APPENDIX A-2

SPECIFICATIONS - MALAKOFF DIGGINS STATE HISTORIC PARK PIT DRAINAGE RUNOFF BMP CONSTRUCTION (AUGUST 2021)

GOLDER
MEMBER OF WSP

SPECIFICATIONS

MALAKOFF DIGGINS STATE HISTORIC PARK PIT DRAINAGE RUNOFF BEST MANAGEMENT PRACTICE CONSTRUCTION

Submitted to:

State of California Department of Parks and Recreation

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154490214.004

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These specifications were prepared under the direction of the undersigned.

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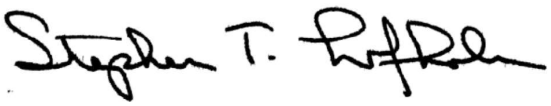

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https://golderassociates.sharepoint.com/sites/127765/project files/6 deliverables/1_drawings and technical specs issued 08 31 21/154490214.004_malakoff_runoff bmp_specifications_083121.docx

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SECTION 01100
SUMMARY

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Information:

1. Owner: State of California, Department of Parks and Recreation.
2. Park District: Acquisition and Development Division
3. Park Unit: Malakoff Diggins State Historic Park
4. Location: 2359 North Bloomfield Road, Nevada City, CA 95959

B. Refer to Notice to Contractors included in Project Manual for a general description of the work.

C. The Work consists of installing best management practices (BMPs) to control and minimize sediment in drainage runoff from leaving the historic mine pit.

1. The Work includes:
   a. Construction of a causeway road to access the pit bottom for construction of the BMPs and maintenance.
   b. Installation of brush dams across larger erosion gullies and upstream of the proposed grade control structure.
   c. Installation of a soldier pile weir wall around Hiller Tunnel entrance to back-up water and increase settling time and treatment of runoff water before it discharges from the site.
   d. Construction of an interceptor swale to divert stormwater runoff from the east end of the pit to the west end of pit lake for settling.
   e. Construction of a grade control structure to hold back larger grain-size sediment load from east end of the pit.
   f. Installation of Flocculants and soil stabilizers to remove finer-grained sediments.

D. Project will be constructed under a general construction contract.

1.2 WORK PHASING AND SEQUENCE

A. The Work shall be conducted in six phases:

1. Phase 1: Construction of Pit Access, Staging Areas and Causeway - Work of this phase shall be substantially complete within 60 days of Notice to Proceed.

2. Phase 2: BMP Footprint Vegetation Clearing and Installation of Brush Dams - Work of this phase shall be substantially complete within 60 days of completion of Phase 1.

3. Phase 3: Installation of a soldier pile weir wall around Hiller Tunnel entrance - Work of this phase shall be substantially complete within 60 days of completion of Phase 2.

4. Phase 4: Construction of the cross-pit interceptor swale - Work of this phase shall be substantially complete within 60 days of completion of Phase 3.

5. Phase 5: Installation of the Grade Control structure - Work of this phase shall be substantially complete within 60 days of completion of Phase 4.

6. Phase 6: Installation of soil stabilizers and flocculants and project completion - Work of this phase shall be substantially complete within 60 days of completion of Phase 5.

B. Sequencing. Conduct the Work in the following sequence.

1. Complete each phase prior to starting work on the next phase.
2. Phase 2 may be completed concurrently with Phase 3.

1.3 USE OF PROJECT SITE

A. General: The project site is limited to the areas indicated, and the Contractor shall limit operations to the project site. Contractor shall have full use of project site for construction operations during construction period. Contractor's use of project site is limited only by The State's right to perform work or to retain other contractors on portions of Project or as directed by State's Representative. Rules and regulations for state park systems are found in Title 14 California Code of Regulations, Division 3, Chapters 1 and 2.

1.4 WORK UNDER OTHER CONTRACTS

A. Separate Contract: The State will award a separate contract or self-perform other construction operations at Project site. Those operations may be conducted simultaneously with work under this Contract. This other work will include the following:

1. Removal of boardwalk across lake on west end of Pit and rerouting hiking trail around the south and east side of the lake.

B. Cooperate fully with separate the State and/or other contractors so this other work may be carried out smoothly, without interfering with or delaying the work under this Contract.

1.5 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 16-division format and CSI/CSC's "MasterFormat" numbering system.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01100

SECTION 01140
WORK RESTRICTIONS

PART 1 - GENERAL

A. Use of Site: Limit operations to work in areas indicated. Do not disturb portions of project site beyond areas indicated.

1. Limits: Confine constructions operations to the areas indicated.
2. State Occupancy: Allow for State occupancy of site and use by the public for all areas not in an active Phase of work.
3. Driveways and Entrances: Keep driveways and entrances serving the project site clear and available to The State, State's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

a. Schedule deliveries to minimize use of driveways and entrances.
b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

B. Use of Existing Facilities: Maintain existing facilities in a weather tight condition throughout construction period. Repair damage caused by construction operations. Protect facilities and occupants during construction period.

1.2 SPECIAL REQUIREMENTS

A. Reserved for requirements that are developed during permit review.

1.3 OCCUPANCY REQUIREMENTS

A. Full State Occupancy: Cooperate with the State during construction operations to minimize conflicts and facilitate State usage. Perform the Work so as not to interfere with State’s operations.

B. Partial Owner Occupancy: State reserves the right to occupy and to place and install equipment in completed areas of the facility, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. State Representative will prepare a Certificate of Substantial Completion for each specific phase of the Work before State occupancy.
2. On occupancy, State will assume responsibility for maintenance and custodial service for occupied portions of the facility.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01140

SECTION 01210
ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements governing the following:

1. Lump sum allowances.
2. Unit cost allowances.
3. Contingency allowances.
4. Testing and inspecting allowance.
5. Quantity allowances.

1.2 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise State Representative of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At State Representative request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by the State from the designated supplier.

1.3 SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

1.4 USE OF ALLOWANCES

A. Use the allowance only as directed by State Representative for State's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Contractor's overhead, profit, and related costs for products and equipment ordered by State under the allowance are included in the allowance and are not part of the Contract Sum. These costs also include delivery, installation, taxes, insurance, equipment rental, and similar costs.

C. Change Orders authorizing use of funds from the allowance will include Contractor's related costs and reasonable overhead and profit margins. Markups shall be applied to direct costs in the same manner as specified for Change Orders.

D. At Project closeout, credit unused amounts remaining in the allowance to State by Change Order.

1.5 TESTING AND INSPECTING ALLOWANCES

A. Testing and inspecting allowances include the cost of engaging testing agencies, actual tests and inspections, and reporting results, as specified.

B. The allowance does not include incidental labor required to assist the testing agency or costs for retesting if previous tests and inspections result in failure. Such costs are included in the Contract Sum.

C. Costs of services not required by the Contract Documents are not included in the allowance.

D. At Project closeout, credit unused amounts remaining in the testing and inspecting allowance to State by Change Order.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

END OF SECTION 01210

SECTION 01230

ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if State decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. <Insert Number>: <Insert description of alternate.>

END OF SECTION 01230

SECTION 01310
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General Project coordination procedures.
2. Coordination Drawings.
3. Project meetings.

1.2 COORDINATION

A. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with Park Rangers to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Pre-construction conferences.
7. Project closeout activities.

1.3 SUBMITTALS

A. Contractor's Construction Schedule in Gannt chart format

B. Progress Meeting Agenda and Minutes.

1.4 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at the Park Headquarters Building in the North Bloomfield Historic Town.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify the State of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including the State, within 3 days of the meeting.

B. Preconstruction Conference: a preconstruction conference will be scheduled by the State before starting construction, the conference will be held at the Project site or another convenient location. The meeting will review responsibilities and personnel assignments.

1. Attendees: Authorized representatives of the State, and its consultants; Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

a. Tentative construction schedule.
b. Phasing and sequencing.
c. Special work restrictions.
d. Designation of responsible personnel.
e. Procedures for processing field decisions and Change Orders.
f. Procedures for processing Applications for Payment.
g. Distribution of the Contract Documents.
h. Submittal procedures.
i. Preparation of Record Documents.
j. Use of facilities.
k. Responsibility for temporary facilities and controls.
l. Parking availability.
m. Office, work, and storage areas.
n. Equipment deliveries and priorities.
o. First aid.

p. Security.
q. Progress cleaning.
r. Working hours.
s. Inspection and Quality Control.

C. Conduct progress meetings at weekly intervals or as determined by the State Representative. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of the State, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
b. Review present and future needs of each entity present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Status of submittals.
4) Deliveries.
5) Off-site fabrication.
6) Access.
7) Site utilization.
8) Temporary facilities and controls.
9) Work hours.
10) Hazards and risks.
11) Progress cleaning.
12) Quality and work standards.
13) Change Orders.
14) Documentation of information for payment requests.

3. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

    a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01310

SECTION 01320
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Contractor's Construction Schedule.
2. Submittals Schedule.
3. Daily construction reports.
4. Field condition reports.
5. Construction photographs.

1.2 DEFINITIONS

A. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall Project duration and contains no float.

B. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either the State or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

C. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.

D. Major Area: For this project, this term refers to a Phase on construction (see Section 01100).

1.3 SUBMITTALS

A. Submittals Schedule: Submit copies of schedule in electronic Microsoft™ Excel™ format via email, and three paper copies at the progress meetings. Arrange the following information in a tabular format:

1. Scheduled date for first submittal.
2. Specification Section number and title.
3. Submittal category (action or informational).
4. Name of subcontractor.
5. Description of the Work covered.
6. Scheduled date for Engineer's final release or approval.

B. Contractor's Construction Schedule: Submit three printed copies of initial schedule, one a reproducible print and one a blue- or black-line print, large enough to show entire schedule for entire construction period. For each activity (task) in the schedule shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float. The schedule shall include:

1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
3. Total Float Report: List of all activities sorted in ascending order of total float.

C. Construction Photographs: Submit digital photographs to the State Representative within seven days of taking the photograph, in accordance with Section: 01322 PHOTOGRAPHIC DOCUMENTATION.

D. Daily Construction Reports: Submit email copies daily.

E. Field Condition Reports: Submit email copies at time of discovery of differing conditions.

1.4 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from parties involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

C. Auxiliary Services: Cooperate with State Representative and provide auxiliary services requested, including access to Project site and use of temporary facilities including temporary lighting.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
2. Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established from commencement of the Work to date of Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each Major Area as a separate numbered activity for each principal element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than [**20**] <**Insert number**> days, unless specifically allowed by Engineer.
2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

    a. Rock

    b. Fill Materials

    c. Steel Soldier Piles

    d. Wood Lagging

3. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section 01330 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Engineer’s administrative procedures necessary for certification of Substantial Completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.
2. Work Restrictions: Show the effect on the schedule of the following:

    a. Coordination with existing construction.
    b. Limitations of continued occupancies.
    c. Uninterruptible services.
    d. Use of premises restrictions.
    e. Provisions for future construction.
    f. Seasonal variations.
    g. Environmental control.

3. Work Stages: Indicate important stages of construction for each major portion of the Work.

D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Each Phase Substantial Completion, and Final Completion.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for commencement of the Work. Base schedule on the Preliminary Construction Schedule and whatever update or feedback was received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require 3 months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2. All line items on the Schedule of Values shall also be included in the progress schedule as separate activities. These two documents must be coordinated and contain the same work items.

2.4 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording events at Project site, including the following:

1. List of subcontractors.
2. High and low temperatures and general weather conditions.
3. Accidents.
4. Stoppages, delays, shortages, and losses.
5. Meter readings and similar recordings.
6. Orders and requests of authorities having jurisdiction.
7. Services connected and disconnected.
8. Equipment or system tests and startups.

B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare a detailed report. Submit with a request for information, include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At weekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one day before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Engineer, the State, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01320

SECTION 01322
PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Periodic construction photographs.
3. Demonstration and training videotapes.

B. See Division 1 Section 01770 "Closeout Procedures" for submitting photographic data as Project Record Documents at Project closeout.

1.2 SUBMITTALS

A. Key Plan: Submit key plan of Project site with notation of vantage points marked for location and direction of each photograph. Include the same label information as the corresponding set of photographs.

B. Construction Photographs: Submit one copy of each photographic view within seven days of taking photographs.

1. Format: Digital format, JPEG, minimum resolution of 1.3 megapixels.
2. Identification: Provide with each copy an associated label or rubber-stamped impression with the following information:

a. Name of Project.
b. Name of Contractor.
c. Date photograph was taken.
d. Description of vantage point, indicating location, and direction (by compass point.

3. Digital Images: Submit a complete set of digital image electronic files as a Project Record Document. Identify electronic media with date photographs were taken. Submit images that have the same aspect ratio as the sensor, uncropped.

1.3 EXTRA COPIES

A. Copies: Contractor shall retain photographic copies for three years after date of Substantial Completion. During this period, photographer shall fill orders by the State for extra copies. Contractor shall price extra copies at prevailing local commercial prices.

PART 2 - PRODUCTS

2.1 DIGITAL MEDIA

A. Digital Images: Provide images in JPEG format, with minimum sensor size of 1.3 megapixels.

B. Videotape Format: Provide high-quality VHS color videotape in full-size cassettes.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

A. Photographer: Contractor Superintendent or his designee. .

B. Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph. At minimum this should be documented as the correct date and time in the “Details” or “Properties” of the digital photograph.

C. Field Office Prints: Retain one set of prints of progress photographs in the field office at Project site, available at all times for reference. Identify photographs the same as for those submitted to Engineer.

D. Preconstruction Photographs: Before starting construction, take color photographs of Project site and surrounding properties from different vantage points, as directed by Engineer.

E. Periodic Construction Photographs: Take a minimum of two, color photographs per active phase per day of active construction. Photographer shall select vantage points to best show status of construction and progress since last photographs were taken.

F. Additional Photographs: The State Representative may issue requests for additional photographs, in addition to periodic photographs specified. Additional copies will be paid for by Change Order and are not included in the Contract Sum.

1. Contractor will be given three days' notice, where feasible.
2. In emergency situations, photographer shall take additional photographs within 24 hours of request.
3. Circumstances that could require additional photographs include, but are not limited to, the following:

    a. Special events planned at Project site.
    b. Immediate follow-up when on-site events result in construction damage or losses.

c. Substantial Completion of a major phase or component of the Work.
d. Extra record photographs at time of final acceptance.
e. Owner's request for special publicity photographs.

END OF SECTION 01322

SECTION 01350
HEALTH AND SAFETY

PART 1 - GENERAL

1.1 SUMMARY

A. This section describes health and safety requirements to be implemented in support of Contractor activities associated with:

1. Excavating, handling, loading, and transporting, potentially contaminated soil and water.

a. Soil Contamination -Based on the presence of metal constituents in soil at the site, Contractor shall prepare and implement a site-specific health and safety plan for the work under this Contract. Additionally, Contractor shall exercise due caution when excavating and handling impacted soil and construction water to minimize the potential health hazard to persons on the site, adjacent properties, and the general public.

1) The work is located within an historic (1853 to 1907) mining pit within the Malakoff Diggins State Historic Park, which is under a Regional Water Quality Control Board issued NPDES Order to clean-up contaminated sediment in the runoff water leaving the pit.

2) Based on field investigations, hazardous substances exist in site surface water. In the areas designated for project work on the Drawings, the maximum concentrations of these hazardous substances detected in soil during previous site investigations are:

Water Constituent	Maximum Detected Concentration
Total Metals: (µg/L)	
Copper	180
Manganese	2,200
Mercury	0.74
Nickel	200

2. Wildfire Emergency Safety –Contractor shall remain vigilant about the threat of wildfire. This includes:

- Listening and researching local media to learn of wildfires in the area before going to the site. If there is a wildfire in the area, call off work if there is even a remote threat of fire at the site or blocking evacuation routes

- Be vigilant about wildfire smoke while working at the site. If contractor staff smell wildfire smoke, check in with Parks' staff at the museum and leave the site
- Becoming familiar with the Golder Wildfire Health, Safety and Environment Plan prior to working at the site
- Learn the evacuation routes from the Golder Wildfire Health, Safety and Environment Plan and leave the site by the appropriate route if you learn that there is wildfire in the area, or you smell wildfire smoke

3. General Construction Safety- Contractor shall at all times conduct its activities with appropriate precautions to avoid the risk of bodily harm to persons or the risk of damage to any property or the environment. Contractor shall comply with, at a minimum, the provisions of 29 CFR 1926. Contractor shall continuously inspect all work, materials, and equipment and shall be solely responsible for discovery, determination, and correction of any conditions that may involve such risks

1.2 REFERENCES

A. It is not the intent of the State to list and identify all applicable safety codes, standards, and/or regulations requiring compliance by Contractor. Contractor shall be responsible for identifying and determining all safety codes, standards, and regulations that are applicable to the work. These include, but are not limited to, the following:

1. 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response
2. 29 CFR 1926, Safety and Health Regulations for Construction.
3. Golder's Wildfire Health, Safety and Environment Plan dated October 2019, for Malakoff Diggins State Historic Park

1.3 SUBMITTALS

A. The following submittals shall be provided by the contractor for the State Representative Engineer (Engineer) review and approval at least 21 day prior to beginning the work. The contractor will not be allowed to begin the work until all submittal requirements are satisfied and found acceptable to the Engineer. Changes or deviations from the approved submittals must be re-submitted for approval. No adjustments in contract time will be allowed due to incomplete submittals.

1. A site-specific health and safety plan meeting applicable regulatory requirements. Obtain State's concurrence with the plan before conducting the work.

2. Submit to the State the name and qualifications of Contractor's health and safety officer for the work. Contractor shall not replace this person without prior written approval by the State.

3. Submit proof of appropriate safety training for site workers and supervisory personnel who are authorized by the Contractor to engage in work associated with hazardous materials and potentially hazardous materials. In addition, for onsite supervisory personnel, submit proof of onsite management or supervisor training and American Red Cross first aid and cardiopulmonary resuscitation (CPR) training.

4. That all Contractor's site workers and supervisors have completed 40 hours of OSHA Hazwoper (29 CFR 1910.120) training and have the required 8-hour annual refresher training since the initial 40-hour training.

PART 2 - PRODUCTS

2.1 HEALTH AND SAFETY PLAN

A. Prepare and maintain for the duration of this Contract a site-specific health and safety plan to promote the health and protection of all onsite personnel and the environment. The plan shall be consistent with the requirements of Part 1 of this Section.

B. Assess the potential risks to onsite personnel and the environment and develop a site-specific health and safety plan to safely execute the work under this Contract. Contractor shall submit the health and safety plan to the State for review and general concurrence. The State's review and concurrence with Contractor's health and safety plan shall not in any way relieve Contractor of its responsibility for health and safety, nor shall the State's concurrence be construed as limiting in any manner Contractor's obligation to undertake actions that may be necessary or required to establish and maintain safe working conditions at the site, including conditions not related to hazardous materials, nor shall the State's concurrence be construed as establishing the State in a position of responsibility for implementation or administration of Contractor's health and safety plan.

C. Contractor and its subcontractors shall comply with the site-specific health and safety plan for the duration of this Contract. Contractor shall coordinate with the State and with all of its subcontractors on health and safety matters. Contractor shall furnish all necessary first-aid, safety, personal protective and decontamination equipment, and facilities and enforce the use of such equipment and facilities by its employees and its subcontractors of any tier.

D. At a minimum, Contractor's site-specific health and safety plan shall include:

1. A description of the site activities to be performed.
2. A listing of hazardous substances known to be, or suspected of being, present at the site.
3. A description of the site chemical hazards (e.g., toxicity, flammability, stability, reactivity, etc.), including the nature of each chemical; its physical properties; OSHA, WISHA, or ACGIH standards, where established; and physical hazards (e.g., noise, heavy equipment, heat stress, etc.).
4. A map of the site showing the known and possible locations of the chemical substances, and the proposed work activity locations and evacuation routes.
5. General health and safety directives regarding onsite conduct, including levels of protection and contingency plans.
6. Site-specific health and safety directives for potentially hazardous activities. These directives shall specify the equipment and safety procedures to be used by personnel engaged in the work activities.
7. Establishment of the work area definitions associated with potential contact with hazardous materials. Planned changes in boundaries during the work shall be identified.
8. Requirements for personal protective equipment. The plan shall include a listing of the health and safety equipment that will be available onsite and required for intrusive site activities during the work under this Contract.
9. Personal decontamination facilities and procedures. Provide decontamination facilities for personnel, as necessary, for conformance with the health and safety plan.
10. Emergency procedures in case of hazardous waste spillage or exposure to personnel, personal injury, fire, explosion, etc. This section of the plan shall include emergency telephone numbers and specific procedures for immediate removal to a hospital or doctor's care of any person who may be injured on the job site.
11. Field monitoring equipment and procedures. This section of the plan shall specify when and how monitoring will be performed (e.g., visual monitoring for airborne dust), what data reporting procedures will be used, and how the data will be used onsite to determine appropriate personal protective equipment.
12. Names and responsibilities of personnel assigned to implement, administer, and supervise the health and safety plan.
13. Names, firms, and staff positions of personnel authorized to work at the site.

14. An employee signature page on which each of Contractor's employees whose activities involve contact with contaminated materials and each employee of each subcontractor of any tier whose activities involve contact with contaminated materials will acknowledge receipt of the plan, an understanding of the plan, and an agreement to comply with plan provisions.
15. Recordkeeping requirements and all necessary reporting to cover the implementation of the Contractor's site-specific health and safety plan.
16. Handling and disposal procedures for personal protective gear, decontamination residuals, and other potentially contaminated construction waste generated by Contractor and other site personnel during the course of the work.

E. As conditions change or if new operations are to be performed, Contractor's health and safety plan shall be modified or amended, or a new health and safety plan shall be developed.

PART 3 - EXECUTION

3.1 HEALTH AND SAFETY

A. Site activities involving hazardous or potentially hazardous materials shall be conducted in accordance with Contractor's site-specific health and safety plan.

B. Designate a qualified representative as Health and Safety Officer whose responsibility will be health and safety monitoring and oversight. The designated qualified health and safety representative shall be onsite at all times when contact with hazardous materials is anticipated.

C. Contractor shall be responsible for providing safety training and shall require its subcontractors and all Contractor-authorized visitors to have this training, if appropriate for the work to be conducted by these personnel. Documentation of this training shall be available at the site. Provide appropriate personal protective equipment for Contractor's employees, as specified in the health and safety plan, and require subcontractors to provide this equipment for subcontractor's employees.

D. Provide for decontamination of Contractor's and subcontractor's personnel and equipment that contact hazardous or potentially hazardous materials, in conformance with the requirements of the health and safety plan.

E. Provide for the proper disposal of disposable safety gear and equipment used by Contractor's employees, the state agency representatives, and all site visitors. Such disposal shall conform to all applicable federal and local hazardous waste disposal regulations. Waste material from Contractor's onsite decontamination facilities shall be properly containerized, labeled, and disposed of by Contractor.

F. Maintain accurate accident and injury reports and furnish the State a copy of reports within 24 hours of the reported incident.

G. Provide proper illumination of construction activity, as necessary, to allow all workers and oversight personnel to safely execute their responsibilities and tasks.

H. Promptly comply with any specific instructions or directions given to Contractor by the State unless overriding health and safety concerns dictate another course of action.

I. Health and safety plans, emergency procedures, and first-aid procedures shall be conspicuously posted at the site and Contractor shall hold regularly scheduled meetings, as necessary, to instruct its personnel and its subcontractors on health and safety practices and proper use of personal protective equipment.

3.2 MATERIAL HANDLING AND DISPOSAL

A. Handle and dispose of contaminated soil, water, and other materials consistent with these Specifications and directives issued by the State, and in conformance with all applicable federal, state, and local waste disposal regulations.

B. Contaminated materials shall be contained within designated areas and shall not, at any time, be placed directly on or otherwise allowed to contaminate the surface of designated uncontaminated areas, except as approved in writing by the State.

C. Transport contaminated soil, water, and other materials from the point of removal to the point of temporary storage or loading in such a manner that contaminated material is not placed on and does not spill or fall on designated uncontaminated areas. Install and maintain chemically resistant liner and containment berm materials and clearly stake and mark temporary storage locations for contaminated materials at all times.

D. Assist the State whenever they elect to acquire confirmational samples. Assist the State to the maximum extent practicable and facilitate the removal of contaminated materials within the limits specified by the State, subject to contractual provisions related to changes in the scope of work.

END OF SECTION 01350

SECTION 01355
ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. This section describes the overall requirements for environmental protection during implementation of the work.

B. Perform the work in a manner to minimize the polluting of air, water, or land, and control noise and the disposal of solid waste materials, as well as any other pollutants.

1.2 RELATED SECTIONS

A. Section 02230 – Site Clearing

B. Section 02450 – Temporary Erosion and Sediment Controls

1.3 SUBMITTALS

A. The following submittals shall be provided by the contractor for the State Representative Engineer (Engineer) review and approval at least 21 day prior to beginning the work. The contractor will not be allowed to begin the work until all submittal requirements are satisfied and found acceptable to the Engineer. Changes or deviations from the approved submittals must be re-submitted for approval. No adjustments in contract time will be allowed due to incomplete submittals.

1. Preconstruction Survey prior to start of any onsite activities, the Contractor shall make a joint condition survey (including photographs), after which Contractor shall prepare and submit a brief report indicating on a layout plan the condition of work areas, assigned storage areas, access routes, and other pertinent site features.

2. Waste Disposal Plan to include a description of Contractor's scheme for disposing of waste materials resulting from the work under this Contract. The waste disposal plan shall meet the requirements of Section 01575 – Construction Waste Management.

1.4 PROJECT CONDITIONS

A. The project is located within a State Historic Park which has been set aside to preserve the historical and archeological artifacts and protect the natural beauty of the Park. It is of upmost importance not to unduly impact the Parks features, ongoing park operations, and public access with construction activity.

1.5 PROTECTION OF LAND AREAS

A. Contractor shall confine its construction activities to onsite areas defined on the Drawings or specifically assigned by the State for its use.

1.6 PROTECTION OF WATER RESOURCES

A. Control the disposal of fuels, oils, bitumens, calcium chloride, acids, or other harmful materials, both on and off the site and comply with applicable federal, state, county, and municipal laws concerning pollution of rivers, streams, and other surface waters while performing the work under this Contract. Special measures shall be taken to prevent chemicals and other hazardous or deleterious substances, including but not limited to fuels, oil, greases, bituminous materials, herbicides, and insecticides from entering public waters. Construction water and other waste waters shall not be allowed to enter natural surface water bodies without adequate treatment.

1.7 WASTE DISPOSAL

A. Waste shall be disposed of in accordance with the Contractors waste disposal plan. If any waste material is spilled or dumped in unauthorized areas, completely remove the material to the States's satisfaction and restore the area to the condition of the adjacent undisturbed areas. Where directed, ground contaminated by such activities shall be excavated, disposed of as approved by the State, and replaced with suitable fill material, all at the expense of Contractor.

1.8 BURNING

A. No burning will be permitted.

1.9 DUST CONTROL

A. Maintain all excavations, fill areas, stockpiles, material and equipment storage areas, waste areas, borrow areas, and all other work areas free from excess dust using a water truck equipped with a spray bar.

B. Contractor's vehicle and equipment speeds shall not exceed 15 miles per hour within the Park.

1.10 DRAINAGE AND EROSION CONTROL

A. Surface water control, management, and disposal within all work areas shall be the responsibility of Contractor. Surface water disposal shall comply with all applicable federal, state, county, and local laws, statutes, ordinances, and

regulations. Surface drainage from work areas shall be contained and surfaces shall be graded as appropriate to control erosion. Temporary control measures shall be provided and maintained until permanent drainage measures are completed. Temporary erosion control measures shall be installed to control the movement of erodible soil by surface water drainage. Drainage and erosion control measures shall be carried out in accordance with Section 02450.

1.11 CORRECTIVE ACTION

A. Upon receipt of a notice in writing of any noncompliance with the foregoing provisions, take immediate corrective action. If Contractor fails or refuses to comply promptly, the State may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to a stop work order shall be made the subject of a claim for extension of time or for excess costs of damages by Contractor unless it was later determined that the Contractor was in compliance.

1.12 POST-CONSTRUCTION CLEANUP OR OBLITERATION

A. Unless otherwise instructed in writing by the State, obliterate all signs of temporary construction facilities such as work areas, temporary stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the Work. The disturbed areas shall be filled and graded to promote proper stormwater runoff as shown.

B. The constructed causeway and turnouts shall remain in place for trail and future maintenance use.

1.13 DECONTAMINATION

A. Decontaminate equipment and materials prior to transporting the equipment or materials to the site, as appropriate. This includes removing all vegetative matter and seeds.

B. Decontaminate and/or clean equipment and materials prior to removing them from the site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Selection of the types, capacities, and materials of products and equipment needed to execute the work and to provide the required environmental protection is the responsibility of Contractor. Materials, tools, and equipment shall be suitable for the intended purpose and shall conform to the requirements of the Specifications and applicable codes and standards for safety.

B. Select suitable environmental protection products and equipment to facilitate the work, including, but not limited to, absorbent pads and booms, straw bales, ecology blocks, silt fencing, containment berms and ditches, pressure washers, pumps and hoses, filter media, tanks, shield systems, small tools, plastic (polyethylene) sheeting, and all other required facilities and equipment.

2.2 EQUIPMENT

A. Contractor shall have the following minimum equipment for controlling dust during the project work:

1. Water truck(s) with controlled spray/mist bar, portable tanks and pumps, and hand-held hoses with fog nozzles.
2. Vacuum sweeper truck for cleaning pavements.

PART 3 - EXECUTION

3.1 CONDUCT OF THE WORK

A. Conduct the work in a manner that protects the environment as specified in this section and elsewhere in the Contract Documents. Failure to protect the environment may result in the Start issuing a stop work order, the duration of which shall extend until conditions that threaten the environment are corrected to the satisfaction of the State. Costs incurred as a result of such a stop work order shall be at the sole expense of Contractor.

END OF SECTION 01355

SECTION 01400
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Contractor shall arrange and pay for a qualified independent testing agency to perform all required testing for the Project. Test reports shall be submitted to the State's Representative within forty-eight (48) hours.

C. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit Contractor's quality-control efforts as necessary to provide compliance with the Contract Document requirements.
2. Requirements for Contractor to provide quality-control services required by Engineer/Designer, the State, or authorities having jurisdiction are not limited by provisions of this Section.

1.2 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions before, during and after execution of the Work to evaluate that completed construction complies with requirements. Quality Control Services do not include contract enforcement activities performed by Engineer the State or Designer of Record.

C. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.3 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement, signed, and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

C. Contractor's Daily Quality Control Reports: The Contractor shall designate an individual responsible for maintaining control over the quality of the work. For each day on which work is scheduled to be performed, the Contractor's Quality Control Representative shall Prepare and submit certified written reports that include the following:

1. Date of report preparation and date work was performed.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples, tests, or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work performed that day, and reasons for non-work.
7. Item of work tested or inspected. Test and inspection methods.
8. Identification of products delivered/installed and corresponding Specification Sections.
9. Complete test or inspection data.
10. Test and inspection results and an interpretation of test results.
11. Weather conditions. Ambient conditions at time of sample taking, testing, and inspecting.
12. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
13. Name and signature of Quality Control Representative, and laboratory inspector.
14. Recommendations on retesting and reinspecting.

D. Permits, Licenses, and Certificates: For the State's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Quarry/Fill Supplier Qualifications: A firm experienced in manufacturing aggregates similar to those indicated for this Project and with a record of successful in-service performance and that provides non-contaminated materials.

D. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.

1.5 QUALITY CONTROL

A. State Responsibilities: Where testing services are indicated as The State's responsibility, the State will engage a qualified testing agency to perform these services.

1. The State will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor**,** and the Contract Sum will be adjusted by Change Order.
3. The presence or absence of the State’s inspector or testing agency does not relieve the Contractor of sole responsibility for compliance with the Contract Documents.

B. Contractor Responsibilities: The Contractor is solely responsible for controlling the work to comply with the Contract Documents. Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.

1. Where testing or inspection services are not indicated as the State’s responsibility, engage a qualified testing agency to perform these quality-control services.

    a. Contractor shall not employ the same entity engaged by the State, unless agreed to in writing by the State.

2. Notify the State Representative, State’s testing agencies, Inspector of Record, and Contractor’s testing agencies at least 48 hours in advance of time when Work that requires testing or inspecting will be performed.

3. Where testing or inspection services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each testing or inspection service.
4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Special Tests and Inspections: The Contractor will engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction.

1. Testing agency will notify Engineer, the State Representative and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to Engineer, the State Representative with copy to Contractor and to authorities having jurisdiction.
3. Testing agency will submit a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
5. Testing agency will retest and reinspect corrected work.

D. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.

E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.

F. Testing Agency Responsibilities: Cooperate with Engineer the State Representative and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Engineer the State and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
5. Do not perform any duties of Contractor.

G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field-curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01400

SECTION 01500
TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 SUMMARY

A. This section specifies requirements for certain temporary facilities to be provided and maintained by Contractor. Assess the requirements and provide for all temporary facilities that are necessary to accomplish the work, and permit, design, fabricate, procure, lease, and install or otherwise supply the required facilities at no additional cost to the State. Unless otherwise indicated by the State, no temporary facilities or utilities will be provided by the State. Temporary facilities are not shown on the Drawings.

B. Temporary facilities include field offices for Contractor, water, sanitary, and electrical utilities, parking areas, material and equipment storage areas, temporary lighting and signage, and other temporary site improvements determined by Contractor as necessary for execution of the work under this Contract.

C. Available areas for temporary facilities within and around the site are limited and the area defined as the *Shooting Range Staging Area* on the Drawings is the preferred area for Contractor offices and parking. Final arrangements and layouts for temporary facilities shall be proposed by Contractor and approved by the Park.

1.2 SUBMITTALS

A. The following submittals shall be provided by the contractor for the State Representative Engineer (Engineer) review and approval at least 21 days prior to beginning the work. The contractor will not be allowed to begin the work until all submittal requirements are satisfied and found acceptable to the Engineer. Changes or deviations from the approved submittals must be re-submitted for approval. No adjustments in contract time will be allowed due to incomplete submittals.

1. A site plan showing the Contractors proposed temporary facility locations.

PART 2 - PRODUCTS

2.1 TEMPORARY CONSTRUCTION FACILITIES

A. Provide and maintain temporary berms, spill kits, ditches, and lining/cover materials as required to prevent movement of waste materials, spills, etc. resulting from the work under this Contract, and as needed to provide a suitable working surface in areas occupied by temporary facilities.

B. Provide barricades, temporary fencing, handrails, warning lights, and other devices required by law or regulation, or as necessary to safely operate temporary facilities and to protect people at the site. Contractor may use and relocate temporary fencing present at the site as approved by the Parks.

2.2 FIELD OFFICE FOR CONTRACTOR

A. Provide a secure mobile office building at the site. Mobile office building shall be suitably and adequately equipped as required for normal job administration.

2.3 MATERIAL STORAGE

A. Construct temporary material and equipment storage areas, as required, to secure and protect materials and equipment against damage, loss, theft, and vandalism.

B. Provide shelters, as required, for material storage to protect goods and supplies against the elements, theft, vandalism, or other damage

2.4 TELEPHONE

A. Cell service may not be available in the Park. Provide telephone service for the entire Contract period. Telephone service shall be accessible to all personnel connected with the work for purposes of making Contract-related calls, including calls to emergency medical or fire prevention services.

2.5 ELECTRICAL LIGHTS AND POWER

A. Determine the locations and requirements for electrical power services at the work locations and provide the required poles, voltage regulation, distribution circuits, and other installations to provide required electrical service to the work under this Contract.

B. Provide power hookup and power to the site and support zones, as required.

C. Provide temporary light and power service as required for safe, efficient, and satisfactory performance of the work and to inhibit vandalism.

D. Provide safety switches and wiring to trailers and required extension cords, lighting outlets, power outlets (grounded type), lamps, and other equipment and accessories necessary for adequate temporary lighting and power.

E. Remove temporary lighting and power and their connections at completion of the work unless otherwise directed by the Park.

2.6 DRINKING WATER

A. Provide drinking water for all personnel connected with the work. Water shall be transported in sanitary containers to provide clean and fresh water.

2.7 CHEMICAL TOILET FACILITIES

A. Provide adequate chemical toilet facilities for all individuals connected with the Work, in numbers as required by federal and state safety and occupational standards.

B. Provide regular service of each chemical toilet facility to maintain sanitary conditions. Remove units at the completion of the site work.

2.8 WATER FOR CONSTRUCTION PURPOSES, DECONTAMINATION, DUST CONTROL, AND FIRE PROTECTION

A. Provide clean, potable water and necessary storage, as required, for the work, including storage requirements for dust emissions control. Water may be transported to the site by tanker truck or by connections to a nearby fire hydrant or other water source, whichever is more feasible and cost-effective, as approved by the Park.

B. Make connections and provide piping, hoses, nozzles, and other accessories required to supply water to the site and support zones for accomplishing the work and providing necessary fire protection and provide and maintain the necessary equipment.

C. At the completion of the Contract, disconnect all temporary connections. The disconnection of water services shall be conducted in accordance with the policies and procedures of the utility purveyor in effect at the time the project is concluded.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install and maintain all necessary temporary facilities for the duration of the project, consistent with applicable codes and regulations and the requirements of these Specifications.

3.2 MAINTENANCE

A. Maintain construction, staging, storage and office areas in a neat, orderly condition.

B. Remove all rubbish, debris, and other accumulations that may result from work under this Contract. Dispose of nonhazardous and non-dangerous wastes, rubbish, debris, and construction waste materials at approved offsite locations on a weekly basis.

3.3 REMOVAL

A. Remove all temporary facilities from the site at project completion, and restore areas occupied by those facilities to a condition similar to those that existed prior to the Contract or as acceptable to the Park.

END OF SECTION 01500

SECTION 01575
CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 SUMMARY

A. This section specifies diversion of construction debris from the landfill.

1. Waste Management Goals: a minimum of 75% of the total project waste should be diverted from landfill by, in order of preference 1) weight, 2) volume, whichever is most feasible to measure.
2. Provide a construction waste management plan, a construction waste estimate, and a final waste management report to show evidence of recycling, and reuse of recovered materials.
3. Inform the State Representative where Construction Waste Management requirements could detrimentally impact construction schedule.

B. Waste Management Objective for the Project:

1. The State has established that this Project shall minimize the generation of construction and demolition waste at the site. Factors that contribute to waste, such as over-packaging, improper storage, ordering error, poor planning, breakage, mishandling, and contamination shall be minimized.
2. Of the inevitable waste that is generated, as many of the waste materials as economically feasible shall be reused or recycled. Waste disposal in landfills shall be minimized.

C. Diversion From Landfill: Waste categories appropriate for diversion from landfill shall include, but not be limited to, the following:

1. Land clearing debris
2. Soil
3. Wood: Clean dimensional wood, palette wood
4. Sheet Wood: Plywood, OSB and particle board
5. Concrete
6. Bricks
7. Concrete Masonry Units (CMU)
8. Asphalt Concrete
9. Paper

    a. Bond
    b. Newsprint
    c. Cardboard and paper packaging materials

10. Cement Fiber Products: Shingles, panels, and siding
11. Metals

    a. Ferrous
    b. Non-Ferrous

12. Paint
13. Rigid Foam
14. Glass
15. Plastics
16. Carpet and pad
17. Beverage Containers
18. Insulation
19. Gypsum Board
20. Porcelain Plumbing Fixtures
21. Florescent Light Tubes (per Department of Toxic Substances Control regulations)

1.2 RELATED REQUIREMENTS

A. Appendix 01575A: Construction Waste Estimate.

B. Appendix 01575B: Waste Management Report.

C. Section 01330: Submittal Procedures.

D. Section 01770: Closeout Procedures.

1.3 REFERENCES

A. The California Integrated Waste Management Board (CIWMB); including the California Materials Exchange (CalMAX), Telephone 877-520-9703; www.ciwmb.ca.gov/calmax/. This provides a source of information, statewide, to buy and sell recycled materials.

B. Local Integrated Waste Management Programs and Re-Use Programs in the Project area.

C. The Department of Toxic Substances Control (DTSC).

1.4 CONSTRUCTION WASTE SUMMARY REPORTS

Provide delivery receipts for the recovered materials and waste materials sent to the permitted recycling facilities, processing facilities, or landfill with the following information:

1. Name of firm accepting the recovered materials or waste materials

2. Specify type of facility (e.g., recycler, processor, Class III landfill, MRF)
3. Location of the facility
4. Type of materials
5. Net weights (or volume) of each type of material
6. Date of Delivery
7. Value of the materials or tipping fee paid

1.5 APPLICATION FOR PROGRESS PAYMENT

The following should be submitted with the Application for Progress Payment:

1. Construction Waste Summary Reports as stated above in section 1.4 CONSTRUCTION WASTE SUMMARY REPORTS.
2. Payment could be withheld until diversion goals are met. The contractor is ultimately responsible for implementation of the Construction Waste Management Plan and achieving the diversion goals.

1.6 DEFINITIONS

A. Class III Landfill – A landfill that accepts non-hazardous waste such as household, commercial, and industrial waste, including construction, remodeling, repair, and demolition operations.

B. Construction and Demolition Waste – Including solid wastes, such as building materials, packaging, rubbish, debris, and rubble resulting from construction, remodeling, repair, and demolition operations.

1. Rubbish: Including both combustible and noncombustible wastes, such as paper, boxes, glass, crockery, metal and lumber scrap, tin cans, and bones.
2. Debris: Including both combustible and noncombustible wastes, such as leaves and tree trimmings that result from construction or maintenance and repair work.

C. Divert – Using material for any purpose other than disposal in a landfill or transformation facility.

D. Waste Materials – Large and small pieces of listed materials which are excess to contract requirements and generally include materials to be recycled an/or recovered from existing construction and items of trimmings, cuttings, and damaged goods resulting from new installations, which can be effectively used in the Work.

E. Reuse – Using a material or product that is recovered from construction, renovation, or demolition activities.

F. Recycling – The process of collecting and preparing recycle materials and reusing them in their original form or manufacturing processes that do not cause the destruction of recyclable materials in a manner that precludes further use.

G. Recovery – Any process that reclaims materials, substances, energy, or other products contained within or derived from waste on-site.

H. Sources Separation – Sorting recovered materials into specific material types with no or a minimum amount of contamination on site.

I. Commingled or Off-site Separation – Collecting all material types into a single bin or mixed collection system and separating the waste materials into recyclable material types in an off-site facility.

1.7 SUBMITTALS

A. Construction Waste Management Plan, Construction Waste Estimate Before the start of construction, submit a construction waste management plan and a construction waste estimate for approval, including the following:

1. Indicate how the Contractor proposes to recover at least 75% of the construction wastes and debris for reuse and recycling.
2. The Construction Waste Management Plan should coordinate the recovery effort with the construction schedule.
3. Include a list of reuse facilities, recycling facilities and processing facilities that will be receiving the recovered recyclable materials.
4. Identify materials that are not recyclable or not recovered which will be disposed of in a landfill (or other means acceptable by the State of California and local ordinance and regulations) and explain why the materials are not recovered.
5. List the permitted landfill, or other permitted disposal facilities, that will be accepting the disposed waste materials.
6. Indicate instances or situations where compliance with the requirements of this specification do not apply or do not appear to be possible.
7. Prepare the Construction Waste Estimate identifying each type of waste material to be reused or recycled.

1.8 WASTE MANAGEMENT REPORT

A. Upon completion of Work including final cleanup, provide a final Waste Management Report containing the information required on Appendix 01575B, Waste Management Report forms.

1. The total quantity of each waste material generated; and the date(s) removed from the jobsite.

2. The percent of the total quantity generated of each material sent to landfill, the identity of the landfill (receiving facility) handling costs, transport costs, tipping fees paid at the landfill, and total landfill costs. Attach copies of manifests, weight tickets, receipts, and invoices.
3. For each material reused or recycled from the Project, include the percent of the total quantity generated, the identity of the receiving facility, the total costs of handling and transportation, and income. Attach manifests, weight tickets, receipts, and/or invoices.
4. Contractor shall edit and use forms included in Appendix 01575B, Waste Management Report, or use them as a basis for Contractor's forms.
5. The State will provide electronic copies of Appendix 01575B for Contractors' use.

B. Submit Waste Management Report under provisions of Section 01770 – Closeout Procedures.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 WASTE MANAGEMENT

A. Manager: Contractor shall designate an on-site party (or parties) responsible for instructing workers and subcontractors and overseeing and documenting results of Waste Management for the Project.

B. Distribution: Contractor shall distribute copies of the Construction Waste Estimate and Waste Management Report forms to the Job Site Foreman, each Subcontractor, and the State's Representative.

C. Meetings: Contractor shall conduct Waste Management meetings with subcontractors who generate construction waste. Contractor shall present current status of the Waste Management Report at regular job-site meetings.

D. Material Handling Procedures: Provide means by which waste materials will be protected from contamination and means to be employed in reuse or recycling of waste material consistent with requirements for acceptance by receiving facilities.

1. Separation Facilities: Contractor shall lay out and label a specific area to facilitate separation of materials for reuse and recycling. Recycling and waste bin areas shall be kept neat and clean and clearly marked in order to avoid contamination of materials.

2. Hazardous Wastes: Hazardous wastes shall be separated, stored, and disposed of according to local regulations, and in accordance with specifications for such work as may be included in the Project.
3. Instruction: Contractor shall provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at appropriate stages of the Project.

END OF SECTION 01575

CONSTRUCTION WASTE ESTIMATE **DATE: _____**

Waste Material (Edit to Suit)	Unit	Estimated Quantity Generated	Percent to Landfill	Percent Reused	Percent Recycled
Land Clearing Debris	CY				
Soil	CY				
Wood	CY				
Sheet Wood	CY				
Concrete	CY				
Bricks	CY				
Concrete Masonry Units	CY				
Asphalt Concrete	CY				
Paper	CY				
Cement Fiber Products	CY				
Metal (ferrous)	TON				
Metals (non-ferrous)	LBS				
Paint	GAL				
Rigid Foam	CF				
Glass	CF				
Plastics	CF				
Carpet and Pad	SY				
Beverage Containers	LBS				
Insulation	CF				
Gypsum Board	CF				
Porcelain Plumbing Fixtures	EA				
Fluorescent Light Tubes	EA				

WASTE MANAGEMENT REPORT
COST / INCOME

Waste Material (Edit to Suit)	Unit	Receiving Facility	Landfill Cost			Reused		Recycled	
			Handling	Transport	Fee	Cost	Income	Cost	Income
Land Clearing Debris	CY								
Soil	CY								
Wood	CY								
Sheet Wood	CY								
Concrete	CY								
Bricks	CY								
Concrete Masonry Units	CY								
Asphalt Concrete	CY								
Paper	CY								
Cement Fiber Products	CY								
Metal (ferrous)	TON								
Metals (non-ferrous)	LBS								
Paint	GAL								
Rigid Foam	CF								
Glass	CF								
Plastics	CF								
Carpet and Pad	SY								
Beverage Containers	LBS								
Insulation	CF								
Gypsum Board	CF								
Porcelain Plumbing Fixtures	EA								
Fluorescent Light Tubes	EA								
		TOTALS:							

SECTION 01600
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for selecting products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

1.2 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project
3. Products salvaged or recycled from other projects are not considered new products.
4. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

D. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to the State.

E. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for the State.

1.3 SUBMITTALS

A. Product List: Submit a list, in tabular from, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.

1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
2. Completed List: Within 30 days after date of commencement of the Work, submit 3 copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
3. State's Action: The Designer will respond in writing to Contractor within 15 days of receipt of completed product list. The Designer's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. The Designer's response, or lack of response, does not constitute a waiver of requirement that products comply with the Contract Documents.

B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use form provided by the State
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

    a. Statement indicating why specified material or product cannot be provided.
    b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the State and separate contractors, that will be necessary to accommodate proposed substitution.
    c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
    d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    e. Samples, where applicable or requested.
    f. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and owners.
    g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time.
j. Cost information, including a proposal of change, if any, in the Contract Sum and Contract Time.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Approval Action: If necessary, the State will request additional information or documentation for evaluation within ten days of receipt of a request for substitution. The State will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or ten days of receipt of additional information or documentation, whichever is later.

a. Form of Acceptance: Contract Bulletin.
b. Use product specified if the State cannot make a decision on use of a proposed substitution within time allocated.

C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section 01330 "Submittal Procedures." Show compliance with requirements.

1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
5. Store products to allow for inspection and measurement of quantity or counting of units.
6. Store materials in a manner that will not endanger Project structure.
7. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
8. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
9. Protect stored products from damage.

1.6 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: Forms are included with the Specifications. Prepare a written document using appropriate form properly executed.
3. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 1 Section 01770 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT OPTIONS

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. The State reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," the State will make selection.
5. Where products are accompanied by the term "match sample," sample to be matched is the State's sample.
6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.

B. Product Selection Procedures: Procedures for product selection include the following:

1. Product: Where Specification paragraphs or subparagraphs titled "Product" name a single product and manufacturer, provide the product named.

    a. Substitutions may be considered, unless otherwise indicated.

2. Manufacturer/Source: Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide a product by the manufacturer or from the source named that complies with requirements.

    a. Substitutions may be considered, unless otherwise indicated.

3. Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.

    a. Substitutions may be considered, unless otherwise indicated.

4. Manufacturers: Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.

    a. Substitutions may be considered, unless otherwise indicated.

5. Available Products: Where Specification paragraphs or subparagraphs titled "Available Products" introduce a list of names of both products and manufacturers, provide one of the products listed or another product that complies with requirements. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
6. Available Manufacturers: Where Specification paragraphs or subparagraphs titled "Available Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed or another manufacturer that complies with requirements. Comply with

provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

7. Basis-of-Design Products: Where Specification paragraphs or subparagraphs titled "Basis-of-Design Product" are included and also introduce or refer to a list of manufacturers' names, provide either the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

    a. Substitutions maybe considered, unless otherwise indicated.

8. Visual Matching Specification: Where Specifications require matching an established Sample, select a product (and manufacturer) that complies with requirements and matches the State's sample. the State's decision will be final on whether a proposed product matches satisfactorily.

    a. If no product available within specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents on "substitutions" for selection of a matching product.

9. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product (and manufacturer) that complies with other specified requirements.

    a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, the State will select color, pattern, or texture from manufacturer's product line that does not include premium items.
    b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, the State will select color, pattern, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: the State will consider requests for substitution if received within 35 days prior to the date approval is needed to use such substitute Requests received after that time may be considered or rejected at discretion of the State.

B. Conditions: the State will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, the State will return requests without action, except to record noncompliance with these requirements:

1. Requested substitution offers the State a substantial advantage in cost, time, energy conservation, or other considerations, after identifying and considering additional responsibilities the State must assume. The State's additional responsibilities may include compensation for redesign and evaluation services, increased cost of other construction, royalties, fees, and similar considerations.
2. Requested substitution does not require extensive revisions to the Contract Documents.
3. Requested substitution is consistent with the Contract Documents and will perform the same functions, be suitable for the same use, and produce the specified results.
4. Substitution request is fully documented and properly submitted.
5. Requested substitution will not adversely affect Contractor's Construction Schedule or result in any claim for delay.
6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty, and other available warranties are identified. Contractor is willing to provide supplemental bonds or guarantees requested.
10. Requested substitution is accompanied by an acceptable cost and time proposal.

2.3 COMPARABLE PRODUCTS

A. Where products or manufacturers are specified by name, submit the following, in addition to other required submittals, to obtain approval of an unnamed product:

1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01600

SECTION 01700
EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. General installation of products.
4. Progress cleaning.
5. Protection of installed construction.
6. Correction of the Work.

1.2 SUBMITTALS

A. Certificates: Submit certificate signed by either a land surveyor or a professional engineer certifying that location and elevation of improvements comply with requirements.

B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to for waste disposal.

C. Certified Surveys: Submit two copies signed by the land surveyor or professional engineer.

D. Record of Survey: Submit three copies showing the Work performed and record survey data.

1.3 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

1. Before construction, verify the location and points of connection of utility services.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

1. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
3. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to the State regarding existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by the State or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify the State not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without the State's written permission.

C. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

E. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to the State Representative. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents, on a Request for Information form. (RFI)]

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify the State promptly.

B. General: Engage a licensed or land surveyor to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each Phase of construction and elsewhere as needed to locate each element of Project.
2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
3. Inform installers of lines and levels to which they must comply.
4. Check the location, level and plumb, of every major element as the Work progresses.
5. Notify the State when deviations from required lines and levels exceed allowable tolerances.
6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

D. Structure Lines and Levels: Locate and lay out control lines and levels for structures. Transfer survey markings and elevations for use with control lines and levels. Level weirs and piles from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer the State.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

B. Benchmarks: Establish and maintain a minimum of three permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

D. Record of Survey: Where a Record of Survey is specified, prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by licensed land surveyor that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.

1. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

D. Installed Work: Keep installed work clean.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

G. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

H. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.8 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction.

END OF SECTION 01700

SECTION 01781
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.

1.2 SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit an original and two (2) copies of marked-up Record Prints.
2. Number of Copies: Submit copies of Record Drawings as follows:

a. Initial Submittal: Submit an original and two copies of [corrected Record plots from corrected Record CAD Drawings one set of marked-up Record Prints. The State will initial and date each plot and mark whether general scope of changes, additional information recorded, and quality of drafting are acceptable. The State will return plots and prints for organizing into sets, printing, binding, and final submittal.
b. Final Submittal: Submit an original and two (2) copies of marked-up Record Prints, and the following:
    1) Record CAD Drawing Files and Plots: an original and two (2) copies, using software as required by the State. each.
    2) Copies printed from Record Plots - Three. Print each Drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit an original and two copies of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit an original and two copies of each Product Data submittal.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare marked-up Record Prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record CAD Drawings: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with the State. When authorized, prepare a full set of corrected CAD Drawings of the Contract Drawings, as follows:

1. Format: AutoCAD 2019 or later.
2. Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to the State for resolution.
4. The State will furnish Contractor one set of CAD Drawings of the Contract Drawings for use in recording information.

a. The State makes no representations as to the accuracy or completeness of CAD Drawings as they relate to the Contract Drawings.
b. CAD Software Program: The Contract Drawings are available in AutoCAD 2019 or later.

C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable tube-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include complete set, identify Drawings included.
3. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of the State.
    e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. Note related Change Orders, Record Drawings, and Product Data where applicable.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Drawings, and Product Data where applicable.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for the State's reference during normal working hours.

END OF SECTION 01781

SECTION 02072
GEOTEXTILE

PART 1 - GENERAL

1.1 SUMMARY

A. The work shall consist of:
   1. Installing reinforcement and separation geotextile in the causeway roadbed as shown on the Drawings
   2. Installing filter cloth for silt fences.

B. The contractor shall furnish all labor, materials, and equipment required for completing geotextile installations as shown on the Drawings.

1.2 REFERENCES

A. American Society of Testing And Materials (ASTM)

1.3 SUBMITTALS

A. The following submittals shall be provided by the contractor for the State Representative Engineer (Engineer) review and approval at least 21 day prior to beginning the work. The contractor will not be allowed to begin the work until all submittal requirements are satisfied and found acceptable to the Engineer. Changes or deviations from the approved submittals must be re-submitted for approval. No adjustments in contract time will be allowed due to incomplete submittals.
   1. A mill certificate from the company manufacturing each geotextile proposed, attesting that the geotextile meets the chemical, physical, and manufacturing requirements specified in Part 2 of this Specification,.

B. The Contractor shall provide the following the Engineer during construction:
   1. A 2-foot long by roll width sample of each geotextile type used on the project.

C. Contractor shall submit any requests for alternate materials or methods from those shown on the drawings or approved in submittals to the engineer for evaluation and approval. Adequate time shall be allowed in the contractor's schedule for the engineer to evaluate the alternate and provide a response to the contractor. Adequate time shall be at least 5 working days, but may be more depending on the request.

1.4 PRODUCT HANDLING

A. The Contractor shall protect the work described in this Section before, during, and after installation, and shall protect the installed work covered by other Sections.

B. The Contractor shall, during all periods of shipment and storage, protect the fabric from direct sunlight, ultraviolet rays, temperatures greater than 120°F, mud, dirt, dust, debris and other deleterious sources. The fabric shall be maintained, wrapped in heavy duty protective covering until it is installed.

C. If the Engineer determines material is damaged or has excessive sunlight exposure, the Contractor shall immediately make all repairs and replacements, at no additional cost to the State.

PART 2 - PRODUCTS

2.1 REINFORCING GEOTEXTILE

A. The reinforcing geotextile shall be Mirafi H_2Ri as produced by Tencati Corporation, or Engineer approved equal, which is also designed to wick away water. The reinforcing geotextile shall meet the following requirements:

Property	Minimum Average Roll Value (MARV) Requirements	Test Method
Wide Width Tensile Strength	4,000 lbs/ft	ASTM D4585
Wide Width Tensile Strength at 2% strain	400 lbs/ft in Machine direction 800 lbs/ft in Cross direction	ASTM D4585
Permittivity	0.4 sec^{-1}	ASTM D4491
Flow rate	30 gal/min/ft^2	ASTM D4491
Apparent Opening Size Sieve No.	0.425 mm (max.)	ASTM D4751
Pore Size 050 090	85 microns (max.) 195 microns (max.)	ASTM D6767
Wet Front Movement at standard temperature and pressure 24 minutes 983 minutes	 6 inches vertical direction 73.3 inches horizontal direction	ASTM C1559 modified

2.2 SEPARATION GEOTEXTILE

A. The separation geotextile shall be a nonwoven polyester or polypropylene fabric meeting the following requirements:

Property	**Minimum Requirements**	**Test Method**
Mass/Area	8 oz/sy	ASTM D3776
Grab Breaking Load, 1-inch grip each direction	160 lbs	ASTM D4632
Elongation at break	<50%	ASTM D4632
Permittivity	0.05 sec^{-1}	ASTM D4491
Puncture Strength	310 lbs	ASTM D6241
UV Resistance, retained grab breaking load, 500 hrs	70 %	ASTM D4355
Apparent Opening Size (Maximum)	0.012 inches Max.	ASTM D4751

2.3 FILTER FABRIC

A. The filter fabric geotextile shall be woven and meet the following requirements:

Property	Minimum Requirements	Test Method
Grab Breaking Load, 1-inch grip each direction	120 lbs	ASTM D4632
Apparent Elongation	15%	ASTM D4632
Water Flow Rate, average roll value (Min-Max)	10 to 100	ASTM D4491
Permittivity	0.05 sec^{-1}	ASTM D4491
UV Resistance, retained grab breaking load, 500 hrs	70 %	ASTM D4355
Apparent Opening Size (Maximum)	0.023 Inches	ASTM D4751

PART 3 - EXECUTION

3.1 PREPARATION

A. The surface that the reinforcing or separation geotextile will lay on shall be cleared of sharp objects, boulders, stumps, or any materials that may contribute to fabric punctures, shearing, rupturing or tearing. The subgrade shall be

inspected for unstable areas or soft spots, before the geotextile is placed and additional fill shall be placed and compacted to eliminate those unstable areas.

3.2 INSTALLATION

A. Reinforcing and Separation Geotextile:

1. The geotextile shall be placed in the manner and at the locations shown. When placing the geotextile, seams and repairs shall be field sewn, or heat fused, as recommended by the manufacturer. Geotextile placed on slopes shall be placed so that the upper strip of geotextile overlaps the next lower strip. Geotextile shall be laid smooth and free of tension, stress, folds, wrinkles, or creases.
2. During backdumping and spreading of aggregate subbase material over the geotextile, a minimum depth of 12 inches of subbase material shall be maintained over the geotextile at all times between the geotextile and wheel, or truckloads and bucket. Dozer buckets or blades shall not be in direct contact with the geotextile.
3. If geotextile should be damaged during any step of installation, a piece of geotextile material shall be cut and placed over the damaged area and overlap the undamaged material a minimum of 3 feet in each direction.

B. Filter Fabric Geotextile:

1. Filter Fabric shall be securely attached to the hardwood silt fence post using staples with connection at end of rolls as shown on the drawings.
2. The bottom 6 to 8 inches of the filter fabric shall be buried in and anchor trench up stream of the silt fence as shown on the Drawings.

3.3 PROTECTION

A. Any geotextile damaged during its installation, or during placement of aggregate subbase material, or filter fabric damaged shall be replaced by the Contractor at no additional cost to the Owner.

B. The work shall be scheduled so that the covering of the reinforcing or separation geotextile with a layer of the aggregate subbase material is accomplished within 30 days after placement of the geotextile. Failure to comply with this requirement shall require replacement of the geotextile.

END OF SECTION 02072

SECTION 02230 - SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Protecting existing trees, shrubs, groundcovers, plants, and grass to remain.
2. Removing existing trees, shrubs, groundcovers, plants, and grass.
3. Clearing and grubbing.
4. Stockpiling cleared vegetation for use in constructing brush dams.
5. Stripping and stockpiling topsoil.
6. Temporary erosion and sedimentation control measures.

1.2 MATERIAL OWNERSHIP

A. Stripped brush shall remain Owner's property and used for construction of brush dams as shown on the Drawings.

1.3 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from the Park and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

B. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.

C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.

D. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

PART 2 - PRODUCTS[(Not Applicable)]

2.1 SOIL MATERIALS

A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Division 2 Section "Earthwork."

1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Locate and clearly flag trees and vegetation to remain or to be relocated.

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner, at no additional cost to the Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to sediment and erosion control Drawings that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.

B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE PROTECTION

A. Erect and maintain temporary fencing around tree protection zones as determined by the State Park before starting site clearing. Remove fence when construction is complete.

B. Do not excavate within tree protection zones, unless otherwise indicated.

C. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Engineer.

3.4 UTILITIES

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Engineer not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Engineer's written permission.

B. Removal of underground utilities is included in Division 2 Sections covering site utilities.

3.5 CLEARING AND GRUBBING

A. For access areas using temporary access mats- clear vegetation down to ground surface as necessary for mat installation, but do not grub the surface or remove root balls.

B. For all causeway and structure construction – clear vegetation and grub to a depth of six inches to remove roots.

C. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches and compact each layer to a density equal to adjacent original ground and to the satisfaction of the Engineer.

D. Stockpile all cleared vegetation at an in-pit location determined by the Owner for use in construction of brush dams as shown on the Drawings.

3.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.

C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.

3.7 DISPOSAL

A. Disposal: Remove surplus soil material, topsoil and brush, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

1. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.

END OF SECTION 02230

SECTION 02231
TREE PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the protection of existing trees in the project area.

1.2 REQUIREMENTS

A. Arborist Qualifications: An arborist certified by the International Society of Arboriculture or licensed in jurisdiction where the Project is located.

B. Tree Pruning Standards: Comply with ANSI A300, “Trees, Shrubs, and Other Woody Plant Maintenance - Standard Practices.”

1.3 DEFINITIONS

A. DBH – Diameter at Breast Height of tree, or 54-inches from ground level, measured on the high side of the tree.

B. TPZ - Tree Protection Zone, a distance of 5 times the DBH from the tree trunk, or at the tree drip line, whichever is greater.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Construction Fence: Fencing around trees and planted areas to be protected from construction damage shall consist of 36-inches minimum height, plastic, orange color temporary construction fencing as manufactured by White Cap or approved equal. Posts may be steel driven type, or self-supporting type, as per plans or directions of the State’s Representative.

PART 3 - EXECUTION

3.1 PREPARATION

A. The Contractor shall meet on site with the State’s Representative to review all required protection measures.

B. The Contractor shall locate and clearly flag trees to be protected, as shown on the construction documents, or as directed by the State's Representative.

C. The Contractor and State's Representative shall review all protected trees whose root zones may be impacted by the new construction. When working within the TPZ is unavoidable and approved by the State's Representative, tree trunk protection shall be installed. The Contractor shall install the tree trunk protection measures as outlined in Part 3 of this Section.

D. The State's Representative shall designate trees to be protected during the project pre-construction meeting, including those that may not have been designated on the project construction plans. Designated protection assignment is not limited to only the project construction meeting. The Contractor shall utilize protection measures as outlined in Part 3 of this Section.

E. The Contractor is prohibited from storing or stockpiling material, parking, and vehicular traffic, as determined by the State's Representative, within the TPZ of trees.

F. The Contractor shall avoid flooding, eroding or excessive moisture within the TPZ.

3.2 TREE PROTECTION

A. The Contractor shall protect all trees within the designated construction area from damage by fencing the TPZ of individual, or groups of, trees with construction fencing.

B. All trees that have approved construction activities occurring within the TPZ of the tree trunk shall be protected using this tree trunk protection measure. Tree trunk and root protection shall consist of a wood guard that is constructed from 2"x 6"x 8' pieces of lumber that are placed at 12-inch on center and then attached vertically around the entire trunk of the tree using 3-inch-wide nylon straps. Lumber shall extend to the natural base of the tree and must protect any exposed roots.

C. No fill shall be placed against the trunks of protected trees.

D. No fill shall be placed within the TPZ, unless approved by the State's Representative.

3.3 TREE PRUNING

A. No pruning shall be conducted unless approved by the State's Representative and as directed by a certified arborist.

3.4 TREE REPAIR

A. In the event that a tree is damaged during construction operations, the damaged limb, trunk, or root shall be treated within 24 hours in a manner approved by the State Representative's and as directed by a certified arborist.

3.5 DISPOSAL

A. The Contractor shall remove excess excavated material, displaced trees, and excess chips from State Park's property. Burning shall not be permitted.

3.6 TREE DAMAGE PENALTY

A. If any tree, not designated for removal, is damaged or destroyed during the course of, as a result of, construction operations, the Contractor shall repair the damage, if possible, under the guidance of a certified arborist at no additional cost to the State. In addition, the Contractor shall pay the State an amount calculated in accordance with the formulas below. Damage is defined, without limitation, as any cutting, breaking, tearing, bruising, or skinning of the trunk, roots, or significant limbs.

1. The total tree value shall be paid to the State for a tree totally destroyed.

   a. Total Tree Value = \$2.16 x (Trunk circumference in inches at DBH) ^{2}.

   b. Example: 24-inch Diameter Pine

      Circumference = 75.4 inches

      \$2.16 x $(75.4)^2$ = \$12,280

      Total Tree Value \$12,280

2. A proportional amount of the total tree value shall be paid to the State, for each tree damaged, based upon the amount of damage to the trunk and roots. Total trunk and root damage shall not exceed a factor of 1.0.

   a. Damage = Total Tree Value x (Trunk Damage Factor + Root Damage Factor)

   b. Trunk Damage = Maximum width of trunk damage divided by trunk circumference.

   c. Root Damage = Percentage of root damage based on size of root damaged. Percentages will be added for multiple roots damaged within the root zone of one tree. Assumed root zone for all trees is a 20-foot diameter or 314 square feet The following table determines percentage of overall root damage based on size of root damaged.

Root size (inches)	Equivalent Percent of Root Zone	Damage Factor
2 to 3	10	0.1
4 to 5	20	0.2
6 and larger	30	0.3

d. Example: 24-inch diameter Pine with 6-inch-wide trunk damage and with one 2-inch root and one 4-inch root damaged.

Trunk damage: 6 ÷ 75.4 = 0.08

Root damage: 0.1 + 0.2 = 0.3

Damage $ = $12,280 x (0.08 + 0.3)

Total Damage $4,666

3. Total amount of such damages shall be deducted from any funds due, or that become due to the Contractor. All destroyed trees shall remain the property of the State. At no additional cost to the State, the Contractor shall remove destroyed trees from State Park property if directed by the State's Representative.

END OF SECTION 02231

SECTION 02232
STORMWATER POLLUTION PREVENTION PLAN
(SWPPP)

PART 1 – GENERAL

1.01 DESCRIPTION

A. This section describes the requirements for preparation and implementation of the Stormwater Pollution Prevention Plan (SWPPP), and includes:
   1. Required sections and content
      a. SWPPP Certifications
      b. SWPPP Amendments
      c. Introductions and Project Descriptions
      d. References
      e. Body of SWPPP
      f. Monitoring Program and Reports
      g. SWPPP Attachments
   2. Best Management Practices (BMPs)
   3. SWPPP template for Contractor use

B. Contractor's preparation of a project specific SWPPP and implementation of the approved plan are required.

C. The Contractor's detailed SWPPP shall be submitted within seven (7) working days of the Notice to Proceed. The Contractor shall revise and resubmit the SWPPP as indicated by the State's Representative. The Contractor shall not mobilize to the site until the SWPPP has been approved in writing by the State's Representative.

D. The Contractor shall not deviate from the approved SWPPP unless a revised plan has been approved in writing by the State's Representative. Failure to adhere to an approved plan that demonstrates conformance with the provisions of the Contract shall be cause for rejection of Contractor's request for payment until the plan has been brought into conformance.

E. The Contractor is required to maintain a copy of the approved SWPPP on the project site at all times and to follow the elements of the plan as described therein for all work on the project.

F. Information and a template to assist with preparation of a SWPPP document are available on the SWQCB website located at http://www.cabmphandbooks.com/Construction.asp

1.02 ABBREVIATIONS AND ACRONYMS

BMPs	Best Management Practices
CSP	California State Parks
RWQCB	Regional Water Quality Control Board
SWPPP	Storm Water Pollution Prevention Plan
SWQCB	State Water Quality Control Board
WPCD	Water Pollution Control Drawings
WPCM	Water Pollution Control Manager

1.03 RELATED WORK SPECIFIED ELSEWHERE

Section 00810 – Constraints and Mitigations

PART 2 – PRODUCTS

2.01 REQUIRED SWPPP SECTIONS AND CONTENT

A. SWPPP CERTIFICATIONS
1. Initial SWPPP Certification: The Contractor shall certify under penalty of law that the document and all attachments have been prepared under the Contractor's direction and supervision and that qualified personnel have properly gathered and evaluated the information submitted. An Initial SWPPP Certification form is attached to this section. A copy of the Initial SWPPP Certification shall be filled out and attached to the SWPPP document.
2. Annual Compliance Certification: The Contractor is required to submit an Annual Certification of Compliance to the State's Representative, on the anniversary date of the start of construction activities if construction is still in progress, that certifies compliance with all terms and conditions of the SWPPP and the permit. A copy of the Annual Compliance Certification shall be attached to the SWPPP.

B. SWPPP AMENDMENTS
1. The SWPPP may need to be amended by the Contractor during the course of construction activities. Reasons for amendments include:
   a. A change in construction or operations that may affect the discharge of pollutants to surface waters, groundwater, or a municipal sewer system.
   b. If any condition of the Permit is violated or if the control measures in the original SWPPP are not functioning to reduce or eliminate pollutants in storm water discharge. If a Permit violation has occurred, the SWPPP must be amended and implemented within 14 calendar days after notification of non-compliance.

c. When determined to be necessary by the State's Representative.

2. If an amendment is necessary, the Contractor shall complete an amendment certification form stating that the Contractor has certified, under penalty of law, that the amendment has been prepared under the Contractor's direction and supervision and that qualified personnel have properly gathered and evaluated the information submitted. The Amendment and the Amendment Certification Form shall be completed by the Contractor and submitted to the State's Representative for approval. A copy of the Amendment and the Amendment Certification Form shall be attached to the SWPPP. Amendments must be numbered and kept in an Amendment Log by the Contractor.

C. INTRODUCTION AND PROJECT DESCRIPTION

The Contractor shall prepare the following sections of the SWPPP document.

1. Introduction and Project Description: Describe the project and its various components, the project location, and what the goal of the project is (i.e., what problem would implementation of the project solve). Include the Project Identification number issued by the SWQCB for the project.
2. Unique Site Features: Provide a brief description of any unique natural features within the project area such as wetlands, streams, environmentally sensitive areas, endangered species, etc. Include any activities that would occur within or adjacent to any water body.
3. Construction Site Estimates: Provide estimates of the size of the construction site, the percentage of impervious area before and after construction, the runoff coefficient before and after construction, and the anticipated storm water flow onto the construction site.
4. Project Schedule/Water Pollution Control Schedule: Provide a project schedule in written or graphic format, clearly showing how the rainy season relates to soil-disturbing and re-stabilization activities and the timing of the implementation of BMPs. The schedule shall include, but is not limited to:
   a. Project start and finish dates
   b. Rainy season dates
   c. Annual certification dates
   d. Mobilization dates
   e. Mass clearing and grubbing/roadside clearing dates
   f. Major grading/excavation dates
   g. Special dates named in other permits such as California Department of Fish and Game, U.S. Army Corps of Engineers, or another regulatory agency.

h. Annual submittal of rainy season implementation schedule
i. Dates for implementation of pre-rainy season temporary soil stabilization and temporary sediment control BMPs.
j. Rainy season implementation schedule
k. Non-rainy season implementation schedule
l. Paving operations
m. Major planned stockpiling operations
n. Dates for other significant long-term operations or activities that involve non-storm water discharges
o. Final site stabilization activities

5. Contact Information/List of Responsible Parties: The Contractor shall assign a Water Pollution Control Manager (WPCM) to the project. The Contractor shall provide the name, address, and telephone number of the WPCM for the project. The Contractor shall assign authority to the WPCM to mobilize crews in order to make immediate repairs as needed. The WPCM shall be responsible for:
   a. Ensuring full compliance with the SWPPP and the RWQCB at all times
   b. Implementation of all elements of the SWPPP
   c. Pre-storm inspections
   d. Post-storm inspections
   e. Storm event inspections
   f. Preparing annual compliance certifications
   g. Ensuring elimination of all unauthorized discharges
   h. Coordination with the project engineer to assure that all necessary corrections/repairs are made immediately.

D. REFERENCES
The Contractor shall cite all documents, reports, plans and specifications, and/or personal communications that were used to prepare the SWPPP.

E. BODY OF SWPPP
1. Objectives: There are 4 main objectives for the SWPPP, including:
   a. Identify all pollutant sources, including sources of sediment, that may affect the quality of storm water discharges associated with construction activity (storm water discharges) from the construction site.
   b. Identify non-storm water discharges.
   c. Identify, construct, and implement in accordance with a time schedule, and maintain BMPs to reduce or eliminate pollutants in storm water discharges and authorized non-storm water discharges from the construction site during construction.

d. Develop a maintenance schedule for BMPs installed during construction to reduce or eliminate pollutants following construction (post-construction BMPs).

2. Vicinity Map: The construction project vicinity map that shows the project location, surface water boundaries, geographic features, construction site perimeter, easily identifiable major roadways, and general topography shall be attached. The vicinity map will be provided by CSP.

3. Pollutant Source Identification and BMP Selection:

3.1 Inventory of Materials and Activities that May Pollute Storm Water: The Contractor shall list all construction materials that will be used and activities that will be performed that will have the potential to contribute pollutants, other than sediment, to storm water runoff. Additionally, all construction activities that have the potential to contribute sediment to storm water discharges shall be indicated in this section.

3.2 Existing (Pre-Construction) Control Measures:
The Contractor shall identify existing control measures that are in place prior to construction. Pre-construction control measures may include any measures used to reduce erosion, sediment, or other pollutants in storm water discharges. Examples of pre-construction control measures include, but are not limited to, detention basins, infiltration basins, sediment basins, oil water separators, bridge slope protection, rock slope protection, existing erosion control, existing landscaping, lined ditches, energy dissipaters, etc.

3.3 Nature of Fill Material and Existing Data Describing the Soil:

a. The Contractor shall describe the conditions of the fill material and soils at the construction site (i.e., types of soils, groundwater location and conditions, dewatering operations that may be necessary, etc.)
b. The Contractor shall show and/or describe known existing site features that, as a result of known past usage, may contribute pollutants to storm water (e.g., toxic materials that are known to have been treated, stored, disposed, spilled, or leaked onto the construction site)

3.4 Soil Stabilization (Erosion Control): Soil stabilization, also referred to as erosion control, consists of source control measures that are designed to prevent soil particles from detaching and becoming suspended in storm water runoff. Soil stabilization BMPs protect the soil surface by covering and/or

binding soil particles. The Contractor will utilize and implement principles to assure effective temporary and final soil stabilization (erosion control) during construction, including but not limited to:

a. Preserve existing vegetation where required and when feasible.
b. Apply temporary soil stabilization (erosion control) to remaining active and non-active areas. Reapply as necessary to maintain effectiveness.
c. Implement temporary soil stabilization measures at regular intervals throughout the defined rainy season to achieve and maintain stabilization requirements for the disturbed soil area. When required, temporary soil stabilization measures will be implemented 20 days prior to the defined rainy season.
d. Stabilize non-active areas within 14 days of the cessation of construction activities using permanent BMPs.
e. Control erosion in concentrated flow paths by applying erosion control blankets, erosion control seeding, and lining swales as required for the project.
f. Seeding will be applied either during the defined seeding window and/or to areas deemed substantially complete by State's Representative during the defined rainy season.
g. At completion of construction, apply permanent erosion control measures (e.g., revegetation, hardscape, etc.) to all remaining disturbed soil areas.
h. Sufficient quantities of temporary soil stabilization materials will be maintained on-site to allow implementation as described in this SWPPP for active areas, non-active areas, and areas that require deployment before the onset of rain. Implementation and locations of temporary soil stabilization BMPs shall be shown on the WPCDs (refer to Part 2.01, Paragraph E, sub-paragraph 4 on page 9 of this section) and described in the Soil Stabilization section of the SWPPP. The BMP Consideration Checklist shall indicate the BMPs that will be implemented to control erosion on the construction site, including, but not limited to:
    1. Scheduling of project and BMP implementation
    2. Preservation of existing vegetation
    3. Mulching
    4. Hydroseeding
    5. Culvert outlet protection
    6. Geotextiles, plastic covers, erosion control blankets/mats
    7. Timing of construction activities to avoid rainy season

3.5 Sediment Control: The Contractor will incorporate all necessary and required temporary sediment control measures along with any other additional measures selected by the Contractor or the State's Representative. The selected temporary sediment control BMPs shall be adequate to prevent a net increase of sediment in storm water discharge relative to pre-construction levels. The Contractor shall maintain sufficient quantities of temporary sediment control materials on-site throughout the duration of the project, to allow implementation of temporary sediment controls in the event of predicted rain, and for rapid response to failures or emergencies as described in the SWPPP. This includes implementation requirements for active and non-active areas before the onset of rain. Implementation and locations of the temporary sediment control BMPs shall be shown on the WPCD. BMPs to be used on the construction site shall be listed in the SWPPP and indicated on the BMP Consideration Checklist. BMPs for sediment control may include, but are not limited to:

a. Silt fencing
b. Storm drain inlet protection
c. Check dams
d. Fiber rolls
e. Silt curtains

3.6 Sediment Tracking Control: The tracking of sediments from the construction site onto public and private roads shall be controlled using BMPs that will be implemented by the Contractor during all construction activities for the duration of the project. The measures to be used to prevent sediment tracking shall be listed in the SWPPP and shown on the WPCDs. Measures may include, but are not limited to:

a. Street sweeping and vacuuming
b. Stabilized construction entrance/exit
c. Stabilized construction haul road

3.7 Wind Erosion Control: Wind erosion control BMPs shall be implemented during all construction activities for the duration of the project on all disturbed soils on the project site that are subjected to wind erosion. BMPs to be used on the project site for wind erosion control shall be listed here.

3.8 Non-Storm Water Control: Non-storm water discharges consist of all discharges from a municipal storm water conveyance that do not originate from precipitation events (i.e., all discharges other than storm water). Examples of non-storm water

discharges that are common to construction activities include, but are not limited to:

a. Vehicle and equipment wash water, including concrete washout water
b. Surface water diversions
c. Dewatering operations
d. Slurries from concrete or mortar mixing operations
e. Slurries from concrete cutting and coring operations, PCC grinding or AC grinding operations
f. Blast residue from high-pressure washing of structures or surfaces
g. Wash water from cleaning painting equipment
h. Runoff from dust control applications of water or dust palliatives
i. Sanitary and septic wastes
j. Chemical spills of any kind including but not limited to petroleum, paints, cure compounds, etc.

The Contractor shall identify and describe all potential non-storm water discharges related to project activities and select and describe BMPs and practices to minimize, contain, and dispose of prohibited discharges and to minimize adverse impacts of authorized discharges from the project into the storm drain system or waterways. The time period and frequency of each potential non-storm water discharge activity and the timing of implementation of BMPs shall be indicated in the SWPPP and BMPs shall be indicated on the BMP Consideration Checklist. The Contractor shall indicate in the SWPPP how unplanned and illegal discharges will be handled.

3.9 Waste Management and Materials Pollution Control: Waste management consists of implementing procedural and structural BMPs for collecting, handling, storing, and disposing of wastes generated by a construction project to prevent the release of waste materials into storm water discharges. Materials pollution control (materials handling) consists of implementing procedural and structural BMPs for handling, storing, and using construction materials to prevent the release of those materials into storm water discharges. The Contractor shall identify, describe, and implement waste management and pollution control BMPs to prevent materials and wastes from being discharged off-site and those BMPs shall be indicated on the BMP Consideration Checklist. The primary mechanisms for storm water contact that shall be addressed are:

a. Direct contact with precipitation
b. Contact with storm water run-on and runoff

c. Wind dispersion of loose materials
d. Direct discharge to the storm drain system through spills or dumping

4. Water Pollution Control Drawings (WPCDs):

4.1 The Contractor shall prepare the WPCDs in conformance with the following instructions and the construction permit requirements.
   a. Include a cover sheet(s) listing the BMPs that will be used, along with construction notes and a legend. Use standard symbols as noted in the State Water Quality Control Board manual located at http://www.cabmphandbooks.com/Construction.asp .
   b. Include detailed sheets showing construction details for the BMPs that will be used. Use project layout, grading, stage construction, drainage sheets and/or erosion sheets as base sheets for the WPCDs. The base sheets will be provided to the Contractor by CSP. The Contractor shall select BMPs that are appropriate for the site and show their locations on the WPCDs.

4.2 The Contractor's WPCDs shall show the construction project in detail, including:
   a. The construction site perimeter
   b. Geographic features within or immediately adjacent to the site. Include surface waters such as lakes, streams, springs, wetlands, estuaries, ponds, and the ocean
   c. Site topography before and after construction. Include roads, paved areas, buildings, slopes, drainage facilities, and areas of known or suspected contamination
   d. Permanent (post-construction) BMPs. These are usually shown on the project plans.

4.3 The following shall also be noted on the Contractor's submitted WPCDs:
   a. Discharge points from the project to off-site storm drain systems or receiving waters
   b. Tributary areas and drainage patterns across the project area (show using flow arrows)
   c. Tributary areas and drainage patterns to each on-site storm water inlet, receiving water or discharge point.
   d. Relevant drainage areas outside the site perimeter. Where relevant drainage areas are too large to depict on the WPCDs, use map notes or inserts illustrating the upstream drainage areas.
   e. Temporary on-site drainage(s) to carry concentrated flows.

f. Drainage patterns and slopes anticipated after major grading activities are completed.
g. Outline all areas of existing vegetation, soil cover, or native vegetation that will remain undisturbed during the project.
h. Outline all areas of soil disturbance. Indicate which areas will be disturbed during the rainy season and which areas will be left exposed during the rainy season.
i. Identify location(s) of contaminated or hazardous soils.
j. Locate potential non-storm water discharges and activities, such as dewatering operations, concrete saw-cutting or coring, pressure washing, waterline flushing, diversions, cofferdams, and vehicle and equipment cleaning. If operations can't be located, provide a narrative description.
k. Proposed locations for all construction site BMPs. Include additional detail drawings if necessary to convey site-specific configurations.

5. Construction BMP Maintenance, Inspection and Repair: The purpose of storm water inspections is to evaluate BMP effectiveness and implement repairs or design changes as soon as feasible. The Contractor shall include in the SWPPP a description of the program that will be used to inspect and maintain all BMPs as identified in the WPCDs, or other narrative section of the SWPPP, for the duration of the project. The Contractor shall be responsible for the following:
   a. Inspections shall be completed by the Contractor's WPCM.
   b. Inspections shall occur on a regular basis during dry weather. The purpose of dry-weather inspections is to ensure proper implementation of BMPs that are not necessarily weather-related. Examples include, but are not limited to, non-storm water, waste management, and sediment tracking control BMPs.
   c. A checklist is required during each inspection. A Storm Water Quality Construction Site Inspection Checklist is attached. This checklist shall be used for all BMP inspections.
   d. Inspections are required: prior to forecasted storms, within 24 hours after a rain event that causes runoff from the construction site, at 24-hour intervals during extended rain events, and at any other times specified in the project specifications.
   e. Completed checklists shall be submitted to the State's Representative within 24 hours of inspection. Copies of the completed checklist shall be kept with the SWPPP.
   f. A tracking or follow-up procedure shall follow any inspection that identifies deficiencies in the BMPs.

6. Post-Construction Storm Water Management:

   6.1 Post-Construction Control Practices: Post-construction BMPs are permanent measures installed during construction, designed to reduce, or eliminate pollutant discharges from the site after construction is completed. The Contractor shall provide in the SWPPP a description of all BMPs used after all construction activities are completed on the site. Examples of post-construction BMPs include, but are not limited to:
   a. Infiltration basins
   b. Detention/retention devices
   c. Vegetated strips and/or swales
   d. Biofilters
   e. Permanent erosion control, seeding, and planting
   f. Outlet protection/velocity dissipation devices
   g. Earth dikes, drainage swales, and lined ditches
   h. Slope protection
   i. Mulching

   6.2 Operations/Maintenance after Project Completion: The Contractor shall identify in the SWPPP the party or parties that are responsible for the long-term funding, operation, and maintenance of permanent BMPs.

7. Training: The Contractor is required to obtain training for all individuals responsible for SWPPP preparation, implementation, and permit compliance including personnel responsible for installation, inspection, maintenance, and repair of BMPs. The Contractor shall document all training in the SWPPP document.
   a. Training may be both formal and informal
   b. Formal storm water pollution prevention or erosion and sediment control training sessions may include workshops offered by the SWRCB, RWQCB, or other locally recognized agencies or professional organizations. Contractor is encouraged to contact the RWQCB or the SWRCB to inquire about availability of training. A list of training organizations, subject matter and classes is located online at http://www.dot.ca.gov/hq/construc/stormwater.html .
   c. The Contractor's Water Pollution Control Manager (WPCM) and the SWPPP preparer shall have a minimum of 24-hours (3 days) of formal storm water pollution prevention training. On-site storm water pollution training shall be conducted on an ongoing basis.

8. List of Subcontractors: The Contractor must notify all subcontractors and pertinent individuals of the requirement for

storm water management measures during the project. The Contractor shall include a list of all contractors, subcontractors, and individuals responsible for implementation of the SWPPP. This list shall include telephone numbers and addresses and specific areas of responsibility of each firm or individual. If subcontractors change during the course of the project, the Contractor will update this list accordingly.

9. Other Plans or Permits: The Contractor shall include a list of all other local, State, and Federal plans and permits that are pertinent to the project.

F. MONITORING PROGRAM AND REPORTS

1. Site Inspections: The Contractor will inspect the site prior to a forecast storm, after a rain event that causes runoff from the construction site, at 24-hour intervals during extended rain events, and as directed by the State's Representative. The results of all inspections and assessments will be documented and copies of the completed inspection checklists will be maintained with the SWPPP. A copy of the inspection checklist, that includes the name and contact number of the assigned inspection personnel, will be provided to the State's Representative.
   a. BMPs shall be evaluated for adequacy and proper implementation
   b. Implementation of non-storm water discharge BMPs shall be verified, and their effectiveness evaluated
   c. One-time discharges of non-storm water shall be inspected when such discharges occur.

2. Discharge Reporting: If a discharge occurs or if the project receives a written notice or order from any regulatory agency, the Contractor shall immediately notify the State's Representative and will file a written report to the State's Representative within 7 days of the discharge event, notice, or order. The Contractor shall implement corrective measures immediately following the discharge, notice, or order. The report to the State's Representative will include the following:
   a. The date, time, location, nature of operation, and type of unauthorized discharge, including the cause or nature of the notice or order.
   b. The control measures (BMPs) used prior to the discharge event, or prior to receive the notice or order.
   c. The date of deployment and type of control measures (BMPs) implemented after the discharge event, or after receiving the notice or order, including additional measures installed or planned to reduce or prevent re-occurrence.

d. An implementation and maintenance schedule for any affected BMPs.

3. Record Keeping and Reports: Contractor shall keep records for a minimum of three years after completion of construction for the following items:
   a. Site inspections
   b. Compliance certifications
   c. Discharge reports
   d. Approved SWPPP document and amendments

G. BEST MANAGEMENT PRACTICES (BMPs)
The Contractor shall use Best Management Practices throughout the site for the duration of the project. The SWQCB BMPs (http://www.cabmphandbooks.com/Construction.asp) shall be followed for all work on the project unless otherwise approved in writing by the State's Representative. In addition, local grading, and erosion control ordinances and BMPs shall be adhered to, if applicable to the Project.

H. SWPPP TEMPLATE FOR CONTRACTOR USE
A template to aid the Contractor in preparation of the SWPPP can be found at the above SWQCB website. A template can also be provided to the Contractor by CSP upon request.

I. SAMPLES OF SWPPP DOCUMENTS
CSP will provide samples of SWPPP documents to the lowest responsible bidder upon request.

INITIAL SWPPP CERTIFICATION

Project Name: _____

DPR Contract Number: _____

"I certify under penalty of law that this document and all attachments and amendments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

_____ _____
Contractor's signature Date

_____ _____
Contractor's Name and Title Telephone Number

CONSTRUCTION SITE
BMP CONSIDERATION CHECKLIST

The Contractor shall list all BMPs noted in the SWPPP to be used on the project.

Temporary Soil Stabilization BMPs		
BMP USED	**CONTRACT REQUIREMENT (check if yes)**	**TIMING OF IMPLEMENTATION**

Temporary Sediment Control BMPs		
BMP USED	**CONTRACT REQUIREMENT (check if yes)**	**TIMING OF IMPLEMENTATION**

Wind Erosion Control BMPs		
BMP USED	**CONTRACT REQUIREMENT (check if yes)**	**TIMING OF IMPLEMENTATION**

Sediment Tracking Control BMPs		
BMP USED	**CONTRACT REQUIREMENT (check if yes)**	**TIMING OF IMPLEMENTATION**

Non-Storm Water Management BMPs		
BMP USED	**CONTRACT REQUIREMENT (check if yes)**	**TIMING OF IMPLEMENTATION**

Waste Management and Materials Pollution Control BMPs		
BMP USED	**CONTRACT REQUIREMENT (check if yes)**	**TIMING OF IMPLEMENTATION**

STORM WATER QUALITY CONSTRUCTION SITE INSPECTION FORM

Project Name: _____

DPR Contract Number: _____

Contractor: _____

Inspector's Name: _____

Inspector's Title: _____

Inspector's Signature: _____

Date of Inspection: _____

Inspection Type: ☐ prior to forecast rain ☐ after a rain event
☐ at 24-hr intervals during extended rain event ☐ other _____
_____

Season (check applicable): ☐ rainy ☐ non-rainy

Storm Data: Storm start date and time: _____

Storm duration (hrs.): _____

Approximate rainfall amount: _____

Interval since last storm (days): _____

List all project BMPs and the locations that were inspected on the project site. Describe the condition of the BMPs and if they were within permit requirements at the time of inspection. Describe what, if any, corrective measures were taken to repair BMPs in order to keep the project within permit compliance, or to return the project to compliance.

END OF SECTION 02232

SECTION 02260
TIMBER LAGGING

PART 1 - GENERAL

1.1 SUMMARY

The contractor and subcontractors are responsible for supply and installation of timber lagging and seals between lagging for construction of the soldier pile weir wall.

1.2 DESCRIPTION

A. The work shall consist of installation of timber lagging at the locations shown on the plans, The contractor shall furnish all labor, materials, and equipment required for completing the work.

1.3 REFERENCES

A. West Coast Lumber Inspection Bureau (WCLIB)
   1. Standard 17: Standard Grading Rules for West Coast Lumber

B. Western Wood Products Association (WWPA)
   1. Western Lumber Grading Rules

1.4 RELATED SECTIONS

A. Section 02460 – Drilled Solider Piles.

1.5 SUBMITTALS

A. Provide the following at least 21-days prior to construction for approval by the State Representative Engineer:
   1. Product sheets for the products proposed for construction:
      a. Timber Lagging
      b. Butyl Sealing Rope

B. Provide the following information during construction:
   1. One copy of each timber lagging delivery ticket to the engineer at the time the timber is delivered. Delivery ticket shall include a grading certificate and a certificate of treatment.

1.6 PROJECT CONDITIONS

A. Survey adjacent structures and improvements, employing a qualified land surveyor; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

1. During installation of excavation support and protection systems, regularly resurvey benchmarks, maintaining an accurate log of surveyed elevations and positions for comparison with original elevations and positions. Promptly notify State Representative Engineer if changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.

PART 2 - PRODUCTS

2.1 TIMBER LAGGING

A. Timber lagging shall be dressed lumber. Species, grade, and treatment shall be uniform throughout the finished wall.

B. Timber lagging shall be graded in accordance with WCLIB or WWPA grading rules. Timber lagging shall be marked with a certified lumber grade stamp provided by a lumber grading bureau certified by the American Lumber Standards Committee. Timber lagging shall be Douglas fir-larch grade no. 2 or hem-fir grade no.1.

C. Timber lagging shall not be pressure-treated.

D. Nominal thickness of timber lagging shall be:
1. 4 inches for up to 7-foot maximum spans
2. 6 inches for over 7 -foot to 9.5-foot maximum spans

2.2 BUTYL SEALING ROPE

A. Self-adhesive, dark color, coil which adheres to wood,

B. Pre-installed dimension (on coil) - 5/16” minimum width, ¼” minimum thickness

PART 3 - EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING

A. Contractor shall check all materials upon delivery to assure that the proper type, grade, and certification have been received.

B. Contractor shall protect all materials from damage due to jobsite conditions and in accordance with the execution manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

3.2 INSTALLATION OF LAGGING

A. Excavate a key trench between soldier piles as shown on the Drawings and remove soil and lean concrete around the top of each pile as needed for lagging installation.

B. Timber lagging shall be installed from the bottom upward, with two rows of butyl sealing rope between lagging boards as shown on the Drawings.

C. Backfill and compact the bottom lagging board into place using onsite soils. No heavy equipment shall be used within 3 feet of lagging. Use light equipment for compaction in this area.

.END OF SECTION 02260

SECTION 02300
EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Excavation.
2. Preparing subgrades.
3. Fill Materials.

1.2 DEFINITIONS

A. Backfill: Soil materials used to fill an excavation.

B. Excavation: Removal of material encountered above subgrade elevations.

1. Additional Excavation: Excavation below subgrade elevations as directed by Engineer. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated dimensions without direction by Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be without additional compensation.

C. Fill: Soil materials used to raise existing grades.

1. Import: Satisfactory soil imported from off-site for use as fill or backfill.

D. Structures: Walls, rock berms, or other man-made stationary features constructed above or below the ground surface.

E. Subbase Course: Layer placed between the subgrade and surface course for causeway construction.

F. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase materials.

G. Surface Course: Layer of soil that will form the surface of the causeway for construction equipment use and trial.

H. Utilities include on-site underground pipes, conduits, ducts, and cables.

1.3 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by State or others unless permitted in writing by Engineer and then only after arranging to provide temporary utility services according to requirements indicated.

1.4 REFERENCES

A. Golder Associates, Inc.
   1. Geotechnical Investigation, Pit Drainage Runoff BMP Design, Malakoff Diggins State Historic Park, Draft March 1, 2021.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: ASTM D 2487 Soil Classification Groups GC, SC, ML, MH, CL, CH, OL, OH, and PT, or a combination of these group symbols.

D. Backfill and Fill: Satisfactory soil materials.

E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2- inch sieve and not more than 12 percent passing a No. 200 sieve.

F. Surface Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch sieve and not more than 15 percent passing a No. 200 sieve.

G. Drainage Fill: Washed, narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 3 - inch sieve and 0 to 5 percent passing a No. 8 sieve.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect utilities, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, freezing temperatures or frost, and other hazards created by earthwork operations. Provide protective insulating materials as necessary.

B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

D. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

3.2 EXCAVATION

A. Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

B. Excavate for structures to indicated elevations and dimensions.

C. In no case should excavation for this project extend more than 4-feet below surrounding grade. All excavations 4-feet or more below existing grade would require review by the Engineer and have trench safety review and design as required by 29 CFR 1926 OSHA Construction Industry Regulations Subpart P - Excavation. All 4-foot and deeper excavations must be reviewed and necessary support and/or sloping of cuts must be designed and certified by a licensed professional engineer in the State of California provided by the Contractor.

D. Proof roll subgrades, before filling or placing aggregate courses, with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated subgrades.

E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities.

F. Stockpile borrow materials and satisfactory soil materials, without intermixing, in shaped, graded, drained, and covered stockpiles. Stockpile soil materials away from edge of excavations and outside drip line of remaining trees.

3.3 FILLS

A. Fill: Place and compact fill material in layers to required elevations.

B. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.

1. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

C. Compaction: Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 6 inches in loose depth for material compacted by hand-operated tampers.

D. Compact subgrade soil to not less than the 95 percent of maximum dry density according to ASTM D 1557 with a moisture content of +/- 2% of optimum moisture content.

E. Grading: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated. Grade to tolerances of plus or minus 1 inch.

F. Base and Surface Courses: Under causeways, place base course on prepared subgrade. Place surface course material over base. Compact to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557 with a moisture content of +/- 3% of optimum moisture content.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.

B. Allow testing agency to test and inspect subgrades and each fill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify, and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.5 PROTECTION AND DISPOSAL

A. Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

D. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 02300

SECTION 02370
SURFACE WATER MANAGEMENT CONSTRUCTION

PART 1 - GENERAL

1.1 SUMMARY

A. The work in described in this section includes construction of the:
   1. Grade Control Structure
   2. Soldier Pile Wier Wall
   3. Interceptor Swale
   4. Brush Dams

B. The contractor shall furnish all labor, materials, and equipment required for completing the surface water management structure as shown on the Drawings.

1.2 RELATED SECTIONS

A. Section 02230 – Site Clearing

B. Section 02260 – Timber Lagging

C. Section 02300 – Earthwork

D. Section 02374 – Temporary Construction Mats

E. Section 02450 – Temporary Erosion and Sediment Controls

F. Section 02460 – Drilled Soldier Piles

1.3 REFERENCES

A. Standard Specifications (2018), State of California, California State Agency, Published by Department of Transportation, CALTRANS.

1.4 SUBMITTALS

A. The following submittals shall be provided by the contractor for the State Representative Engineer (Engineer) review and approval at least 21 day prior to beginning the work. The contractor will not be allowed to begin the work until all submittal requirements are satisfied and found acceptable to the Engineer. Changes or deviations from the approved submittals must be re-submitted for approval. No adjustments in contract time will be allowed due to incomplete submittals. In addition to the submittals required for the Related Sections (part 1.2 above), the Contractor shall provide:

   1. Rock Gradation and Quality Test Results from the quarries

B. The Contractor shall provide the following information during construction:

1. Weight Tickets for all rock brought to the project.

C. Contractor shall submit any requests for alternate materials or methods from those shown on the drawings or approved in submittals to the engineer for evaluation and approval. Adequate time shall be allowed in the contractor's schedule for the engineer to evaluate the alternate and provide a response to the contractor. Adequate time shall be at least 5 working days but may be more depending on the request.

1.5 PROJECT CONDITIONS

A. As shown on the Drawings, the work in this section will require construction of an access causeway and use of temporary construction mats by the Contractor to haul in materials and equipment for construction of the surface water management features.

PART 2 - PRODUCTS

2.1 GRADE-CONTROL STRUCTURE ROCK

A. Rock and aggregates shall consist of hard, sound, and durable natural material (not recycled materials), free from seams, cracks, and other defects that tend to destroy its resistance to weather, and it shall consist of broken and/or processed rock the following properties:

Aggregate Property	**Test method**	**Requirement**
Los Angeles Wear, 500 Rev.	AASHTO T 96	40% maximum
Specific Gravity, SSD	AASHTO T 85	2.55 minimum

B. Bedding Layer shall consist of well graded aggregate with the following gradation:

Sieve Size	**Percent Passing by Weight**
4”	99-100
2”	75-100
No. 4	50-80
No. 40	30 maximum

No. 200	10 maximum
Sand Equivalent	50 minimum

C. Grade-Control Structure Rock shall be “Angular” (having sharply defined edges) to “Subangular” (having a shape in between Rounded and Angular) for a higher degree of interlocking to provide stability to the protected area. The use of round, thin, flat, or long and needle-like shapes is not allowed. Suitable Shape can be determined by the ratio of the Length/Thickness, where the Length is the longest axis, Width is the second longest axis, and Thickness is the shortest. The Suitable Shape shall be the maximum of 3.0. Rock and aggregates shall consist of hard, sound, and durable natural material (not recycled materials), free from seams, cracks, and other defects that tend to destroy its resistance to weather, and it shall consist of broken and/or processed rock the following properties:

Aggregate Property	**Test method**	**Requirement**
Los Angeles Wear, 500 Rev.	AASHTO T 96	40% maximum
Specific Gravity, SSD	AASHTO T 85	2.55 minimum

D. The Rock Gradation shall meet the following gradation for CALTRANS Section 72-2.02 Class VI Rock Slope Protection Class:

Criteria	**Average size**	**Range**
15 percent passing diameter	15 inches	13 to 18.5 inches
50 percent passing diameter	21 inches	20 to 24 inches
100 percent passing diameter	33 inches	42 inches maximum
15 percent passing particle weight	440 lbs	180 to 520 lbs
50 percent passing particle weight	875 lbs	650 to 1,100 lbs
100 percent passing particle weight		6,000 lbs maximum

2.2 SOLDIER PILE WALL WEIR MATERIALS

A. Soldier Piles shall be in accordance with the requirements of Section 02460 – Drilled Soldier Piles.

B. Wood Lagging accordance with the requirements of Section 02260 – Timber Lagging.

C. Spill Pad Rock shall be the same as specified for Grade-Control Structure Rock (part 2.1 of this specification).

2.3 INTERCEPTOR SWALE MATERIALS

A. Earthen Materials shall consist of on-site soils excavated to create the swale and compacted into the adjacent berm as shown on the drawings. No materials shall be imported to the site to construct the interceptor swale.

B. Flocculant Logs to be installed within the interceptor swale shall meet the requirements specified in Section 02450 – Temporary Erosion and Sediment Controls.

2.4 BRUSH DAM MATERIALS

A. Brush shall be obtained from site clearing activities within the pit required for installation of the grade control structure, interceptor swale and the brush dams themselves. No brush from outside the Pit shall be used for constructing brush dams.

B. Stakes shall consist of 4-foot long 2” x 4” nominal dimension lumber.

C. Rope for holding brush within stakes shall be ½-inch nominal diameter hemp rope.

PART 3 - EXECUTION

3.1 PREPARATION

A. Survey center line of the surface water management structures and limits of disturbance as shown on the Drawings employing a qualified land surveyor.

B. Clear the footprint of the structure to the Limits of Disturbance shown on the Drawings in accordance with Section 02230 – Site Clearing and retain cleared vegetation in for use in brush dam construction.

3.2 INSTALLATION

A. The foundation for all rock placements shall be excavated to the elevation shown in the Plans, and no rock shall be placed until the excavation is approved by the Engineer. Excavation below the level of the intersection of the slope to be protected and the adjacent original round shall be classified, measured, as excavation. Before placing rock, the slopes shall be dressed to the lines and grades as staked.

B. The bedding layer and loose rock shall be placed in such a manner that all relatively large stones shall be essentially in contact with each other, and all voids filled with the finer materials to provide a well graded compact mass. The stone shall be dumped on the slope in a manner that will ensure the rock attains its specified thickness in one operation. When dumping or placing, care shall be used to avoid disturbing the underlying material.

C. For the interceptor swale construction, follow the phased construction and specifications provided on the Drawings.

D. For the Brush Dam Construction, install stakes as shown then infill with cleared vegetation with the length of the vegetation trunks roughly parallel to the structure. Manually tamp vegetation in place until the brush fills the space between the stakes up to 1/3 the height of the stake, then tie the brush down with ropes as shown on the Drawings. Continue filling and tying down in this way for the second third and then full height of the stakes.

3.3 QUALITY ASSURANCE

A. A Representative of the State will review load tickets for the rock to ensure the size of rock delivered is correct. Any rock brought to the site which does not meet the specification will be removed from the site at no expense to the State.

END OF SECTION 02370

SECTION 02374
TEMPORARY CONSTRUCTION MATS

PART 1 - GENERAL

1.1 SUMMARY

A. The work shall consist of installing temporary construction mats (swamp mats) for access and construction of the soldier pile retaining wall. The mats will be used for support over wetlands and very soft sediment that has infilled the Malakoff Diggins pit.

B. The contractor shall furnish all labor, materials, and equipment required for using temporary construction mat is areas shown on the Drawings.

1.2 REFERENCES

A. Golder Associates, Inc.
   1. Geotechnical Investigation, Pit Drainage Runoff BMP Design, Malakoff Diggins State Historic Park, Draft March 1, 2021.

B. US Army Corps of Engineers – New England District
   1. Construction Mat Best Management Practices (BMPs).

1.3 SUBMITTALS

A. The following submittals shall be provided by the contractor for the State Representative Engineer (Engineer) review and approval at least 21 days prior to beginning the work. The contractor will not be allowed to begin the work until all submittal requirements are satisfied and found acceptable to the Engineer. Changes or deviations from the approved submittals must be re-submitted for approval. No adjustments in contract time will be allowed due to incomplete submittals.
   1. Planned Temporary Construction Mat product sheet (s) showing the proposed mats meeting the requirements of Part 2 of this specification.
   2. Calculations or documented experience showing the proposed mats will support the equipment proposed for the project construction, including but not limited to trucks, dozers, cranes, and foundation drilling rigs.
   3. Mat Installation Plan and Removal Plan, detailing compliance with Part 3 of this specification.
   4. The contractor shall submit a reference list indicating the successful completion of at least two temporary mat access projects in the last 5 years. A brief description of each project with the owner's name and current phone number shall be included.

B. Contractor shall submit any requests for alternate materials or methods from those shown on the drawings or approved in submittals to the Engineer for evaluation and approval. Adequate time shall be allowed in the Contractor's schedule for the engineer to evaluate the alternate and provide a response to the contractor. Adequate time shall be at least 5 working days but may be more depending on the request.

1.4 PROJECT CONDITIONS

A. The subgrade soil conditions underlying the mats will be intermittent standing water and soft to very soft clay and plastic silt soils. For example, a typical passenger car or pickup would become mired up to its axles if it were attempted to cross the pit without the use of temporary construction mats.

PART 2 - PRODUCTS

2.1 TEMPORARY CONSTRUCTION MATS

A. Composite Materials or Wood Materials of sufficient thickness and durability to provide access for the Contractors equipment over the soil conditions present.

B. 14-foot-wide maximum dimension.

PART 3 - EXECUTION

3.1 PREPARATION

A. Survey center line of temporary access road, employing a qualified land surveyor.

B. Clear Vegetation (trees, shrubs, etc.) within the allowable disturbance zone shown on the Drawings. Vegetation shall be cut at or above ground level and not uprooted in order to prevent disruption to the wetland soil structure and to allow stump sprouts to revegetate the work area. See also Section 2230 for clearing specifications.

C. Mats shall be cleaned off-site of soil and any invasive plant species seed stock or plant material from before installation.

3.2 INSTALLATION

A. Mats should be in good condition to ensure proper installation, use and removal.

B. Heavy equipment shall not be stored, maintained, or repaired in pit area unless the equipment is broken down and cannot be easily removed.

C. An adequate supply of spill containment equipment shall be maintained on site and spill containment trays or tarps shall be deployed under all refueling ports prior to refueling and under hydraulic hoses during emergency maintenance

D. Do not drag construction mats into position.

E. Where feasible, place mats in a location that would minimize the amount needed for the wetlands crossing.

F. Minimize impacts to wetland areas during installation, use, and removal.

G. Install adequate erosion and sediment controls at approaches to mats to promote a smooth transition to, and minimize sediment tracking onto, swamp mats.

H. In most cases, construction mats should be placed along the travel area so that the individual boards are resting perpendicular to the direction of traffic. No gaps should exist between mats. Place mats far enough on either side of the resource area to rest on firm ground.

I. Follow suggested construction mat BMP details shown on the Drawings.

3.3 WETLAND/STREAM CHANNEL CROSSING

A. At “dry” crossings where no flow is present or anticipated during project construction, the mats may be placed directly onto the ground in order to prevent excessive rutting, provided stream banks and bottoms are not adversely altered.

B. Construction mats may be used as a temporary bridge over a stream to allow vehicles access to the work site. Small sections of mat are placed within and along the stream parallel to the flow of water. Mats may then be placed perpendicular to the stream, resting on top of the initial construction mat supports. It may be necessary to place additional reinforcement for extra stability and to minimize the amount of sediment that could fall between the spaces of each timber.

C. Mats should not be placed so that they restrict the natural flow of the stream.

D. More than one layer of mats may be necessary in areas which are inundated, have deep organic wetland soils, or soft soils.

3.4 MAINTENANCE

A. Matted wetland crossings should be monitored to assure correct functioning of the mats. Inspect mats daily. Look for any defects or structural problems. Mats which become covered with soils or construction debris should be cleaned and the materials removed and disposed of in an upland location. The material should

not be scraped and shoveled into the resource area. Mats which become imbedded must be reset or layered to prevent mud from covering them or water passing over them.

3.5 REMOVAL

A. Matting should be removed by “backing” out of the site, removing mats one at a time. Any rutting or significant indentations identified during mat removal should be regraded immediately, taking care not to compact soils.

B. Mats should be cleaned before transport to another wetland location to remove soil and any invasive plant species seed stock or plant material.

C. Mats shall be cleaned of soil and any invasive plant species seed stock or plant material from before installation.

D. Cleaning methods may include but are not limited to shaking or dropping mats in a controlled manner with a piece of machinery to knock off attached soil and debris, spraying with water or air, and sweeping.

E. Crossings should be inspected following mat removal to determine the level of restoration required.

3.6 RESTORATION

A. Special precautions should be taken to promptly stabilize areas of disturbed soil located near wetlands and streams. Matted areas within wetlands shall be restored to their original condition and elevation. This may involve natural revegetation from existing root and seed stock of native plant species. Conditions may warrant planting and the broadcast of a wetland seed mix over the matted area to supplement the existing seed and rootstock. Seed mixes and vegetation shall contain only plant species native to the Malakoff Pit. The use of mulch in wetlands shall consist of weed-free mulch to mitigate the risk of the spread of invasive plant species.

3.7 QUALITY ASSURANCE

A. The State Representative will be on-site intermittently to verify that the above installation and restoration methods are being employed.

END OF SECTION 02374

SECTION 02450
TEMPORARY EROSION AND SEDIMENTATION CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. The contractor shall furnish all labor, materials, and equipment required for completing installation of silt fences, straw wattles, soil stabilizers, flocculant logs and other permanent and temporary erosion and sedimentation control measures.

1.2 RELATED SECTIONS

A. Section 02072 – Geotextile

B. Section 02300 – Earthwork

1.3 SUBMITTALS

A. The following submittals shall be provided by the contractor for the State Representative Engineer (Engineer) review and approval at least 21 days prior to beginning the work. The contractor will not be allowed to begin the work until all submittal requirements are satisfied and found acceptable to the Engineer. Changes or deviations from the approved submittals must be re-submitted for approval. No adjustments in contract time will be allowed due to incomplete submittals.

1. Product Sheet with Specifications for the proposed:
    a. Silt Fence
    b. Straw Wattles
    c. Soil stabilizer
    d. Flocculant Logs

B. Contractor shall submit any requests for alternate materials or methods from those shown on the drawings or approved in submittals to the engineer for evaluation and approval. Adequate time shall be allowed in the contractor's schedule for the engineer to evaluate the alternate and provide a response to the contractor. Adequate time shall be at least 5 working days but may be more depending on the request.

1.4 PROJECT CONDITIONS

A. The project site is in and active sedimentation area within a State Park. This project requires erosion and sedimentation controls during construction to

prevent construction impacts to adjacent wetlands. Soil stabilizers and flocculant will also be installed as a best management practice (BMP) to minimize sediment leaving the Hiller Tunnel after construction and will be maintained by the Park.

PART 2 - PRODUCTS

2.1 SILT FENCE

A. Posts shall be 2-inch square hardwood at a 10-foot maximum spacing.

B. Filter fabric shall be as specified in Section 02072 – Geotextile.

2.2 STRAW WATTLES

A. Straw bales shall 8-inch minimum diameter and bound with biodegradable netting

B. Wooden Stakes 2- inch by 2-inch and 24- to 36-inches long

2.3 SOIL STABILIZER

A. Soilworks Soiltac (https://soilworks.com)

B. Engineer approved equivalent after Contractor provides American Society for Testing and Materials (ASTM) D7101 Rainfall Erosion Testing on proposed alternative soil stabilizer using Malakoff Pit soils.

2.4 FLOCCULANT LOGS

A. Applied Polymer Systems Inc. (APS) Floc Log Series 703d#3 (https://www.siltstop.com/pictures/floclogdatasheet.pdf)

B. Engineer approved equivalent after Contractor provides Polymer Testing for Clarification Applications proposed alternative flocculation agent using Malakoff Pit soils.

C. Flocculant logs stakes, mesh netting and anchor ropes as shown on the Drawings.

PART 3 - EXECUTION

3.1 PREPARATION

A. Survey center line of temporary access road and limits of disturbance as shown on the Drawings employing a qualified land surveyor.

3.2 INSTALLATION

A. Silt fences and Straw Wattles shall be installed in accordance with the details shown on the Drawings on the limits of disturbance lines also shown on the Drawings

B. Soil Stabilizer shall be applied at a rate of 290 gallons of product per acre, diluted in water at an 8:1 ratio within the areas shown on the Drawings. Apply with a water truck or all-terrain vehicle equipped with a water tank and spray bar.

C. Flocculant Logs shall be installed along the interceptor swale as shown on the drawings.

3.3 MAINTENANCE

A. Silt fences shall be maintained as needed, and sediment materials removed when "bulges" develop in the silt fence.

B. Straw Wattle shall be inspected frequently and cleaned and/or replaced promptly if damaged.

END OF SECTION 02540

SECTION 02460
DRILLED SOLDIER PILES

PART 1 - GENERAL

1.1 SUMMARY

A. The work shall consist of:
   1. Excavation of shafts using temporary casing;
   2. Installation of structural steel piles as specified herein and shown on the Drawings; and
   3. Backfilling the shafts with lean concrete as specified herein and shown on the plans.

B. The contractor shall furnish all labor, materials, and equipment required for completing installation of the drilled soldier piles.

1.2 REFERENCES

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

   1. M6: Standard Specification for Fine Aggregate for Hydraulic Cement Concrete

   2. M80: Standard Specification for Coarse Aggregate for Hydraulic Cement Concrete

   3. M85: Standard Specification for Portland Cement

   4. M295: Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

B. American Concrete Institute (ACI)

   1. 301: Specifications for Structural Concrete for Buildings.

   2. 304: Guide for Measuring, Mixing, Transporting, and Placing Concrete.

C. American Society of Testing And Materials (ASTM)

   1. A529: Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality

   2. A572: Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel

   3. A992: Standard Specification for Structural Steel Shapes

4. C33: Specification for Concrete Aggregates.

5. C94: Standard Specification for Ready-Mixed Concrete

6. C150: Specification for Portland Cement.

7. C494: Specification for Chemical Admixtures for Concrete.

8. C595: Standard Specification for Blended Hydraulic Cements

D. American Welding Society (AWS)

1. D1.1: Structural Welding Code – Steel

E. Golder Associates Inc.

1. Geotechnical Investigation, Pit Drainage Runoff BMP Design, Malakoff Diggins State Historic Park, Draft March 1, 2021.

1.3 SUBMITTALS

A. The following submittals shall be provided by the contractor for the State Representative Engineer (Engineer) review and approval at least 21 days prior to beginning the work. The contractor will not be allowed to begin the work until all submittal requirements are satisfied and found acceptable to the Engineer. Changes or deviations from the approved submittals must be re-submitted for approval. No adjustments in contract time will be allowed due to incomplete submittals.

1. Shop and working drawings indicating structural steel pile fabrication details and materials.

2. Concrete mix designs and placement procedures.

3. Shaft installation plan, providing at least the following information:
   a. List and description of proposed equipment to be used, including but not limited to, cranes, drills, augers, bailing buckets, final cleaning equipment, tremies, pumps, etc.
   b. The construction sequence and the order of shaft construction.
   c. Details of shaft excavation methods including methods to clean the shaft excavation.
   d. Details of the shafts and casing.
   e. Details of structural steel pile placement methods including internal support bracing and centralization methods.
   f. Details of concrete placement methods including equipment and procedures for concreting through a conduit or tremie.

g. The method to be used to prevent caving (temporary casing, slurry, or other methods).

B. The contractor shall provide the following information during construction:

1. Certified mill test results for structural steel within 1 week before delivery to the site.

2. Submit one copy of each lean concrete delivery ticket to the Engineer at the time the lean concrete is delivered.

C. Contractor shall submit any requests for alternate materials or methods from those shown on the drawings or approved in submittals to the Engineer for evaluation and approval. Adequate time shall be allowed in the contractor's schedule for the Engineer to evaluate the alternate and provide a response to the contractor. Adequate time shall be at least 5 working days but may be more depending on the request.

1.4 PROJECT CONDITIONS

A. Survey adjacent structures and improvements, employing a qualified professional Engineer or land surveyor; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

1. During installation of excavation support and protection systems, regularly resurvey benchmarks, maintaining an accurate log of surveyed elevations and positions for comparison with original elevations and positions. Promptly notify Architect if changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.

PART 2 - PRODUCTS

2.1 STRUCTURAL STEEL

A. Structural steel shall meet the following specifications unless otherwise noted on the drawings:

1. Pile: W12x16 - ASTM A992 (fy = 50 ksi)

2. Plate: ASTM A529 grade 50 or ASTM A572 grade 50 (fy = 50 ksi)

2.2 WELD ELECTRODES

A. Weld electrodes shall be E70XX and shall conform to AWS D1.1.

2.3 PAINTING

A. Soldier Piles and attachments shall not be painted.

2.4 LEAN CONCRETE

A. Lean concrete for drilled shafts shall be proportioned to meet the following requirements:

1. Cementitious material content shall be not less than 141 pounds per cubic yard.

2. Cementitious material may be Portland cement, blended hydraulic cement, or a combination of Portland cement and fly ash as follows:
   a. Portland cement shall conform to the requirements of AASHTO M85/ASTM C150 Type I/II.
   b. Blended hydraulic cement shall conform to the requirements of ASTM C595 type 1P(MS).
   c. Fly ash shall conform to the requirements of AASHTO M295.

3. Slump, including water-reducing admixtures, shall be no less than 4 inches and no greater than 8 inches.

B. Admixtures shall conform to the requirements of ASTM C494, shall be used in accordance with the manufacturer's recommendations, and shall be approved by the Engineer.

C. Aggregates shall conform to the requirements of AASHTO M6/ASTM C33 for fine aggregates and AASHTO M80 Class B for coarse aggregates.

2.5 DELIVERY, STORAGE, AND HANDLING

A. Contractor shall check all materials upon delivery to assure that the proper type, grade, and certification have been received.

B. Contractor shall protect all materials from damage due to jobsite conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

PART 3 - EXECUTION

3.1 QUALITY ASSURANCE

A. The contractor shall submit a reference list indicating the successful completion of at least five drilled pile projects completed during the last 3 years. A brief

description of each project with the owner's name and current phone number shall be included.

B. The contractor's superintendent shall have a minimum of 3 years of experience supervising drilled pile and pier construction and the drill operators and on-site supervisors shall have a minimum of 1 year of experience installing drilled piles and piers. Prior to starting the work, the contractor shall submit a list identifying the superintendent, drill rig operators, and on-site supervisors assigned to the project. The list shall contain a summary of each individual's experience and shall be sufficiently complete for the Engineer to evaluate the individual's qualifications.

C. Welders employed in the work shall have satisfactorily passed qualification tests in accordance with AWS D1.1. Certification or re-certification, if required, shall be the contractor's responsibility.

D. The Engineer may suspend the work if the contractor substitutes non-approved personnel for approved personnel. The contractor shall be fully liable for additional costs resulting from the suspension of work and no adjustments in the contract time resulting from the work suspension will be allowed.

3.2 CONSTRUCTION SITE SURVEY

A. Prior to any construction activity, the contractor shall visit the site for the purpose of observing and documenting the pre-construction condition of all structures, sidewalks, roadways, and all other facilities adjacent to the project site.

B. During construction, the contractor shall observe the conditions around the excavation on a daily basis for signs of any ground or structure movements.

C. Contractor shall immediately notify the Engineer if any sign of movement such as new cracks in structures, increased size of old cracks or separation of joints in structures, foundations, streets or paved and unpaved surfaces are observed; and provide the Engineer written documentation of the observed conditions within 24 hours.

3.3 SHAFT EXCAVATION

A. Shafts shall be excavated to the required depth as shown on the plans or as directed by the Engineer. The excavation shall be completed in a continuous operation using equipment capable of excavating through the type of material expected to be encountered.

B. The soils within the area are soft highly plastic clays and silts which will close on the shaft excavation. Groundwater is also present within a few feet of the ground surface. The Contractor must use temporary casing or use other methods

approved by the Engineer to keep the shaft excavation open during steel and lean concrete placement. The casing shall be smooth and well-oiled with form oil.

C. Shaft excavations shall be backfilled within 4 hours of beginning of excavation, unless approved otherwise by the Engineer. If the shaft excavation is stopped with the approval of the Engineer, the shaft shall be secured by installation of a safety cover. It shall be the contractor's responsibility to ensure the safety of the shaft and surrounding soil and the stability of the side walls.

D. The contractor shall use appropriate means (such as a cleanout bucket or a vacuum system), to clean the bottom of the excavation such that no more than 1 inch of loose or disturbed material is present.

E. The excavated shaft shall be inspected and approved by the Engineer prior to proceeding with construction.

F. When unexpected obstructions are encountered that require specialized equipment and/or labor, the contractor shall notify the Engineer promptly and the obstructions shall be removed, and the excavation continued in a manner approved by the Engineer.

G. Temporary casings for the shafts shall be removed during concrete placement. A minimum 5-foot head of concrete must be maintained to balance the soil and water pressure at the bottom of the casing during removal.

3.4 INSTALLATION OF STRUCTURAL STEEL PILES

A. Structural steel piles and reinforcing steel shall be lowered into the drilled shafts and secured in position prior to backfilling the shaft.

B. Provide adequate support to structural steel such that proper position is maintained until concrete backfill has set.

3.5 PLACEMENT OF SHAFT BACKFILL

A. Shaft backfill shall be placed as shown on the plans and shall commence within 2 hours after completion of the excavation. Shaft backfill shall be placed in one continuous operation to the top of the shaft.

B. The backfill shall be lean concrete, deposited by tremie placement methods.

C. Preparation

1. Before placing backfill, remove all dirt, sawdust, loose tie wire, debris, ice, snow from shaft excavations.

2. Earth surfaces upon which backfill is to be placed shall be clean, damp surfaces, free from frost, ice, and standing or running water.

D. Placement

1. Place backfill in accordance with ACI 304.
2. Convey backfill from mixer to excavations as rapidly as practicable by methods which will prevent segregation or loss of ingredients. No addition of water to the backfill shall be permitted after discharge from the mixer.
3. Do not disturb embedded parts, or formwork during backfill placement.
4. Pumped backfill
    a. Locate pumps as near the backfill placing area as practicable with consideration for maintaining a continuous supply of backfill to the pumps.
    b. Lay out lines from the pump to the backfill placing area with a minimum number of bends. For large placing areas, install alternate lines.
    c. Maintain direct communication between the pump operator and the backfill placing crew.
    d. Test backfill mix for pumpability under actual field conditions. Do not place any backfill until field tests are completed.
    e. Before placing any backfill, pump concrete through the system to lubricate the system. Dispose the backfill used to lubricate the system in a disposal area approved by the State.

3.6 WELDING

A. All fillet welds shall be visually tested. Acceptance criteria will be per AWS D1.1.

3.7 CUTTING

A. Field cuts shall be performed by oxygen-fuel gas cutting or plasma-arc cutting.

B. Cut ends shall be ground to provide a smooth edge.

3.8 SPLICING

A. Splicing of piles will not be allowed, unless approved by the Engineer prior to splicing.

3.9 CONSTRUCTION TOLERANCES

A. Shafts shall be constructed so that the center at the top of the shaft is within 3 inches of the plan location. Shafts shall be plumb, to within 1.0% of the length based on the total length of the shaft. The elevation at the top of shaft shall be +/-3 inches from the plan location. During construction for the shafts, the contractor shall make frequent checks on the plumbness, alignment, and dimensions of the shafts. Any deviation exceeding the allowable tolerances shall be corrected immediately.

B. Structural steel piles shall be placed so that the center line of the pile is within 1 inch of the shaft center. Steel piles shall be plumb. The top elevation of steel piles shall be within 1 inch of the plan elevation.

C. Weld size shall not be less than that shown on the drawings. Weld length shall not be less than the length shown on the drawings. Weld length shall not be more than 8.0 inches greater than the length shown on the drawings.

3.10 REJECTION OF DEFECTIVE CONCRETE

A. When the Engineer rules that the concrete construction fails to conform to the requirements, the Engineer will notify the contractor in writing, stating the extent of the repair or removal and replacement to be made.

B. The contractor shall repair or remove and replace the unsatisfactory concrete in a manner satisfactory to the Engineer. Such repair or removal and replacement shall be performed by the contractor at his own expense.

C. Rejected concrete shall be disposed of in an area designated by the State.

END OF SECTION 02460

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