be used, as approved.
3. Tamping feet on soil compactors shall be maintained to within manufacturer's wear limits, and replaced as necessary during the course of the work.

### B. Water Application Equipment:

1. Equipment for applying water shall be of a type and quality adequate for the work, shall be free of major leaks or equipment problems, and shall be equipped with distributor bars or other approved devices to ensure uniform application. Water supply trucks shall be equipped with meters, gauges, or other devices, capable of measuring the quantities of water dispensed.
2. Equipment and methods of application used shall be such that water does not cause erosion or damage to levee slopes or placed materials.

### C. Equipment Maintenance:

1. Placing and compaction equipment shall be maintained in proper operating condition. The Engineer may direct the Contractor to improve the method, or increase efficiency by replacing inadequate or worn equipment if tests indicate areas of compacted fill are not within specified requirements.

## PART 3 EXECUTION

### 3.01 FIELD QUALITY CONTROL AND QUALITY ASSURANCE

- A. The Engineer will perform quality assurance testing of materials.
- B. When materials tested by the Engineer do not conform to these specifications, the Contractor shall bring the materials into conformance. If the materials do not satisfy the specification

requirements after the Engineer's final quality assurance testing, the materials will be rejected. The Contractor shall remove and replace the rejected materials and the testing procedure described above will be repeated.

### 3.02 EXCAVATION

- A. Excavation shall be to the elevations and dimensions required to allow the sheet piling to be driven and cut off one foot below finished grade as shown.
- B. Excavating Beyond Established Lines:
  - 1. Necessary precautions shall be taken to preserve, in an undisturbed condition, material beyond the established lines, except for unsuitable material ordered removed. Material loosened beyond the excavation limits as a result of excavation operations shall be removed and recompacted or replaced as directed at no additional expense to the Department.
- C. The nature of materials encountered in excavation will be unclassified for payment.
- D. Except for moisture conditioning, excavations shall be performed in dry conditions and shall be kept free of standing water.
- E. Excavated material may be temporarily stockpiled at designated stockpile areas as directed. Excavated materials may be windrowed adjacent to the trench as approved. Prior to final acceptance the stockpile areas shall be returned to pre-existing conditions.

### 3.03 COMPACTION

- A. Moisture Conditioning:
  - 1. Materials for earthwork shall be moisture conditioned prior to placement. Moisture conditioning shall be done sufficiently in advance of placement to ensure thorough penetration and uniform distribution of moisture in the materials. Material too dry for compaction shall have water added followed by mixing to obtain uniform moisture distribution. Material too wet for compaction shall be disked and allowed to dry prior to compaction. The necessary moisture content will be approximately equal to the laboratory optimum.

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. Measurement for payment for the contract item Road Repair at West False River will be by the linear foot and will be the number of linear feet placed to in the work.

4.02 PAYMENT

- A. The contract price will be paid for ROAD REPAIR AT WEST FALSE RIVER; which price shall include full compensation for all costs incurred under this section.

END OF SECTION

SECTION 02360

SHEET PILES

PART 1 GENERAL

1.01 DESCRIPTION

- A. This section covers the contract item Drive Steel Sheet Piles.

1.02 RELATED SECTIONS

- A. Supplementary General Conditions, General Conditions, Division 1 sections, and Drawings apply to this section. This section may require direct correlation with the following sections of the contract:
  - 1. Section 02455 – Driven Piles.

1.03 REFERENCES

- A. The following publications form a part of this specification to the extent referenced. Application of these publications shall conform to Document 00702 – Interpretation of the Contract, Paragraph 2:
  - 1. American Welding Society (AWS):
    - a. AWS D1.1 – Structural Welding Code – Steel.

1.04 SUBMITTALS

- A. Submit the following:
  - 1. Information on the pile driving equipment, including the hammer, follower if used, crane, and equipment.
  - 2. Information on the pile driving subcontractor if used, including number of years in the business, and records of previous experience.
  - 3. Driving records of each sheet pile not later than 2 days after driving each sheet pile. Include the following data:
    - a. Project name and number.
    - b. Name of Contractor.
    - c. Pile location and number.

- d. Type and size of hammer used.
  - e. Type of pile driving cap used.
  - f. Information on follower used, if any.
  - g. Rate of operation of pile driving equipment.
  - h. Sheet pile dimensions.
  - i. Elevation of tip.
  - j. Elevation of head before and after cutoff.
  - k. Ground elevation before and after the sheets are driven.
  - l. Record of number of blows for each foot of penetration.
  - m. Pile deviation.
  - n. Unusual occurrences during pile driving.
- 4. Submit records which have been compiled and attested to by a registered professional engineer in the State of California.
  - 5. Sheet pile dimensions, materials, and splices, including means of aligning and welding pile sections.
  - 6. Methods and equipment to be used for pile driving operations, including proof of the adequacy of pile driving equipment. Proof shall consist of, but is not limited to, wave equation analysis confirming that proposed equipment can drive sheet piles to the required penetration depth without damage.

## PART 2 PRODUCTS

### 2.01 MATERIALS

- A. Steel sheet piles will be Department furnished conforming to Section 01640 – Department Furnished Equipment and Materials.

### 2.02 DRIVING EQUIPMENT

- A. Pile Hammers:
  - 1. Sheet piles may be driven with air, steam, diesel, or hydraulic hammers or vibratory hammers. Driving aids such as jets shall not be used.

2. Sheet pile driving equipment shall be sized such that the sheet piles can be driven with reasonable effort to the lengths required without damage.
3. Plant and Equipment for Hammers:
  - a. The plant and equipment furnished for hammers shall have sufficient capacity to maintain at the hammer, under working conditions, the volume and pressure specified by the manufacturer. The plant and equipment shall be equipped with accurate pressure gauges that are easily accessible to the Engineer. The weight of striking parts of hammers shall not be less than 1/3 the weight of helmet and sheet pile being driven, and in no case shall striking parts weigh less than 2,750 pounds.
  - b. Open-end (single acting) diesel hammers shall be equipped with a device such as rings on the ram to permit the Engineer to visually determine hammer stroke during sheet pile driving operations. Contractor shall also provide Engineer a chart from the hammer manufacturer equating stroke and blows per minute for the open-end diesel hammer to be used. Closed-end (double acting) diesel hammers shall be equipped with a bounce chamber pressure gauge, in good working order, mounted near ground level to be easily read by the Engineer. Contractor shall provide the Engineer a chart, calibrated to actual hammer performance within 90 days of use, equating bounce chamber pressure to either equivalent energy or stroke for the closed-end diesel hammer to be used.

B. Drive System Components and Accessories:

1. Hammer Cushion: Impact sheet pile driving equipment designed to be used with a hammer cushion shall be equipped with a suitable thickness of hammer cushion material to prevent damage to the hammer or pile and to ensure uniform driving behavior. Hammer cushions shall be made of durable manufactured materials, provided in accordance with the hammer manufacturer's guidelines. Wood, wire rope, and asbestos hammer cushions will not be allowed. A striker plate recommended by hammer manufacturer shall be placed on the hammer cushion to ensure uniform compression of the cushion material. Hammer cushion shall be removed from the helmet and inspected in the presence of the Engineer when beginning sheet pile driving. When hammer cushion thickness decreases by 25 percent of its original thickness, it shall be replaced by the Contractor before driving resumes.

2. **Helmet:** Sheet piles driven with impact hammers require an adequate helmet or drive head to distribute the hammer blow to the head. The helmet shall be axially aligned with the hammer and the pile. The helmet shall be guided by the leads and not be free-swinging. Helmet shall fit around the pile head in such a manner as to prevent transfer of torsional forces during driving, while maintaining proper alignment of hammer and sheet pile.
3. **Leads:** Sheet piles shall be supported in line and position with leads during driving operations. Sheet pile driver lead shall be constructed in a manner that affords freedom of movement of the hammer while maintaining alignment of the hammer and the sheet pile to ensure concentric impact for each blow. Leads may be either fixed or swinging type. Swinging leads, when used, shall be fitted with a pile gate at the bottom of the leads. The sheet pile section being driven shall not extend above the leads. The leads shall be adequately embedded in the ground or the pile constrained in a structural frame, such as a template, to maintain alignment. The leads shall be of sufficient length to make the use of a follower unnecessary.

### PART 3 EXECUTION

#### 3.01 DELIVERY, STORAGE, AND HANDLING

- A. After pile lengths are verified, deliver materials to work site in such quantities and at such times to ensure continuity of pile driving operations and adherence to project schedule.
- B. Store piles in orderly groups above ground and blocked to prevent distortion of members.

#### 3.02 PRELIMINARY WORK

- A. **Pile Length Markings:** Mark each sheet pile length with horizontal lines at 5 foot intervals from the tip. As each sheet pile approaches its final driven depth, 2 feet of visible pile above water or ground shall be marked in inches to facilitate measuring the driving progress.
- B. Prior to starting to drive sheet piles the Contractor and the Engineer shall agree on a set of monuments to be set in the top surface of the levee. The Contractor shall install such monuments. The Contractor shall make periodic measurements of the levee monuments to determine if settlement is occurring. If settlement does occur the Contractor shall immediately notify the Engineer. Remedial measures shall be taken as directed to prevent further settlement or damage to the levee.

### 3.03 SHEET PILE CAPACITY

- A. Sheet piles shall be driven with approved driving equipment to the tip elevations as shown.

### 3.04 DRIVING

#### A. General:

1. The heads of all sheet piles shall be plane and perpendicular to the longitudinal axis of the pile before the helmet is attached.
2. Approval of pile hammer relative to driving stress damage shall not relieve Contractor of the responsibility for sheet piles damaged because of misalignment of the leads, failure of cushion materials, failure of splices, malfunction of the sheet pile hammer, or other improper construction methods. Sheet piles damaged for such reasons shall be replaced at Contractor's expense when the Engineer determines that the damage impairs the strength of the sheet pile.
3. Driving stresses in the piles shall not exceed 90 percent of the minimum yield stress of the steel.
4. Drive sheet piles to the position and line shown. After driving, inspect each sheet pile for position, vertical alignment, buckling or reduced dimensions at any point.

#### B. Tolerances: Use methods to hold the piles within the specified tolerances. Drive piles within following maximum tolerances.

1. Horizontal Alignment: The sheet pile head at cutoff elevation shall be within 2 inches of plan location, in both the transverse and longitudinal directions.
2. Plumb: Maintain 1 inch in 20 feet from vertical, measured when the pile is above ground in leads.
  - a. Pulling laterally on piles to correct misalignment, or splicing a properly aligned section on a misaligned section, will not be allowed.
  - b. If the preceding location and/or alignment tolerances are exceeded, the Engineer will evaluate the extent of displacement. If, in the judgment of the Engineer, corrective measures are necessary, suitable measures shall be designed and taken by the Contractor.

### 3.05 UNSATISFACTORY SHEET PILES

- A. The method used in driving sheet piles shall not subject the sheet piles to excessive or undue abuse producing deformation of the steel.
- B. Misaligned sheet piles shall not be forced back into proper position.
- C. Piles damaged during driving by reason of internal defects, or by improper driving, or driven out of their proper location, or driven below the designated cutoff elevation shall be corrected by the Contractor, without added compensation, by a method approved by the Engineer.

### 3.06 SPLICES

- A. The length of steel sheet pile may be built up in sections either before or during driving operations. The spliced sections shall each be of identical cross section.
- B. Splices shall be made by full penetration butt welding the entire cross section in conformance with the requirements of AWS D1.1 and as shown.
- C. The end of a steel pile to be spliced shall be of sound and uniform section conforming to the tolerances for diameter, edge alignment, and roundness required to meet the welding requirements. Field cutting of steel pile ends shall be done using automated guided cutting equipment. Manual flame cutting shall not be used.

### 3.07 CUTOFF

- A. The sheet pile head shall be cut off at elevations shown.
- B. Cutoff lengths of piling, rejected sheet piling, and sheet piling not used shall be removed from the work site as the Contractor's property.

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. Measurement for payment for the contract item Drive Steel Sheet Piles will be by the square foot, and will be the number of square feet of sheet piles placed in the work. Vertical measurement for payment will be from sheet pile head cutoff elevation to sheet pile tip elevation. Horizontal measurement for payment will be the horizontal distance in feet covered by the sheet piling, not including the indentations of the sheet piling.

4.02 PAYMENT

- A. The contract price will be paid for DRIVE STEEL SHEET PILES; which price shall include full compensation for all costs incurred under this section.

END OF SECTION

SECTION 02370

ROCK BARRIERS

PART 1 GENERAL

1.01 DESCRIPTION

- A. This section covers the contract items Embankment Rock at the various locations, and Crushed Rock Gravel at the various locations.

1.02 RELATED SECTIONS

- A. Supplementary General Conditions, General Conditions, Division 1 sections, and Drawings apply to this section.

1.03 REFERENCES

- A. The following publications form a part of this specification to the extent referenced. Application of these publications shall conform to Document 00702 – Interpretation of the Contract, Paragraph 2:

- 1. American Society for Testing and Materials (ASTM):
  - a. ASTM C 127 – Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.

1.04 SUBMITTALS

- A. Submit the following:
  - 1. Source name and location of quarry(ies).
    - a. Gradation of embankment rock.
    - b. Gradation of crushed rock gravel.
  - 2. Proposed plan for transport, stockpile and placement for rock materials including:
    - a. Proposed transport routes to be used.
    - b. Proposed stockpile locations.
    - c. Barges to transport rock, loading methods and equipment.
    - d. Equipment and methods to be used for rock placement.

- e. Equipment and methods to be used for placement of the culverts, frames and gates.
- f. Proposed procedures to be used for verification of line and grade of placements above and below water level.

PART 2 PRODUCTS

2.01 MATERIALS

A. General:

- 1. Rock material shall be quarry rock with angular fragments, and not river run rock.
- 2. Rock material shall be hard, dense, durable, and free from cracks, seams and other defects. Rock material shall have a specific gravity of not less than 2.57, saturated surface-dry basis, when tested in accordance with ASTM C 127.
- 3. The shape of rock shall be such that the least dimension of a rock is not less one third of the greatest dimension and shall be angular.
- 4. When placed, rock material shall be clean, free of clinging dirt or mud, loose concrete or mortar, trash and organic matter.

B. Embankment Rock:

- 1. Rock material for embankment rock shall be quarry stone and conform to the following gradation:

<u>Embankment Rock</u>	
<u>Inches</u>	<u>Percent Passing</u>
22	100
18	70-100
12	50-80
8	32-58
5	20-40
2	12-30
0.5	3-15

- 2. No rock material shall be smaller than 3/8 inch.

C. Crushed Rock Gravel:

1. Rock material for placement around the culverts and under the articulated concrete mats shall be 3/4 inch crushed rock gravel:

PART 3 EXECUTION

3.01 PLACEMENT OF ROCK BARRIERS

- A. General: Rock shall be placed in a manner to produce well-keyed and stable barriers with a neat and uniform surface true to the lines and grades shown and approved.
- B. Place rock to produce a minimum of voids in the finished fill.
- C. The larger rocks shall be evenly distributed throughout the entire mass of rocks so that the rock material in its final position conforms to the specified gradation.
- D. Do not dump rock material directly from barge decks; place with bottom dump barges, cranes equipped with skip or clamshell, or similar equipment.
- E. Place rock in layers, the full width of the channel, with a minimum thickness of 3 feet measured perpendicular to the existing slope.
- F. The height of drop for the rock materials onto the fill surface shall be limited to 5 feet or less, and rock materials shall not be allowed to roll down the slope.
- G. Heavy equipment shall not be allowed on the finished surface of rock barriers.

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. Measurement for payment for the contract items Embankment Rock at the various locations, and Crushed Rock Gravel at the various locations will be by the ton and will be the number of tons of each type of rock placed in the work at each location.

4.02 PAYMENT

- A. The contract prices will be paid for EMBANKMENT ROCK at the various locations; and CRUSHED ROCK GRAVEL at the various locations; which prices shall include full compensation for all costs incurred under this section.

END OF SECTION

SECTION 02380

INSTALL DEPARTMENT FURNISHED  
EQUIPMENT AND MATERIALS

PART 1 GENERAL

1.01 DESCRIPTION

- A. This section covers the contract items Install Department Furnished Culverts at the various locations, Install Department Furnished Boat Docks with Anchors at the various locations, Install Department Furnished Articulated Concrete Mats at the various locations, and Install Department Furnished Warning Signs, Buoys, And Lights at the various locations.
  - 1. This work includes receiving, handling, transporting, storing, protecting, installing at the work sites the Department furnished items. The list of Department furnished items is contained in Section 01640 – Department Furnished Equipment and Materials.

1.02 RELATED SECTIONS

- A. Supplementary General Conditions, General Conditions, Division 1 sections, and Drawings apply to this section. This section may require direct correlation with the following sections of the contract:
  - 1. Section 02370 – Rock Barriers.
  - 2. Section 02360 – Sheet Piles.
  - 3. Section 02455 – King Pipe Piles.

1.03 SUBMITTALS

- A. Receiving submittals are covered in Section 01640 – Department Furnished Equipment and Materials.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Delivery, storage, and handling shall conform to Section 01640 – Department Furnished Equipment and Materials.

## PART 2 PRODUCTS

### 2.01 MATERIALS

- A. Provide miscellaneous nuts, bolts, washers, gaskets, pipe, tubing, fittings, and other materials necessary to complete the installation of the Department furnished equipment.

## PART 3 EXECUTION

### 3.01 INSTALLATION REQUIREMENTS

- A. The equipment shall be cleaned before assembly begins. Proper care shall be taken to protect finished parts from damage during handling and installation.
- B. Mounting shall include positioning, alignment, leveling, adjusting for proper working order.
- C. Installation shall include repair of chips, scratches, dents, and marks on Department furnished equipment incurred during storage, handling or installation.
- D. King piles and sheet piles shall be driven and paid conforming to Section 02360 – Sheet Piles and Section 02455 – Driven Piles.

## PART 4 PAYMENT

### 4.01 PAYMENT

- A. The contract prices will be paid for INSTALL DEPARTMENT FURNISHED CULVERTS at the various locations; INSTALL DEPARTMENT FURNISHED BOAT DOCKS WITH ANCHORS at the various locations; INSTALL DEPARTMENT FURNISHED ARTICULATED CONCRETE MATS at the various locations; and INSTALL DEPARTMENT FURNISHED WARNING SIGNS, BUOYS, AND LIGHTS at the various locations; which price shall include full compensation for all costs incurred under this section.

END OF SECTION

SECTION 02455  
KING PIPE PILES

PART 1 GENERAL

1.01 DESCRIPTION

- A. This section covers the contract item Drive King Pipe Piles. This work includes:
  - 1. Steel pipe piles driven to support the sheet piles.

1.02 RELATED SECTIONS

- A. Supplementary General Conditions, General Conditions, Division 1 sections, and Drawings apply to this section. This section may require direct correlation with the following sections of the contract:
  - 1. Section 02360 – Sheet Piles.

1.03 REFERENCES

- A. The following publications form a part of this specification to the extent referenced. Application of these publications shall conform to Document 00702 – Interpretation of the Contract, Paragraph 2:
  - 1. American Welding Society (AWS):
    - a. AWS D1.1 – Structural Welding Code – Steel.

1.04 SUBMITTALS

- A. Submit the following:
  - 1. Method of pile tip reinforcement.
  - 2. Methods for locating and maintaining pile locations.
  - 3. Methods to align and maintain pile alignment.
  - 4. Information on the pile driving equipment, including the hammer, follower if used, and crane.
  - 5. Information on the pile driving subcontractor if used, including number of years in the business, and records of previous experience.

6. Plan for field weld splicing of piles above ground or water to allow inspection of weld.
7. Driving records of each pile not later than 2 days after driving each pile. Include the following data:
  - a. Project name and number.
  - b. Name of Contractor.
  - c. Pile location and number.
  - d. Type and size of hammer used.
  - e. Type of pile driving cap used.
  - f. Information on follower used, if any.
  - g. Rate of operation of pile driving equipment.
  - h. Pile dimensions.
  - i. Elevation of tip.
  - j. Elevation of butt before and after cutoff.
  - k. Ground or water elevation.
  - l. Record of number of blows for each foot of penetration.
  - m. Pile as-built locations to be used for dimensions of the support framing for the release piping, intake piping, and platform.
  - n. Pile uplift and reaction.
  - o. Unusual occurrences during pile driving.

#### 1.05 QUALITY ASSURANCE

- A. Welder Qualifications: Qualify welders, welding processes, and procedures in accordance with AWS D1.1.

### PART 2 PRODUCTS

#### 2.01 KING PIPE PILES

- A. King pipe piles will be Department furnished conforming to Section 01640 – Department Furnished Equipment and Materials.

## 2.02 WHALERS AND ACCESSORIES

- A. Contractor shall furnish and install the whalers and attachments to the piles to support the sheet piles conforming to Section 05500 – Miscellaneous Metal.

## 2.03 DRIVING EQUIPMENT

- A. General: Provide pile driving equipment of type generally used in standard pile driving practice, operated at manufacturer's specified rate, to develop required rated energy per blow.
- B. Impact hammers shall be steam, hydraulic, air, or diesel hammers. Impact hammers shall develop sufficient energy to drive the piles at a penetration rate of not less than 1/8 inch per blow.
- C. Driving Caps: Equip hammer with cast steel or structural steel driving cap with grooved base conforming to pile shape. Keep bearing surfaces of grooves true and smooth. Approved synthetic material hammer cushion shall be placed on top of the cap as directed.

## PART 3 EXECUTION

### 3.01 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to work site in such quantities and at such times to ensure continuity of pile driving operations and adherence to project schedule.

### 3.02 PRELIMINARY WORK

- A. Pile Length Markings: Mark each pile length with horizontal lines at 1 foot intervals and the number of feet from pile tip at 5 foot intervals. As each pile approaches its final driven depth, 2 feet of visible pile above water or ground shall be marked in inches to facilitate measuring the driving progress.

### 3.03 DRIVING

- A. Drive piles at locations shown. Drive each pile to its Specified Tip Elevation shown.
- B. Followers or underwater hammers for driving piles will be allowed only if approved by the Engineer and with acceptance of information submittals. When a follower or underwater hammer is used, its efficiency shall be verified by driving a pile to its Specified Tip Elevation shown. A pile adjacent to that pile shall then be driven without the use

of a follower or underwater hammer to its Specified Tip Elevation shown.

- C. Plumb piles before driving vertical piles. Prevent and correct tendencies of piles to twist or rotate.
- D. When high-resistant strata lying near the surface must be penetrated, spud piles may be used to minimize hard driving of long piles during early stages of driving operations.
- E. Driving Tolerances: Drive piles within following maximum tolerances:
  - 1. Location: 6 inches from location indicated for center of gravity of each single pile.
  - 2. Plumb: Maintain 1 inch in 10 feet from vertical, or a maximum of 3 inches, measured when the pile is above ground.
  - 3. Batter Angle: Maximum 1 inch in 10 feet from required angle, measured when pile is above ground.
- F. Heaved Piles: Provide recorded instrument observations made during pile driving to determine whether a driven pile has lifted from its original seat during driving of adjacent piles. If uplift occurs, redrive affected piles to tip elevation at least as deep as original tip elevation with a driving resistance at least as great as original driving resistance.
- G. After piles have been accepted piles shall be cut off square with pile axis and at elevations shown. Provide pile caps where shown.
- H. Cut off lengths of piling and other materials not directed to be salvaged shall be disposed of as the Contractor's property and removed from the work site.

### 3.04 REJECTED PILES

- A. Damaged or Misdriven Piles: Damaged piles and piles driven outside required driving tolerances will not be accepted.
  - 1. Piles rejected after driving shall be replaced with new piles at locations as directed.
  - 2. Piles rejected after driving may be abandoned and cut off.
  - 3. No Payment will be made for rejected piles including piles driven out of place, imperfect piles, or piles damaged in driving or handling.

### 3.05 SPLICING

- A. Steel pile splices shall conform to the requirements in AWS D 1.1. Steel pipe pile splices that are made at a permanent manufacturing or fabrication facility, and that are made prior to furnishing the Certificate of Compliance, shall be complete penetration welds. Steel pipe pile splices that are made in the field shall be complete joint penetration groove welds.
- B. Ends of steel pipe piling to be spliced that have been damaged during driving shall be removed to a sound and uniform section conforming to the tolerances for diameter, edge alignment and roundness required to meet the steel pile splice welding requirements. Pipe ends shall be field cut using automated guided cutting equipment. Manual flame cutting shall not be used.
- C. Welded Splices: Clean surfaces to be welded of rust, scale, oil, paint, and foreign material. Use only pile members with identical cross sections for splicing.
- D. Only one splice per pile will be allowed unless otherwise directed. Make splices before starting driving operations and bring the completed pile to the work site prior to driving operations. If a welded splice is required during driving operation, make splice when top of driven pile is at least 3 feet above ground or water surface to permit inspection of welded connection during welding and during subsequent driving.
- E. Splices shall produce straight pile alignment through splice and develop full strength of pile in both bearing and bending.

## PART 4 MEASUREMENT AND PAYMENT

### 4.01 MEASUREMENT

- A. Measurement for payment for the contract item Drive King Pipe Piles will be by the linear foot, and will be the number of linear feet of piles placed in the work. Measurement for payment will be from pile cutoff elevation to final required tip elevation.

### 4.02 PAYMENT

- A. The contract price will be paid for DRIVE KING PIPE PILES; which price shall include full compensation for all costs incurred under this section.

END OF SECTION

SECTION 02720  
AGGREGATE BASE

PART 1 GENERAL

1.01 DESCRIPTION

- A. This section covers the contract item Aggregate Base.

1.02 RELATED SECTIONS

- A. Supplementary General Conditions, General Conditions, Division 1 sections, and Drawings apply to this section. This section may require direct correlation with the following sections of the contract:
  - 1. Section 02370 – Rock Barriers.

1.03 REFERENCES

- A. The following publications form a part of this specification to the extent referenced. Application of these publications shall conform to Document 00702 – Interpretation of the Contract, Paragraph 2:
  - 1. California Department of Transportation (Caltrans) Specifications:
    - a. Section 26 – Aggregate Bases.
  - 2. American Society for Testing and Materials (ASTM):
    - a. ASTM C 136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
    - b. ASTM D 2922 – Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
    - c. ASTM D 4253 – Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

1.04 SUBMITTALS

- A. Submit the source and the gradation of aggregate base.

1.05 DEFINITIONS

- A. Percent compaction is the ratio, expressed as a percent, of the field dry density as determined by ASTM D 2922, to the maximum dry density as determined by ASTM D 4253.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Aggregate base shall conform to the grading and quality requirements of Caltrans Specifications Section 26-1.02B, Class 2 Aggregate Base, conforming to the following gradation:

<u>Sieve Size</u>	<u>Percentage Passing</u>	
	1-1/2" Maximum	3/4" Maximum
2 Inch	100	-
1-1/2 Inch	90-100	-
1 Inch	-	100
3/4 Inch	50-85	90-100
No. 4	25-45	35-60
No. 30	10-25	10-30
No. 200	2-9	2-9

- B. At the option of the Contractor, the gradation for either the 1-1/2 inch maximum or 3/4 inch maximum shall be used, except that once a gradation is selected it shall not be changed without the Engineer's written approval.
- C. Aggregate for aggregate base shall be free from organic matter and other deleterious substances, and shall be of such nature that it can be compacted readily under watering and rolling to form a firm, stable base.
- D. Aggregate may include material processed from reclaimed portland cement concrete, lean concrete base, cement treated base asphalt concrete or a combination of any of these materials. The amount of reclaimed material shall not exceed 50 percent of the total volume of the aggregate used.
- E. Aggregate base shall be delivered to the job site as a uniform mixture.

PART 3 EXECUTION

### 3.01 SUBGRADE

- A. Subgrade preparation shall comply with Caltrans Specifications Section 26-1.03B.
- B. Subgrade to receive the aggregate base shall conform to the compaction and elevation tolerances shown and specified, and shall be free of loose or extraneous material.
- C. Subgrade shall be moisture conditioned and compacted to not less than 95 percent compaction.

### 3.02 SPREADING

- A. Spreading aggregate base shall comply with Caltrans Specifications Section 26-1.03C.
- B. Aggregate base shall be deposited and spread to the required compacted thickness within the specified tolerances. Where the required thickness is 0.50 foot or less, the aggregate base may be spread and compacted in one layer. Where the required thickness is more than 0.50 foot, the aggregate base shall be spread and compacted in two or more layers of approximately equal thickness, and the maximum compacted thickness of any one layer shall not exceed 0.50 foot.

### 3.03 COMPACTING

- A. Compacting aggregate base shall comply with Caltrans Specifications Section 26-1.03D.
- B. Compact each layer of aggregate base to not less than 95 percent compaction.

### 3.04 FINISHED SURFACE

- A. The surface of the finished aggregate base at any point shall not vary more than 0.025 foot above or 0.05 foot below the grade established by the Engineer.
- B. Aggregate base which does not conform to the above requirements shall be reshaped or reworked, moisture conditioned, and recompact to conform to the specified requirements.

### 3.05 FIELD QUALITY CONTROL

- A. The Engineer may take samples during placement of materials and perform tests for moisture content, gradation, percent compaction, and density in accordance with Section 02300 – Earthwork.
  - 1. For gradation the Engineer will use ASTM C 136.
- B. The Contractor shall provide material as directed and shall provide necessary assistance for sampling and testing.

## PART 4 MEASUREMENT AND PAYMENT

### 4.01 MEASUREMENT

- A. Measurement for payment for the contract items Aggregate Base will be by the ton and will be the number of tons placed in the work.

### 4.02 PAYMENT

- A. The contract price will be paid for AGGREGATE BASE; which price shall include full compensation for all costs incurred under this section.

END OF SECTION

## SECTION 02820

### CHAIN LINK FENCE AND GATES

#### PART 1 GENERAL

##### 1.01 DESCRIPTION

- A. This section covers the contract items 8 Foot Chain Link Fence, and Double Drive Gate.
  - 1. The contract item 8 Foot Chain Link Fence includes 8 foot chain link mesh, posts, barbed wire, rails, post excavation, and concrete.
  - 2. The contract item Double Drive Gate includes chain link mesh double drive gates, barbed wire, gate posts, center posts, gate frames, braces, latches, hinges, miscellaneous hardware, post excavation, and concrete.

##### 1.02 RELATED SECTIONS

- A. Supplementary General Conditions, General Conditions, Division 1 sections, and Drawings apply to this section. This section may require direct correlation with the following sections of the contract:
  - 1. Section 02370 – Rock Barriers.

##### 1.03 REFERENCES

- A. The following publications form a part of this specification to the extent referenced. Application of these publications shall conform to Document 00702 – Interpretation of the Contract, Paragraph 2:
  - 1. American Society for testing and Materials (ASTM):
    - a. ASTM A 53 – Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
    - b. ASTM A 121 – Standard Specification for Metallic-Coated Carbon Steel Barbed Wire.
  - 2. California Department of Transportation (Caltrans) Specifications:
    - a. Section 80 – Fences.

##### 1.04 SUBMITTALS

- A. Submit the following:

1. Certificates for materials.
2. Catalog cuts showing thickness and dimensions.
3. Working drawings.

## PART 2 PRODUCTS

### 2.01 MATERIALS

- A. Materials for the chain link fence and gates shall conform to sections 80-3.01.D and 80-3.02 through 80-3.02.D of the Caltrans Specifications, except posts shall conform to ASTM A 53, schedule 40, 2 inches in diameter, galvanized. Fabric shall have barbed ends at top and bottom.
- B. Barbed wire shall comply with ASTM A 121 and shall have two point barbs. Barbed wire shall be 12-1/2 gauge, Class 1, galvanized.
- C. Wire used to fasten barbed wire and wire mesh to metal posts shall be galvanized and at least 11 gauge. Clips and hog rings used for metal posts shall be at least 9 gauge and shall be galvanized.
- D. Double Drive Gates:
  1. Gates shall be sized as shown and shall have gate stops to hold the gates open and center rests with catches.

## PART 3 EXECUTION

### 3.01 INSTALLATION

- A. Contractor shall install chain link fencing and gates in accordance with Section 80-3.03 of the Caltrans Specifications.
- B. Installation of gates shall be in accordance with manufacturer's instructions.
- C. Pursuant to Document 00706 – Control of Work, the Contractor shall protect gates during the construction and shall repair damage to the gates prior to final acceptance.

## PART 4 MEASUREMENT AND PAYMENT

### 4.01 MEASUREMENT

- A. Measurement for payment for the contract items 8 Foot Chain Link Fence will be by the linear foot and will be the number of linear feet of fence placed in the work.
- B. Measurement for payment for the contract item Double Drive Gate will be by the number of double drive gates placed in the work.

### 4.02 PAYMENT

- A. The contract prices will be paid for 8 FOOT CHAIN LINK FENCE; and DOUBLE DRIVE GATE; which prices shall include full compensation for all costs incurred under this section.

END OF SECTION

SECTION 05500

MISCELLANEOUS METAL

PART 1 GENERAL

1.01 DESCRIPTION

- A. This section covers the contract item Miscellaneous Metal.
- B. The contract item Miscellaneous Metal includes whalers and accessories for the sheet piles and pipe piles.

1.02 RELATED SECTIONS

- A. Supplementary General Conditions, General Conditions, Division 1 sections, and Drawings apply to this section. This section may require direct correlation with the following sections of the contract:
  - 1. Section 02360 – Sheet Piles.
  - 2. Section 02455 – Driven Piles.

1.03 REFERENCES

- A. The following publications form a part of this specification to the extent referenced. Application of these publications shall conform to Document 00702 – Interpretation of the Contract, Paragraph 2:
  - 1. American Society for Testing and Materials (ASTM):
    - a. ASTM A 36 – Standard Specification for Carbon Structural Steel.
    - b. ASTM A 53 – Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
    - c. ASTM A 193 – Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High Temperature Service.
    - d. ASTM A 194 – Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure or High Temperature Service, or Both.
    - e. ASTM F 844 – Standard Specification for Washers, Steel, Plain (Flat), Unhardened for General Use.

- f. ASTM F 2329 – Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.

2. American Welding Society:

- a. AWS D1.1 – Structural Welding Code – Steel.

#### 1.04 SUBMITTALS

- A. Submit shop drawings detailing fabrication and erection of each metal fabrication shown. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

### PART 2 PRODUCTS

#### 2.01 MATERIALS

- A. Steel shapes, channels, plates, angles, and bars: ASTM A 36.
- B. Bolts, studs, nuts, washers, and hardware shall be galvanized conforming to ASTM F 2329.
- C. Bolts shall have heavy hexagon heads and conform to ASTM A 193, Grade B7.
- D. Nuts shall be heavy hexagon and conform to ASTM A 194, Grade 7.
- E. Washers shall conform to ASTM F 844.
- F. All thread rod shall conform to ASTM A 193, Grade B7.
- G. Pipe shall conform to ASTM A 53.
- H. Elastomeric Bearing Pads:
  - 1. Pads shall be of the thickness as shown. Pads shall be laminated. Laminated pads shall consist of alternate layers of elastomer and fabric reinforcement bonded together. The top and bottom layers of reinforcement shall be uniformly covered with a maximum of 1/8 inch of elastomer. Stacking of individually laminated pads to attain thicknesses over 1/2 inch, or cold bonding of individual laminated pads will not be allowed.
  - 2. Laminated pads shall have reinforcement every 1/2 inch through the entire thickness.

3. The sole polymer in the elastomeric compound shall be neoprene and shall be not less than 60 percent by volume of the total compound.

## 2.02 FABRICATION

- A. Metalwork shall be fabricated conforming to AWS D1.1, and as shown.
- B. The lengths of studs and bolts, excluding anchor bolts, shall provide a projection of not less than 1/4 inch nor more than 1/2 inch through the nut when it is drawn tight.
- C. Bolts installed in holes 1/8 inch or more oversize, as measured on the diameter, shall be provided with washers each contact surface.
- D. Bolts installed between channels shall be provided with plate washers and washers. Plate washers shall conform to ASTM A 36, and do not need to be galvanized.

## PART 3 EXECUTION

### 3.01 INSTALLATION

- A. Threads of bolts, nuts, and studs shall be cleaned of dirt and other foreign substances prior to assembly.

## PART 4 MEASUREMENT AND PAYMENT

### 4.01 MEASUREMENT

- A. Measurement for payment for the contract item Miscellaneous Metal will be by the pound and will be the number of pounds of miscellaneous metal placed in the work.

### 4.02 PAYMENT

- A. The contract price will be paid for MISCELLANEOUS METAL; which price shall include full compensation for all costs incurred under this section.

END OF SECTION

SAMPLE CALCULATION FOR LABOR, MATERIALS AND EQUIPMENT, AND CONSTRUCTION EQUIPMENT

A. GENERAL: This appendix demonstrates a sample calculation for labor, materials and equipment, and construction equipment. This sample calculation is for information only and does not represent the actual classifications, hourly rates, benefits, and labor surcharge for this project.

B. WAGE DETERMINATION:

CLASSIFICATION	BASIC HOURLY	HEALTH WELFARE	PENSION	VAC HOL	TRAIN'G	SUB'T BENEFIT	HOURLY RATE
LABORER GP 1	\$26.14	\$6.54	\$8.90	\$2.48	\$0.37	\$18.29	\$44.43
LABORER GP 6	27.10	6.54	8.90	2.48	0.37	18.29	45.39
OPERATOR GP 1	36.35	12.53	8.89	3.70	0.62	25.74	62.09
OPERATOR GP 4	27.52	12.53	8.89	3.70	0.62	25.74	53.26
OPERATOR 4-MAN	40.31	12.53	8.89	3.70	0.62	25.74	66.05

C. SALARY + VACATION DETERMINATION:

CLASSIFICATION	BASE SALARY	VACATION	SUBTOTAL SALARY + VAC
LABORER GP 1	\$26.14	\$2.48	\$ 32.68
LABORER GP 6	27.10	2.48	33.64
OPERATOR GP 1	36.35	3.70	48.88
OPERATOR GP 4	27.52	3.70	40.05
OPERATOR 4-MAN	40.31	3.70	52.84
		TOTAL	\$208.09
			x 8
			\$1664.72

C. LABOR SURCHARGE DETERMINATION:

Workmen's Compensation . . . . .	10.24%
Liability Insurance . . . . .	6.75%
Federal Unemployment Insurance . . . . .	0.80%
State Unemployment Insurance . . . . .	5.40%
Social Security (FICA) . . . . .	7.65%
	RATE = 0.3084 30.84%

D. DAILY EXTRA WORK REPORT: A sample Daily Extra Work Report (Form DWR 2832) is shown on page 2 of this appendix.

# DAILY EXTRA WORK REPORT

REPORT NO. **1**

F.M. No. \_\_\_\_\_  
 M.D. No. \_\_\_\_\_  
 C.C.O. No. **1**

DATE PERFORMED **12/11/12** DATE OF REPORT **12/11/12**

SPECIFICATION NO. **XX-XX**

WORK PERFORMED BY **X, Y, Z EXCAVATORS**  
 DESCRIPTION OF WORK **EXCAVATE AND REPLACE PIPE, SAN BERNARDINO COUNTY**

MATERIALS & EQUIPMENT AND/OR WORK DONE BY SPECIALIST		EXTENDED AMOUNT		P. R. NO.	LABOR	HOURS	SALARY + VACATION RATE	EXTENDED SALARY + VACATION RATE	HOURLY RATE	EXTENDED AMOUNT	
DESCRIPTION	NO. UNIT	UNIT COST	AMOUNT								
CULVERT 30 INCH DIA. CMP (LF)	20	\$ 40.00	\$ 800.00	33	LABORER GP 1	REG 8 OT	\$ 32.68	\$ 261.44	\$ 44.43	\$ 355.44	
				35	LABORER GP 6	REG 8 OT	\$ 33.64	\$ 269.12	\$ 45.39	\$ 363.12	
				40	OPERATOR GP 1	REG 8 OT	\$ 48.88	\$ 391.04	\$ 62.09	\$ 496.72	
				10	OPERATOR GP 4	REG 8 OT	\$ 40.05	\$ 320.40	\$ 53.26	\$ 426.08	
				21	OPERATOR 4 AMN	REG 8 OT	\$ 52.84	\$ 422.72	\$ 66.05	\$ 528.40	
TOTAL MATERIALS & EQUIPMENT COST <b>B</b>											
CONSTRUCTION EQUIPMENT											
EQUIP. DESCRIPTION	HOURS	RATE	AMOUNT								
1 SKIP LOADER	8	\$ 36.00	\$ 288.00								
1 SELF-PROPELLED SCRAPER	8	\$ 50.00	\$ 400.00								
TOTAL CONSTRUCTION EQUIPMENT COST <b>C</b>											
HAULING OF CONSTRUCTION EQUIPMENT											
DESCRIPTION	NO. UNIT	UNIT COST	AMOUNT								
TOTAL HAULING OF CONSTRUCTION EQUIPMENT <b>D</b>											
SIGNATURE VERIFIES TIME, CLASSIFICATION, MATERIALS & EQUIPMENT, CONSTRUCTION EQUIPMENT, AND HAULING OF CONSTRUCTION EQUIPMENT.											
TOTAL MATERIALS & EQUIPMENT COST <b>B</b>											
TOTAL CONSTRUCTION EQUIPMENT COST <b>C</b>											
TOTAL HAULING OF CONSTRUCTION EQUIPMENT <b>D</b>											
TOTAL LABOR COST <b>A</b>											
TOTAL THIS REPORT											

DWR INSPECTOR \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACTOR'S FOREMAN/SUPERINTENDENT \_\_\_\_\_ DATE \_\_\_\_\_  
 DWR FIELD ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACTOR'S REPRESENTATIVE \_\_\_\_\_ DATE \_\_\_\_\_  
 DWR 2632 (Rev. 3/09) For instructions, see reverse side.

**INSTRUCTIONS TO INSPECTORS**

1. On the line "Work Performed by" enter the name of the company who maintains the payroll for the employees listed on the report. **Make separate reports for each company's work.**
2. On "Date Performed," enter date work was actually done. On "Date of Report," enter the date report is prepared.
3. Under "Construction Equipment," describe the equipment in the same manner as it is in the current Labor Surcharge and Equipment Rental Rates, published by Caltrans.
4. Under "Labor" show employee's payroll number, if there is one, name and wage classification. **List operators on the same line as the construction equipment they operated.** If one person operates more than one piece of construction equipment, indicate this on the report. If construction equipment is owner-operated, mark "O/op" under "Labor" on the same line as the construction equipment.
5. Under "Rate" show the equivalent rate per hour from the rental rates established by distributors of equipment rental agencies in the locality for performance of the work or the appropriate, as determined by the Engineer, hourly, daily, weekly, or monthly rental rate in the Labor Surcharge and Equipment Rental Rates, published by Caltrans.
6. Under "Material & Equipment and/or Work Done by Specialists," show net amount, after available discounts whether or not taken. Attach two copies of each invoice.
7. Submit reports promptly in accordance with Specifications.

WREM Distribution List  
March 9, 2010

State of California  
The California Natural Resources Agency  
DEPARTMENT OF WATER RESOURCES

WATER RESOURCES ENGINEERING MEMORANDUM NO. 55b

TO: WREM Distribution List

DATE: March 9, 2010

FROM: Director

SUBJECT: Department Diving Procedures

This memorandum supersedes Water Resources Engineering Memorandum No. 55a, March 28, 1986. Refer to WREM 67 for snorkeling procedures.

PURPOSE

This memorandum covers the initiation, planning, approval, and execution of dives performed by non-Department of Water Resources (DWR) divers ("divers") at DWR facilities and/or under DWR direction. Divers include contract divers [i.e. commercial dive entity under contract to DWR], and non-contract divers [i.e. divers from other federal, state or local agencies].

POLICY

DWR employees shall not perform diving. DWR is committed to ensuring safe underwater practices. All managers, supervisors, and employees associated with initializing, planning, approving, and executing dives shall follow the procedure set forth herein.

All divers shall comply with either the State of California Occupational Safety and Health Act (Cal-OSHA) or the Federal Occupational Safety and Health Act (OSHA) requirements, whichever is more stringent.

DISCUSSION

This memorandum originally established the responsibilities and procedures for the DWR in-house Dive Team. Following the suspension of diving by DWR employees in February 2007, the Division of Operations and Maintenance (O&M) developed an interim procedure to authorize and manage diving activities performed by divers at State Water Project Facilities. The procedure set forth below supersedes the interim procedure and replaces Project O&M Instructions No. ST – 9, and its predecessor MM – 11h.

For DWR purposes diving shall be defined as work performed beneath the surface of a body of water, exposed to hyperbaric conditions, and using underwater breathing apparatus.

WREM Distribution List  
March 9, 2010

## PROCEDURE

### **1. Request for Dives**

A Dive Request form (DWR 3569) shall be used to initiate dives and document approvals. The requestor shall complete the scope of work including any special conditions that apply.

All dive requests at State Water Project (SWP) facilities and/or under O&M's direction shall be submitted to the appropriate O&M Field Division Hydroelectric Plant Operations Superintendent (Operations Superintendent). The Operations Superintendent shall coordinate an operations review based on the scope of work, location, and any special conditions stated on the submitted Dive Request.

All other dive requests under the direction of other DWR organizations shall be submitted to the coordinator assigned by that respective organization. An operations review based on the scope of work, location, and any special conditions stated on the submitted Dive Request shall be conducted with the facility owner/operator.

### **2. Dive Submittal Requirements**

Dive submittals or documents on file with the Project Safety Office, Division of Engineering, shall include but may not be limited to the following:

- Injury and Illness Prevention Program.
- Safe Practices Manual.
- Proof of liability insurance.
- Dive Operations Plan (Job Specific).
- Site Specific Job Hazard Analysis (Job Specific).
- Emergency Management Plan (Job Specific).
- Dive Personnel Certifications (Job Specific).

Inquiries regarding dive submittal requirements can be directed to the Project Safety Office.

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### **3. Dive Coordination**

#### **3.1 Dives at SWP Facilities and/or under the direction of the Division of Operations and Maintenance:**

The Operations Superintendent shall:

- Prepare the Dive Request (DWR 3569) and submit to the Chief, Operations Support Office for approval by the Chief, Division of O&M.
- Prepare the Work Clearance Application (WCA) and all safety related documents in accordance with Project O&M Instruction No. OP-2, General Operating Procedures for Safe Clearances, Hot Line Orders, Special Conditions, and General Switching.
- Coordinate the transmittal, review, and approval of the dive submittals with the Project Safety Office.

The Project Safety Office shall:

- Review and approve required dive submittals.
- Inform the Operations Superintendent and the Outage Management Branch, Operations Control Office, upon approval of dive submittals.

The Outage Management Branch, shall:

- Schedule the dive in coordination with the Operations Superintendent and the Project Operations Center, including all required WCA approvals.

#### **3.2. All other DWR directed dives:**

The assigned coordinator for the organization requesting the dive shall:

- Prepare the Dive Request (DWR 3569) and submit to the appropriate Division/Office Chief for approval.
- Verify that dive submittals have been sent to the Project Safety Office.
- Consult with the facility owner/operator to coordinate, obtain and schedule the appropriate operational safety clearances.
- Schedule the dive in coordination with the appropriate dive contract manager or agency dive coordinator upon approval of dive submittals and necessary safety clearances.

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The Project Safety Office shall:

- Review and approve required dive submittals.
- Inform the Division requesting the dive upon approval of dive submittals.

#### **4. Dive Site Requirements**

A DWR representative shall be present at all times during a dive. For dives at SWP facilities and/or under the direction of the Division of Operations and Maintenance, the field division Operations Branch shall provide operations personnel. For all other dives, the DWR organization requesting the dive shall provide an onsite representative familiar with the operations of that facility. The DWR representative shall document the following using the Dive Site Checklist (DWR 3569a):

- Verify that the operational conditions are as represented in the approved clearance documents (includes expected flow, velocities, turnout locations, check structures locations and other operational considerations). If the conditions are not as represented on the dive submittal and clearance documents, the DWR representative shall suspend the dive until such time as conditions are corrected or reassessed for safe dive operations. Any reassessment that includes modifications to the dive submittals requires re-approval by both the Project Safety Office and the entity controlling the facility clearances as outlined in Section 3, Dive Coordination above.
- Identify the contractor's Diving Supervisor.
- Walk down clearances with the Diving Supervisor and review expected flow, velocities, turnout locations, check structures locations and other operational considerations.
- Verify Dive Personnel Certifications and confirm that copies of the approved job specific dive submittals are available on-site.
- Attend the dive team briefing.

In addition to the above, for those dives at SWP Facilities and/or under the direction of the Division of Operations and Maintenance, the DWR representative shall do the following:

- Call in "Divers in the water" to the Area Control Center (ACC) (communicate contact number, divers' names, and location).
- Maintain communication with ACC.

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- Notify ACC when underwater work is complete.

For all other DWR directed dives the DWR representative shall follow the facility owner/operator operational safety clearances as applicable.

## 5. Exemptions

“Diving operations performed solely for search, rescue, or related public safety purposes under the control of and performed by employees of a state or local governmental agency” are exempt from Cal/OSHA regulations, Title 8, CA Administrative Code, Section 6050, and are therefore not subject to procedures set forth in this WREM.

### IMPLEMENTATION AND REVIEW

This policy will be implemented immediately. The Management Analysis Office is responsible for the coordination of an annual review of this policy.

Signature on file with MAO

\_\_\_\_\_  
Director

Date:\_\_\_\_\_