AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF PAGES
N/A	1	80

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
0002	03 APR 21	N/A	SPEC. NO. 1325

6. ISSUED BY	CODE	7. ADMINISTERED BY *(If other than Item 6)*	CODE
DEPARTMENT OF THE ARMY CORPS OF ENGINEERS SACRAMENTO 1325 J STREET SACRAMENTO, CALIFORNIA		SEE ITEM 7	

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*			9A. AMENDMENT OF SOLICITATION NO.
		(√) X	DACW05-03-B-0002
			9B. DATED *(SEE ITEM 11)* 20 MAR 2003
			10A. MODIFICATION OF CONTRACTS/ORDER NO. N/A
CODE	FACILITY CODE		10B. DATED *(SEE ITEM 13)* N/A

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☒ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(√) A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER *(Specify type of modification and authority)*

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return _____copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

GUADALUPE RIVER PROJECT, CONSTRUCTION CONTRACT 3A, PHASE 2
(COLEMAN AVENUE TO UPRR BRIDGE NO. 4
SAN JOSE, CALIFORNIA

2 ENCLS NOTE: DELETE SECITON 05650 IN ITS ENTIREY.

1) REVISIONS: PRICING SCHEDULE (2 PAGES), 00800 (2 PAGES), 01010 (3 PAGES), 01270 (11 PAGES), SUBMITTALS (2 PAGES), 01502 (11 PAGES), 02050 (4 PAGES), 02080 (3 PAGES), 02110 (3 PAGES), 02152 (2 PAGES), 02225 (6 PAGES), 05120 (2 PAGES) AND 05650 (28 PAGES).
2) REVISED DRAWING SHEETS D-5, D-12, CS-1, CS-2, CS-4,CS-9, S-25, S-48 AND S-52 THRU 55.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)*	
15B. CONTRACTOR/OFFEROR _____ *(Signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ *(Signature of Contracting Officer)*	16C. DATE SIGNED

Section 00010 - Solicitation Contract Form

PRICING SCHEDULE

CONTRACTOR SHALL FURNISH ALL PLANT, LABOR, MATERIAL, EQUIPMENT, ETC. NECESSARY TO PERFORM ALL WORK IN STRICT ACCORDANCE WITH THE TERMS AND CONDITIONS SET FORTH IN THE CONTRACT TO INCLUDE ALL ATTACHMENTS THERETO.

LINE ITEM NO.	DESCRIPTION	QUANTITY	UNIT OF MEASURE	UNIT PRICE	TOTAL PRICE
0001	MOBILIZATION/ DEMOBILIZATION	1	JOB	LUMP SUM	$_____
0002	DEMOLITION	1	JOB	LUMP SUM	$_____
0003	PERMANENT FENCING	1,900*	LF	$_____	$_____
0004	DEWATERING AND SURFACE WATER CONTROL	1	JOB	LUMP SUM	$_____
0005	WATER TREATMENT				
0005A	WASTEWATER TREATMENT SYSTEM	1	JOB	LUMP SUM	$_____
0005B	OPERATION	21*	WEEK	$_____	$_____
0005C	CARBON FILTERS	60*	TON	$_____	$_____
0006	EXCAVATION	147,700*	CY	$_____	$_____
0007	SPECIAL SOIL HANDLING AND DISPOSAL				
0007A	HAZARDOUS WASTE	160*	TON	$_____	$_____
0007B	DESIGNATED WASTE	160*	TON	$_____	$_____
0008	CONCRETE BOX CULVERTS INCL. OUTLET	1	JOB	LUMP SUM	$_____
0009	BACKFILL	28,170*	CY	$_____	$_____
0010	TEMPORARY STEEL BRIDGE	1	JOB	LUMP SUM	$_____
0011	SIDE DRAINS NO. 4 & 5	1	JOB	LUMP SUM	$_____
0012	CELLULAR CONC. MAT	2,050*	SY	$_____	$_____
0013	GABIONS	360*	CY	$_____	$_____
0014	CRUSHED ROCK	***4,080****	TON	$_____	$_____
0015	TYPE 1 FILTER FABRIC	1,590*	SY	$_____	$_____

0016	TERRACE WALL CONC.	***350****	CY	$_____	$_____
0017	RETAINING WALLS	1	JOB	LUMP SUM	$_____
0018	DRILLED PIER RETAINING WALLS	1	JOB	LUMP SUM	$_____
0019	RIVERWALK/ MAINTENANCE ROAD	4,580*	LF	$_____	$_____
0020	RIVERWALK STAIRS	1	JOB	LUMP SUM	$_____
0021	DECORATIVE PEDESTRIAN RAILING	1	JOB	LUMP SUM	$_____
0022	DECORATIVE PAVING	1	JOB	LUMP SUM	$_____
0023	LANDSCAPING	1	JOB	LUMP SUM	$_____
0024	IRRIGATION SYSTEM	1	JOB	LUMP SUM	$_____
0025	ELECTRICAL WORK	1	JOB	LUMP SUM	$_____
0026	SITE AMENITIES	1	JOB	LUMP SUM	$_____
0027	LANDSCAPE MAINTENANCE DURING MAINTENANCE PERIOD	1	JOB	LUMP SUM	$_____

SUBTOTAL ESTIMATED PRICE $_____
(ITEMS 0001 THRU 0027)

OPTION

0028	UPRR BRIDGE NO. 3 DEMOLITION	1	JOB	LUMP SUM	$_____
0029	REMOVAL OF TEMPORARY INLET BULKHEADS (2X)	1	JOB	LUMP SUM	$_____

SUBTOTAL OPTION ESTIMATED PRICE $_____
(ITEMS 0028 THRU 0029)

TOTAL ESTIMATED PRICE $_____
(ITEMS 0001 THRU 0029)

* QUANTITY IS AN ESTIMATED AMOUNT. SEE SECTION 00700, FAR 52.211-18, FOR VARIATION IN ESTIMATED QUANTITY CONTRACT CLAUSE.

1. Prices must be submitted on all individual items of this Pricing Schedule. Failure to do so may be cause for rejection of bids.

2. If a modification to a price based on unit price is submitted which provides for a lump sum adjustment to the total estimated price, the

Contracting Officer's Representative. For all other materials, the MSDS will also be submitted to U.S. Army Environmental Hygiene Agency, ATTN: HSE-OI, Aberdeen Proving Grounds MD 21010.

(b) Hazardous material is defined in Federal Standard No. 313, sold by the General Services Administration Specifications Unit (3FBP-W), 7th & D Streets, SW, Washington DC 20407.

52.0228-4502 MINIMUM INSURANCE REQUIRED (MAY 1993)

The contract clause, FAR 52.228-5, applies to this contract even if the work or any portion of the work is not performed on a Government installation. In accordance with FAR 52.228-5 and FAR 28.307-2, the contractor shall procure and thereafter maintain during the entire period of this performance under this contract the following minimum insurance.

~~The following is the minimum insurance required for Bid Item 0140A:~~

TYPE	AMOUNT
Worker's Compensation and Employer's Liability	Comply with Federal and State worker's comp and occupational disease statutes. Employer's liability of at least $100,000
General Liability (Comprehensive)	Bodily injury liability of at least $500,000 per occurrence.
Automobile Liability (Comprehensive): Bodily Injury & Property Damage	At least $200,000 per person and $500,000 per occurrence. At least $20,000 per occurrence.
Longshoremen's and Harbor Worker's Compensation (When applicable by location of contract performance)	Coverage complying with applicable Federal statute (33 USC 901 et seq).

See additional insurance requirements in Section 01502, "Coordination with Union Pacific Railroad."

~~The following is the Minimum Additional Insurance required for Bid Item No. 0140B for the Santa Clara Valley Water District and State of California Department of Transportation to be listed as additional insured with respect to all liabilities:~~

~~1. Commercial or Comprehensive General Liability Insurance with coverage as indicated:~~

~~a. $10,000,000 per occurrence and aggregate for bodily injury and property damage.~~

~~b. If the standard ISO Form wording for ANOTHER INSURANCE, or comparable wording, is not contained in Contractor's General Liability insurance policy, an endorsement must be provided that~~

~~said insurance will be primary insurance and any insurance or self-insurance maintained by the Santa Clara Valley Water District, its directors, officers, employees and agents and/or the California State Department of Transportation, its officers, employees or agents shall be in excess of Contractor's insurance and shall not contribute to it.~~

~~c. Said liability policy will be endorsed to name the Santa Clara Valley Water District, its directors, officers, agents and employees and the California State Department of Transportation, its officers, agents and employees as additional insured.~~

~~2. Auto Liability Insurance with coverage of not less than $5,000,000, combined single limit.~~

~~3. Workers Compensation Insurance with statutory limits to comply with applicable Federal and State California statutes and including Employers Liability coverage of not less than $1,000,000. If Longshoremen's and Harbor workers statutes apply, then coverage must be maintained in compliance with applicable Federal USC 901 et seq.~~

~~All insurance policies above shall be endorsed to provide the Santa Clara Valley Water District and the California State Department of Transportation thirty (30) days notice of cancellation (10 days for nonpayment of premium) and the certificates of insurance provided shall have the words "endeavor to" and "but failure to mail such notice shall impose no obligation of any kind upon the company, it agents or representatives" crossed out.~~

~~Certificates and endorsements evidencing the above minimum insurance will be sent to:~~

~~Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118
Attn: Stephen Ferranti~~

~~State of Calif. Depart. of Transportation
Office of Right of Way - District 4
P.O. Box 23660
Oakland, CA 94623-0660
Attn: Jim Bozionelos~~

52.0232-4501 INVOICES (AUG 1991)

The Government shall pay the Contractor upon submission of proper invoices for supplies delivered and accepted or services rendered and accepted for the portion of work actually performed under this contract. Invoices will be submitted in quadruplicate to the address in Block 26, SF1442, which will be completed at time of award. Invoices shall be submitted on ENG Form 93 which will be provided to the Contractor by the Government

52.236-4001 AS-BUILT DRAWINGS (PROGRESS PAYMENT) (OCT 1998)

One-half of one percent of construction award money shall be withheld until the final as-built drawings and CADD files are accepted by the Government.

52.0236-4584 CONTRACTOR-PROVIDED UTILITIES (APR 1992)

All utilities used in the performance of the work shall be furnished and paid for by the Contractor. The Contractor, at the Contractor's expense, and

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SUMMARY OF WORK

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SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

The work specified in this section includes construction of a reinforced concrete box culvert and other flood control and environmental restoration features along the Guadalupe River between Coleman Avenue and UPRR Bridge No. 4 in San Jose, California.

The Work shall be as specified and as shown on the Drawings and includes, but is not limited to, the following:

1. Clearing and Grubbing: Clear and grub the limits of excavation for the Project.
2. Demolition: Demolish and dispose of concrete foundations, ~~track~~, fences, pipes, and other items as shown on the Drawings.
3. Utilities: Demolish or relocate utilities as shown on the Drawings.
4. Diversion and Care of Water during Construction: Management of water flows including storm water flows, temporary diversion of stream flows and permit requirements.
5. Excavation: Excavation (including temporary shoring), soil-characterization for disposal or reuse (includes in-situ characterization of soils within areas shown on the Drawings as "Known Contaminated Soil".
6. Dewatering: Dewater as necessary to excavate for culvert, and treat and dispose of water in accordance with Specifications and regulatory requirements.
7. Temporary Steel Bridge: Construction, placement, and removal of temporary steel bridge.
8. Construction of Culvert: Construct reinforced concrete box culvert.
9. Railroad Construction: Construct track work on temporary steel bridge and permanent restoration of railroad after removal of the temporary steel bridge ***will be by others. Construct other supporting work and furnish hardwares to UPRR.***
10. Outlet Structure: Construct outlet structure for box culvert.
11. Erosion Control: Construct cellular concrete mattresses and gabions.
12. Instrumentation: Install and monitor instrumentation. Includes monitoring of existing instrumentation at Sobrato Garage.
13. Roads: Construct and maintain all temporary roads needed to accomplish the Work and permanent roads and walkways.

14. Landscaping and Irrigation: Provide landscaping and construct irrigation facilities.
15. Riverwalk: Construct riverwalk including pavements, retaining walls, railings, stairs, electrical components and associated facilities.
16. Site Restoration: Perform site restoration in all areas of the Work including restoration of all temporary access and haul roads.

Optional Work shall be as specified and as shown on the Drawings and includes but is not limited to the following:

1. Bridge Demolition: Demolish and dispose of UPRR Bridge No. 3.
2. Temporary Inlet Bulkhead Removal. Remove temporary fill and temporary bulkheads from Santa Clara Inlet and Saint John Inlet.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

- END OF SECTION -

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SECTION 01270

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SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SUMMARY

Work will be paid for at Unit and Lump Sum prices listed in the Pricing Schedule. It is the responsibility of the Contractor to make a thorough examination of the Contract Documents, the available data and information and the site conditions to determine the scope of work included in bid items listed in Pricing Schedule. The payment of said prices will constitute complete compensation for all work shown on the Drawings and provided in the Specifications or other Contract Documents, and for all costs of accepting the general risks and liabilities inherent in the Work and shall include, but not be limited to, compensation for overhead, profit, materials, equipment and labor and services, and performing all work required to accomplish and complete the work specified under each item and all other work required by the Contact Documents.

1.2 SCHEDULE OF VALUES

No later than 10 days after notice as apparent successful contractor, the apparent successful contractor shall submit, for approval and in a form directed by or acceptable to the Contracting Officer, a complete schedule of the values of the various portions of the Work, including quantities and unit prices aggregating the Contract Price (except in cases and to the extent that accepted unit prices form the basis for payment). The schedule shall subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction, to coordinate with the Project Schedule required under Section 01320, and to form the basis for possible change orders or field orders. The schedule shall be supported by such data to substantiate its correctness as the Contracting Officer may require. Each item in the Schedule of Values shall include its proper share of overhead and profit. An unbalanced breakdown providing for overpayment on items of the Work which will be performed first will not be approved. The Schedule of Values, when approved by the Contracting Officer and after execution of a Contract Agreement, shall be used only as a basis for the Contractor's applications for payment and not for additions to or deductions from the Contract Price.

When directed by the Contracting Officer, the apparent low bidder or Contractor shall submit for approval, a revised Schedule of Values coordinated to revised progress schedules made in accordance with the Contract Documents.

1.3 LUMP SUMS

The quantities of work performed for items bid on a lump sum basis will not be measured except for the purpose of determining reasonable progress payments. Progress payments will be made based on the approved Schedule of Values.

1.4 UNIT PRICES

For items bid on a unit price basis, the estimated quantities given in the Bid Form are approximate and are given only as a basis for comparison of bids. The Government does not expressly, nor by implication, warrant that the actual amount of work will correspond to the estimated quantities. The Government reserves the right to increase or decrease the amount of work performed under unit price Bid Items, or to omit such work altogether. No adjustments to the Contract unit prices will be made, nor will any claim for

loss of anticipated profit be allowed on account of any such increase, decrease, or omission except as provided for in FAR 52.211-18 "Variation in Estimated Quantity". Payment for unit price Bid Items will be made at the Contract unit prices stated in the Contractor's Bid, measured in accordance with specified methods of measurement as stated in this section.

1.5 MEASUREMENT OF QUANTITIES

1.5.1 Unit Prices

The quantity of work to be paid for under any item for which a unit price is specified in the Description of Bid Items shall be the actual amount of units of work satisfactorily completed in accordance with the Contract Documents, and as directed by the Contracting Officer. No payment will be made for work done outside of the prescribed or ordered limits.

1.5.2 Measurements and Payment Quantities

Contractor shall take all measurements and compute all payment quantities. The Contracting Officer will verify and approve measurements and quantities. Measurements and computations shall be made by methods approved by the Contracting Officer for the class of work measured.

1.5.3 United States Standard Measure

Contractor shall measure all work to be paid for on a unit price basis in accordance with United States Standard Measures except as otherwise specified. A ton shall consist of 2,000 pounds avoirdupois.

1.5.4 Material Paid for By Weight

Material paid for by weight shall be weighed on sealed scales certified by and regularly inspected by an inspector of the state in which the scale is located.

1.5.5 Material Paid for By Volume

When material is to be measured and paid for on a volume basis and it is impractical to determine the volume by the method of measurement specified in a Bid Item, or when requested by Contractor in writing and approved by Contracting Officer in writing, the material will be weighed in accordance with the requirements specified for weight measurement. Such weights will be converted to volume measurement for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by Contracting Officer and shall be agreed to by Contractor before such method of measurement of pay quantities will be adopted.

1.5.6 Metering Devices

When metering devices are required in the Specifications or are used to measure the quantity of liquids used in the Work, the metering devices shall be inspected and tested for accuracy at the Contractor's expense as often as Contracting Officer may deem necessary.

1.5.7 Compensation for Measurement

Full compensation for all expense involved in conforming to the requirements for measuring and weighing materials shall be considered as included in the unit prices paid for the materials being measured or weighed and no additional compensation will be allowed therefor.

1.5.8 Non-Payment for Rejected Products.

A. Payment will not be made for any of the following:

1. Materials wasted.
2. Materials determined as unacceptable before or after placement.
3. Materials not completely unloaded from the transporting vehicle.
4. Materials placed beyond the lines, grades and levels of the required Work (as indicated in the Contract Documents or as established by the Contracting Officer).
5. Materials remaining on hand after completion of the Work.
6. Loading, hauling, handling, and disposing of rejected materials.

B. Materials described above (items 1 through 6) shall not be included in final total quantities.

1.6 SCOPE OF PAYMENT

1.6.1 General

All of the Work of the Contract is included in the Pricing Schedule.

1.6.2 Division 0 and Division 1

No separate payment will be made for any of the requirements of the General Conditions, the Supplementary Conditions, nor for any of the work specified in Division 1 Sections of the Specifications. The cost thereof will be considered as included in the prices paid for the various contract items included in the Pricing Schedule. Indirect costs shall be distributed over all of the items in the Pricing Schedule.

1.6.3 Full Compensation

Payment for all items shall include full compensation for all labor, materials, tools, equipment, plant, transportation services and incidentals; application or installation of each item of Work; overhead and profit and incidentals necessary to the completed Work and for performing all work contemplated and embraced under the Contract; and for completing the work according to the Contract Documents. Neither the payment of any estimate nor of any retained percentage shall relieve the Contractor of any obligation to make good any defective work or material.

1.6.4 Limits of Payment

Where Limit of Payment lines are shown on the Drawings, these lines show the extent of measurement for payment. All quantities of work performed outside those lines unless otherwise specified or directed by the Contracting Officer will not be paid for.

1.6.5 Loss of Anticipated Profit

No compensation will be made in any case for loss of anticipated profits.

1.7 SUBMITTIALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330; SUBMITTAL PROCEDURES:

SD-07 Schedules

Schedule of Values; GA

Submit Schedule of Values as required herein. Schedule will be used to measure the progress of the work, and to provide the basis for approval progress payment request containing lump sum

bid items.

1.8 DESCRIPTION OF BID ITEMS

The Pricing Schedule is presented to indicate major categories of work for the purposes of comparative bid analyses and payment breakdown for monthly progress payments. The items in the Pricing Schedule are not exhaustive and complete descriptions of the work categories. The Contractor shall determine, and include in the prices, did all materials, labor, equipment and incidentals for doing all work to complete all Contract work as shown and specified.

1.9 PRICING SCHEDULE

Bid Item 1 - Mobilization and Demobilization (Lump Sum): Bid item consists of all work required to set up the construction site and prepare for construction and demobilization at the completion of the Work of all plant and equipment. Mobilization shall include mobilization of general equipment and plant onto the Site, procurement of required bonds and insurance, field offices, general construction facilities, and acquisition of equipment, supplies, and incidentals necessary for starting the Work. This bid item does not cover specialized equipment and plant covered under specific Bid Items.

Bid Item 2 – Demolition (Lump Sum): Bid Item covers all work associated with removing and disposing of existing structures and debris within the work area and as shown on the Drawings, except the demolition of UPRR Bridge No. 3. The bid item includes, but is not limited to, cutting shrubs, bushes, and other vegetation; grubbing stumps; and removing stumps, grass, shrubs, bushes, other vegetation, and demolition of pavements and sidewalks, fences, ~~railroad track, ballast, railroad ties~~, manholes, the temporary storm drain in the culvert, drop inlets, pipes, water wells and miscellaneous concrete, and all additional demolition work called for in the Contract Documents.

Payment will be made on a Lump Sum basis.

Bid Item 3 - Permanent Fencing (Linear Foot): Bid Item covers all work associated with installation of permanent fencing and gates, and connection to existing fencing, all as specified in the Contract Documents. The bid item includes, but is not limited to, fencing, gates, posts, braces and top rails, accessories and padlocks.

Payment will be made based on the linear feet of fencing, including gates, installed in accordance with the Contract Documents and accepted by the Contracting Officer.

Bid Item 4 - Dewatering and Surface Water Control (Lump Sum): Bid Item covers all work associated with the design, selection, installation, operation, maintenance, and all excavation dewatering required by the Contract Documents or as necessary to perform the Work. The work includes sampling and measurement of the contamination levels of the Wastewater as specified in the Waste Discharge Requirements of Order No. 99-051, General Permit under the National Pollutant Discharge Elimination System No. CAG912003, for Discharge or Reuse of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Volatile Organic Compounds as required by the Contract Documents. Treatment of contaminated water is covered by Bid Item 6. The bid item also includes construction, maintenance, and removal of temporary and protective works for diversion and control of all surface water from any source necessary to perform the Work.

Payment will be made on a lump sum basis.

Bid Item 5 - Water Treatment:

Bid Item 5a - Wastewater Treatment System (Lump Sum): Bid Item covers all work associated with providing, mobilizing and demobilizing, and maintenance of a Wastewater Treatment System including NPDES permit fee as required by the Contract Documents which is capable of meeting the Wastewater Discharge Requirements specified in the Contract Documents. The System shall be mobilized and fully functional prior beginning wastewater discharge and shall be kept on site for the duration of the Work at least through to Substantial Completion, unless otherwise agreed to by the Contracting Officer.

Payment will be made on a lump sum basis.

Bid Item 5b - Operation: Bid Item covers all work associated with the operation of the Wastewater Treatment System, including but not limited to personnel, analytical tests, and periodic NPDES reports, power and replacement of consumable items except for as carbon filters.

Payment will be made on a per-week (7 day) basis. Partial weeks will be paid at the weekly rate. Measurement for payment will be made considering the need for operation of the Wastewater Treatment System, as determined by the Contracting Officer, based upon the contamination levels measured in the Wastewater influent.

Bid Item 5c - Carbon Filters (Ton): Bid Item covers the costs of replacement of carbon filter consumed during operation of the Wastewater Treatment System.

Payment will be made based on the weight, measured in units of Tons, of carbon filter actually consumed and replaced in the Wastewater Treatment System as approved by the Contracting Officer.

Bid Item 6 – Excavation (Cubic Yard): This Bid Item covers all work associated with the design, supply, installation and testing of excavation shoring and bracing systems including the temporary shoring at UPRR Bridge No. 4, verification drilling, installation of DSM pile groups, removal of the culvert termination bulkhead; characterization of soils for disposal, excavation for the culvert, outlet structure, retaining walls, including all excavation associated with the installation of the gabion terraces and walls and Cellular Concrete Mats; and all other miscellaneous

excavation to the lines and grades shown in the Drawings. The bid item does not include excavations and associated shoring for storm drains, sewers, and other utilities.

Payment will be full compensation for shoring, instrumentation, instrumentation monitoring, excavation, removing materials from excavations, hauling to temporary stockpile if material is to be reused or characterized on site, soil characterization, hauling to point of final disposal, disposal costs for non-hazardous materials, and preparation of the subgrade as necessary to begin construction of the culvert and other structures and facilities.

Payment will be made the basis of in-place cubic yards. Measurement for payment will be made based upon the difference between the original ground surface topography and the accepted excavated surface topography, except that no payment will be made for culvert excavation outside of the vertical limits defined by the outside face of the exterior walls of the box culvert.

Bid Item 7 – Special Soil Handling and Disposal

Bid Item 7a – Hazardous Waste (Tons): Bid Item covers all work associated with handling, transportation to and disposal at an approved waste treatment or disposal facility or facilities of all Hazardous Waste excavated from within the limits of "Known Contaminated Soil" as shown on the Drawings. Excavation of the soil is covered under Bid Item 6. Materials contaminated by the Contractor's operations, will be the Contractor's responsibility and will not be measured or paid for by the Government.

Payment will be made on the basis of Tons of soil disposed of. Measurement for payment will be determined on the basis of weigh tickets issued by the approved disposal facility. If the Contractor elects to stabilize and recycle waste materials, measurement will be by scales conforming to the requirements specified herein. Payment under this bid item will be contingent upon the prior written agreement of the Contracting Officer that the soil test results for the materials to be disposed of are consistent the hazardous waste classification assigned to the materials.

Bid Item 7b – Designated Waste (Tons): Bid Item covers all work associated with the handling, the transportation to and disposal at an approved waste treatment or disposal facility or facilities of Designated Waste excavated from within the limits of "Known Contaminated Soil" as shown on the Drawings. Excavation of the soil is covered under Bid Item 6. Materials contaminated by the Contractor's operations, will be the Contractor's responsibility and will not be measured or paid for by the Government.

Payment will be made on the basis of Tons of Designated Waste material disposed of. Measurement for payment will be determined on the basis of weigh tickets issued by the disposal facility. If the Contractor elects to stabilize and recycle waste materials, measurement will be by scales conforming to the requirements specified herein. Payment under this bid item will be contingent upon the prior written agreement of the Contracting Officer that the soil test results for the materials to be disposed of are consistent the hazardous waste classification assigned to the materials.

Bid Item 8 – Concrete Box Culverts including Outlet Structure (Lump Sum): This Bid Item covers all work associated with the formwork, reinforcement, and cast-in-place concrete for the single and twin sections of culvert, the outlet walls and slab. Work includes, but is not limited to, all work associated with waterstops, expansion and control joints, decorative form liners,

geosynthetic wall drains, sand filter and gravel drain layers, crushed rock, geosynthetic clay liner, airvent grates and associated fittings, miscellaneous metal, and all components required to complete the Culvert and outlet structure as required by the Contract Documents.

Payment will be made on a Lump Sum basis.

Bid Item 9 – Backfill (Cubic Yard): This Bid Item covers all work associated with Backfill. This item includes, but is not limited to, the procurement, hauling, placement, moisture control, compaction and construction control testing.

Payment will be made on the basis of in-place compacted cubic yards. Measurement will be made based upon the difference between the accepted excavated surface topography and the accepted final backfill surface topography except that no payment will be made for backfill placed outside of the vertical limits defined by the outside face of the exterior walls of the culvert and below the original ground surface.

Bid Item 10 – Temporary Steel Bridge (Lump Sum): This Bid Item covers all work associated with the construction of the temporary steel bridge required by the Contract Documents. Item work includes, but is not limited to, furnishing all materials, fabrication, erection, removal, and all other related work as required by the Contract Documents. It also includes all work associated with ***furnishing all hardwares necessary for connecting the railroad tracks to*** ~~laying railroad track on~~ the temporary steel bridge and ***furnishing complete premanufactured grade crossing package to UPRR*** ~~reconstruction of the railroad after removal of the temporary steel bridge~~ as described in the Contract Documents.

Payment will be made on a lump sum basis.

Bid Item 11 – Side Drains No. 4 and 5 (Lump Sum): Bid Item covers all work associated with the construction of Side Drains Numbers 4 and 5 required by the Contract Documents. Item work includes, but is not limited to, excavation, reinforced concrete pipe, storm drain manholes, backfill and all other related work as required by the Contract Documents.

Payment will be made on a lump sum basis.

Bid Item 12 – Cellular Concrete Mat (Square Yard): Bid Item covers all work associated with the construction of Cellular Concrete Mats (CCM) at the outlet. Excavation and subgrade preparation are covered in Bid Item 6. The work includes, but is not limited to CCM, earth anchors, connections to adjacent structures, filter fabric, gravel drain, low flow channel conform walls and weirs, upstream transition trench cobbles, stone protection, boulders for instream cover, concrete backfill, in-stream sampling station, and cleaning of debris from behind existing fish passage weirs within the Limits of Work as required by the Contract Documents.

Payment will be made on the basis of square yards of CCM placed and approved.

Bid Item 13 – Gabions (Cubic Yard): Bid Item covers all work and materials associated with the construction of gabion walls and the gabion mattresses for the terrace walls as required by the Contract Documents.

Payment will be made on a cubic yard basis of completed gabion baskets. Measurement will be the nominal dimension of the completed gabion wire baskets.

Bid Item 14 – Crushed Rock (Ton): Bid Item covers all work associated with the construction of the crushed rock base course beneath the gabion walls, terrace walls and riverwalk***, and the 6" AB surfacing (including redwood headers)*** as required by the Contract Documents. Excavation and subgrade preparation is covered in Bid Item 6.

Payment will be made the basis of Tons of Crushed Rock material placed and accepted by the Contracting Officer. Measurement for payment will be determined on the basis of weigh tickets issued by the crushed rock supplier.

Bid Item 15 – Type 1 Filter Fabric (Square Yard): Bid Item covers all work associated with the filter fabric (Type 1) beneath crushed rock and beneath the gabion mattresses behind the Terrace walls as required by the Contract Documents.

Payment will be made on a square yard basis. Measurement for payment will be the area actually covered in accordance with the Contract Documents and which the Contracting Officer has approved.

Bid Item 16 – Terrace Wall Concrete (Cubic Yard): Bid Item covers all work associated with the concrete construction for the Terrace Walls on the west side of the channel south of Coleman Street. Work includes but is not limited to the formwork, reinforcement, drain pipe, and cast-in-place concrete as required by the Contract Documents.

Payment will be made on a Cubic Yard basis.

Bid Item 17 – Drilled Pier Retaining Walls (Lump Sum): Bid Item covers all work, associated with construction of Coleman Avenue Retaining Walls No. 7, No. 8, and No. 9 Excavation is covered in Bid Item 6. Item includes, but is not limited to, drilled shafts, concrete facing, shotcrete facing, wall to shaft connection, two gravity retaining walls extending from Coleman Retaining Wall No. 9, wall drains, wall rail, and sidewalk.

Payment will be made on a Lump Sum basis.

Bid Item 18 – Riverwalk/Maintenance Road (Linear Foot): Bid Item covers all work associated with construction of the Riverwalk/Maintenance Roads. Excavation is covered in Bid Item 6. Item includes, but is not limited to, subgrade preparation, aggregate base, bituminous surface course, bituminous prime coat and tack coat, concrete bands and wood headers, sidewalk ramps and driveways, curbs and gutters, and pavement markings

Payment will be made on the basis of Linear Feet of River Walk Path installed in accordance with the Contract Documents and accepted by the Contracting Officer. Measurement for payment will be measured along the Road centerline.

Bid Item 19 –Riverwalk Stairs (Lump Sum): Bid Item covers all work associated with construction of the stairs at Coleman Avenue, as required by the Contract Documents. Excavation is covered in Bid Item 6. Item includes, but is not limited to, concrete, reinforcing steel, formwork, surface finishing, subgrade preparation, aggregate base, stone veneer and mortar, drain pipe, pipe railing and connection details to and against adjacent structures.

Payment will be made on a Lump Sum basis.

Bid Item 20 – Decorative Pedestrian Railing (Lump Sum): Bid Item covers all work associated with custom guard rail and handrail as shown on the L-Series Contract Drawings and specified in the Contract Specifications.

Payment will be made on a Lump Sum basis.

Bid Item 21 – Decorative Paving (Lump Sum): Bid Item covers all work associated with decorative paving. Includes, but is not limited to, stone paving, decorative paving, turf block, decomposed granite, granite, colored and custom design concrete paving and plaza top of stair finish.

Payment will be made on a Lump Sum basis.

Bid Item 22 – Landscaping (Lump Sum): Bid Item covers all work associated with construction of the Landscaping. Item includes, but is not limited to, soil preparation, trees, tree rootball drain system, shrubs, accent plant, and groundcover landscaping, including supplying plants, preparation of planting pits, backfill mix, staking, mulch, fertilizing, maintenance including associated meter rates and water usage prior to final acceptance of the overall project (exclusive of the 12-month maintenance period), Earth and CCM Seeding Operations and Sod placement including hydroseeding, straw mulch, protection and Seeding Maintenance, all as required by the Contract Documents**.** Maintenance during the 12-month maintenance period is covered in Bid Item 26.

Payment will be made on a Lump Sum basis.

Bid Item 23 – Irrigation System (Lump Sum): Bid Item covers all work associated with installation, and testing of the irrigation system as required by the I-Series Contract Drawings and specified in the Contract Specifications. The bid item also covers maintenance performed prior to final acceptance of the overall project (exclusive of the 12-month maintenance period). Maintenance during the 12-month maintenance period is covered in Bid Item 26. Item includes, but not limited to, fees and permits, water meters, pressure backflow assemblies, electric control hydrometers control valves, station controllers, main and lateral lines, coupling valves, rotary and spray sprinklers, bubblers, all with associated enclosures, risers and covers.

Payment will be made on a Lump Sum basis.

Bid Item 24 – Electrical Work (Lump Sum): Bid Item covers all work associated with permitting, service connections, installation, testing and maintenance of the electrical system as required by the E-Series Contract Drawings and specified in the Contract Specifications.

Payment will be made on a Lump Sum basis.

Bid Item 25 – Site Amenities (Lump Sum): Bid Item covers all work associated with site amenities as required by the Contract Documents. Item includes, but is not limited to, bollards and granite bollards, benches, picnic tables, trash receptacles, stone seat walls, anti-skateboard devices, drinking fountains and associated water and sewer lines, Coleman Plaza, street and riverwalk barricades.

Payment will be made on a Lump Sum basis.

Bid Item 26 – Landscaping Maintenance During Maintenance Period (Lump Sum): Bid Item covers all work associated with the 12-month maintenance period after final acceptance of the overall project as required by the Contract Documents for seeding, planting, and irrigation systems . Item includes, but is not limited to, monthly monitoring of irrigation system, adjustment of automatic controllers for seasonal water requirements, monthly checking of moisture of representative plants and adjustments to irrigation system, replacement of dead or unhealthy plants, weed control, reseeding, turf replacement, pest control, mowing, fertilization, resetting trees, tree replacement due to vandalism, security measures to prevent vandalism, watering including associated meter rates and water usage, inspection, and maintenance reporting.

Payment will be made on a Lump Sum basis.

OPTIONAL ITEMS

Bid Item 27 – UPRR Bridge No. 3 Demolition (Lump Sum): Bid Item covers all work associated with the demolition and disposal of the UPRR Bridge No. 3 and the restoration of the river channel within the limits of work across the channel. The bid item includes, but is not limited to, the temporary diversion of the river, complying with the general and environmental requirements for work within the channel limits as specified in the Contract Documents, demolition and disposal of the bridge abutments, ~~track,~~ deck and beams, and the piers.

Payment will be made on a lump sum basis.

Bid Item 28 – Removal of Temporary Inlet Bulkheads (Lump Sum): This Bid Item covers all work associated with the removal of the temporary box culvert bulkheads and associated storm drain system at the Santa Clara Inlet and the St. John Inlet as required by the Contract Documents. Item includes, but is not limited to, removal and disposal of steel support, stoplogs, blocking, pipe, backfill, and crushed rock.

Payment will be made on a Lump Sum basis.

1.10 PAYMENT

1.10.1 General

A. Payment shall be in accordance with the provisions of Section 00700; CONTRACT CLAUSES.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

- END OF SECTION -

SUBMITTAL REGISTER (ER 415-1-10)																								CONTRACT No. DACW05-00-C-0036
TITLE AND LOCATION GUADALUPE RIVER PROJECT, CONTRACT 3A, SANTA CLARA COUNTY, CA															CONTRACTOR									SPEC. No. 1325
TRANSMITTAL No.	ITEM No.	SECTION PARAGRAPH No.	DESCRIPTION OF ITEMS SUBMITTED	TYPE OF SUBMITTAL										CLASSIFICATION		REVIEWER	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVT ACTION		REMARKS
				DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O&M MANUALS	INFO ONLY	GOVT APPROVAL		SUBMIT	APPROVAL REQD BY	MATERIAL REQD BY	CODE	DATE	SUBMIT TO GOVT	CODE	DATE	
a	b	c	D	e	F	g	H	i	J	K	l	M	n	o	P	q	r	s	t	u	v	w	x	y	z
		1.4	Washers								X				X										
			Section 05500																						
		1.2	Anchor Bolt Layout and Shop Drawings for Railings		X										X										
		1.2	*Grating Panel Layout		X									X											
		1.2	Guardrail and Handrail Layout		X									X											
		1.2	Metal Bar Grating		X										X										
		1.2	Ladders		X										X										
		1.2	Steel Samples								X			X											
		1.2	Miscellaneous Metal Items								X			X											
			Section 05650																						
		1.3	~~Wood Ties~~	X											X										
		1.3	~~New Jointed Rail~~	X											X										

SUBMITTAL REGISTER (ER 415-1-10)																								CONTRACT No. DACW05-00-C-0036
TITLE AND LOCATION GUADALUPE RIVER PROJECT, CONTRACT 3A, SANTA CLARA COUNTY, CA														CONTRACTOR										SPEC. No. 1325
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				DATA	DRAWINGS	INSTRUCTIONS	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	O&M MANUALS	INFO ONLY	GOVT APPROVAL		SUBMIT	APPROVAL REQD BY	MATERIAL REQD BY	CODE	DATE	SUBMIT TO GOVT	CODE	DATE	
a	b	c	D	e	F	g	H	i	J	K	l	M	n	o	P	q	r	s	t	u	v	w	x	y	z
		1.3	~~Relay Rail~~	X											X										
		1.3	~~Joint Bars for Inner Guard Rail~~	X											X										
		1.3	Pre-Manufactured Crossing Material or Surface	X											X										
		1.3	Miscellaneous Track Materials	X											X										
		1.3	Materials and Samples	X											X										
		1.3	~~Material Source~~	X											X										
		1.3	~~Thermite Welding Procedures~~	X											X										
		1.3	~~Qualifications~~					X							X										
		1.3	~~Sampling and Testing~~						X						X										
		1.3	~~Wood Ties~~						X						X										
		1.3	~~Wood Ties~~							X					X										
		1.3	~~Ballast~~							X					X										
		1.3	~~Subballast~~							X					X										
		1.3	~~Materials and Supplies~~							X					X										

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SECTION 01502

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SECTION 01502

COORDINATION WITH UNION PACIFIC RAILROAD

PART 1 GENERAL

1.1 SUMMARY

This section describes the special provisions and the requirements for coordination with Union Pacific Railroad (UPRR) when work by the Contractor will be performed upon or over the UPRR Right-of-Way or may impact current or future UPRR operations. The Contractor will coordinate with UPRR while performing the work outlined in this contract, and shall afford the same cooperation with UPRR as it does with the Contracting Officer. All submittals and work shall be completed in accordance with UPRR Guidelines and AREMA specifications as modified by these Special Provisions or as directed by the UPRR Designated Representative.

1.2 SUBMITTAL PROCEDURES

Where submittals are specified as requiring review by UPRR the following requirements shall be included with the provisions in Section 01330; SUBMITTAL PROCEDURES:

A. The submittals shall include all review comments from the Contracting Officer and the Engineer of record. All submittal designs shall be signed by a Registered Engineer.

B. Construction material submittals shall conform with Section 3.9.

C. An additional five sets of submittals shall be furnished for submittals requiring review by UPRR.

D. A minimum of sixty (60) days will be required for UPRR review after receipt of the submittal with review comments from the Contracting Officer is received.

E. Work items requiring UPRR review include the ***following*** as they apply to work in the vicinity of UPRR tracks.

1. Shoring design and details;
2. falsework design and details;
3. temporary steel bridge erection diagrams and sequence;
4. temporary steel bridge demolition diagram and sequence.
5. ***Material list of hardware necessary for connection of the ties/tracks onto the temporary steel bridge***.

SD-18 Records

Right-of-Entry Agreement; FIO

1.3 UTILITIES

All installations shall be constructed in accordance with current American Railway Engineering and Maintenance-Of-Way Association (AREMA) and UPRR specifications and requirements. UPRR general guidelines and the required application forms for utility installations can be found on the UPRR web site www.uprr.com.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

A. Contractor shall be familiar with the train schedules in this location and structure bid assuming intermittent track windows in this period, as defined in Paragraph B below. In addition, site survey is encouraged. All railroad tracks within and adjacent to the contract site are active, and rail traffic over these facilities shall be maintained throughout the project. Activities on these rails include both through moves along the tracks and switching moves to local customers. Railroad traffic and operations will occur continuously throughout the day and night on these tracks and shall be maintained at all times as defined herein. The Contractor shall coordinate and schedule the work so that construction activities do not interfere with railroad operations.

B. Work windows for this contract shall be coordinated with the Contracting Officer and the UPRR. Types of work windows include Conditional Work Windows and Absolute Work Windows, as defined below:

1. Absolute Work Window: An Absolute Work Window is a period of time that construction activities are given priority over railroad operations. During this time frame the designated railroad track(s) will be inactive for train movements and may be fouled by the Contractor. At the end of an Absolute Work Window the railroad tracks and/or signals must be completely operational for train operations and all UPRR, California Public Utilities Commission (CPUC) and Federal Railroad Administration (FRA) requirements, codes and regulations for operational tracks must be complied with. In the situation where the operating tracks and/or signals have been affected, the UPRR will perform inspections of the work prior to placing that track back into service. Railroad flag persons will be required for construction activities requiring an Absolute Work Window. Absolute Work Windows will not generally be granted for this project unless the request is specifically justified by Contractor and granted by the UPRR.

Construction of the temporary steel bridge will require interrupting train service twice, once when the temporary steel bridge is constructed and once when it is removed. UPRR has agreed to allow Absolute Work Windows for these service interruptions

provided they be scheduled at least two weeks in advance and each of them is completed during a 68 hour period between noon on Friday and 8am the following Monday.

UPRR will install the rails and guard rails to the steel bridge prior to the first 68-hour window. The Contractor shall closely coordinate and cooperate with UPRR such that their work and UPRR's work are completed within each 68- hour time frame.

First 68-hour Window: UPRR will remove tracks and ballast. The Contractor shall install DSM shoring wall in gaps, excavate under footprint of bridge, move bridge and connect to pile caps. After the temporary bridge is in position, UPRR will connect the track works to the temporary steel bridge.

Second 68-hour Window: UPRR will cut tracks and the Contractor shall remove the temporary steel bridge. UPRR will install ballast, ties, and new rails including the road crossing. UPRR will make connection to the existing rail.

2. Conditional Work Windows – A conditional Work Window is a period of time that railroad operations have priority over construction activities. Construction activities may occur on and adjacent to the railroad tracks within 25 feet of the centerline of the nearest track but a railroad flag person will be required. At the direction of the railroad flag person, upon approach of a train, and when trains are present on the tracks, the tracks must be cleared (i.e., no construction equipment, or materials may be present within 12 feet, and personnel within 25 feet or as directed by the Engineer, from the tracks) and all construction activity shall cease within 50 feet of the nearest track until the train has passed. Conditional Work Windows for this project are available.

C. Construction activities will be permitted within 12 feet of the centerline of operational tracks only if absolutely necessary and local UPRR operating unit grants approval. Construction closer than 12 feet from the centerline of operational tracks shall not cause the tracks to become unoperational.

~~D. The Contractor is also advised that new railroad facilities on the project will be built by UPRR and that certain Contractor's activities cannot proceed until that work is completed. The Contractor shall allow sufficient time in the schedule for that work to be accomplished.~~

E. The Contractor shall be advised that trains and/or equipment are expected on any track, at any time, in either direction.

3.2 INSURANCE

Contractor shall not begin work upon or over UPRR's Right-of-Way until UPRR has been furnished the proof of insurance required by the "Right-of-Entry Agreement" and UPRR's Designated Representative has advised the Contracting Officer that such insurance is in accordance with the Agreement. The required insurance shall be kept in full force and effect during the performance of work and thereafter until Contractor removes all tools, equipment, and

material from UPRR's property and cleans the premises in a manner reasonably satisfactory to UPRR.

3.3 ADVANCE NOTICE AND WORK STOPPAGES

A. Contractor shall not begin any work upon or over UPRR's right-of-way until Contractor has obtained a ***signed*** "Right-of-Entry Agreement" from UPRR covering his work on or over UPRR right-of-way. ***A copy of the Agreement is attached.*** ~~This agreement shall be in the form as provided or directed by the UPRR.~~ Contractor shall submit a copy of this ***signed*** agreement to the Contracting Officer, prior to commencing work on railroad property. The right of entry agreement shall specify working time frames, flagging and inspection requirements, and any other items specified by the railroad

B. The contractor shall arrange and conduct all work so that there will be no interference with UPRR operations, including train, signal, telephone and telegraphic services; or damage to the property of UPRR; or to poles, wires and other facilities of tenants on the right of way of UPRR. Whenever work may affect the operations or safety of trains, the method of doing such work shall first be submitted to UPRR's Designated Representative for approval, but such approval shall not relieve the Contractor from liability. Any work to be performed by the Contractor, which requires flagging service or inspection service (watchman), shall be deferred until the flagging protection required by UPRR is available at the job site.

C. Whenever work within UPRR right of way is of such a nature that impediment to UPRR operation is unavoidable such as use of runaround tracks or necessity for reduced speed, the Contractor shall schedule and conduct these operations so that such impediment is reduced to the absolute minimum.

D. Should a condition arising from, or in connection with the work, require that immediate and unusual provisions be made to protect operations and property of UPRR, the Contractor shall make such provisions. If in the judgment of UPRR's Designated Representative such provisions are insufficient, the UPRR's Designated Representative may require or provide such provisions as deemed necessary. In any event, such provisions shall be at the Contractor's expense and without cost to the UPRR.

E. Contractor shall give at least 48 hours notice in writing to UPRR's Designated Representative before commencing work in connection with construction upon or over UPRR's Right-of-Way, give at least 1 weeks notice if construction will be performed within 25 feet of any track center line and observe UPRR's rules and regulations with respect thereto. All work upon UPRR's Right-of-Way shall be done at such times and in such manner as not to interfere with or endanger the operations of UPRR. UPRR shall have the right to order Contractor to temporarily cease operations in the event of an emergency or, if in the opinion of the Railroad's Designated Representative, the Contractor's operations could endanger UPRR's operations. In the event such an order is given, Contractor shall immediately notify the Contracting Officer of the order.

F. The Contractor shall make requests to UPRR in writing for both Absolute and Conditional Work Windows, at least two weeks in advance of any work. The written request must include:

1. Exactly what the work entails
2. The days and hours what work will be performed
3. The exact location of work, and proximity to the tracks
4. The protection to be used
5. The designated contact person.

This work shall be performed in accordance with previously approved work plans.

3.4 COOPERATION

UPRR will cooperate with Contractor so that work may be conducted in an efficient manner, and will cooperate with Contractor in enabling use of UPRR's right-of-way in performing the work.

3.5 COMPLIANCE WITH UPRR RULES AND REGULATIONS

Contractor shall perform its work in such manner and at such times as shall not endanger or interfere with the safe operation of the tracks and property of UPRR and the traffic moving on such tracks, or the wires, signals and other property of UPRR, its tenants or licensees, at or in the vicinity of the Work.

3.6 PERFORMANCE OF WORK

The contractor shall arrange and conduct all work so that there will be no interference with UPRR operations. Contractor shall reimburse UPRR for lost revenues due to any delays or interruption of train operations resulting from Contractor's construction or other activities, except as outlined and performed in accordance with these specifications.

3.7 MINIMUM CLEARANCES FOR FALSEWORK AND EQUIPMENT STORAGE

The Contractor shall not pile or store any material nor park any equipment closer than directed by UPRR's Designated Representative

The Contractor shall also abide by the following minimum temporary clearances during the course of construction:

1. 12' – 0" horizontal from centerline of track

2. 21' – 0" vertically above top of rail.

For construction clearance less than listed above, local operating unit review and approval is required.

3.8 APPROVAL OF REDUCED CLEARANCES

A. The minimum track clearances to be maintained by the Contractor during construction are specified in section 3.7.

Any proposed infringement for falsework or equipment storage on the specified minimum clearances by the Contractor's operations shall be submitted to UPRR's Designated Representative through the Contracting Officer at least 60 days in advance of the work and shall not be undertaken until approved by the UPRR's Designated Representative.

B. No work shall commence until the Contractor receives in writing assurance from UPRR's Designated Representative that arrangements have been made for flagging service, as may be necessary and receives permission from UPRR's Designated Representative to proceed with the work.

C. In the case of impaired vertical clearance above top of rail, UPRR shall have the option of installing, at Contractor's expense, such protective devices, as UPRR deems necessary for protection of UPRR trainmen or rail traffic.

3.9 CONSTRUCTION MATERIAL SUBMITTALS

During construction of structures the UPRR requires the review of material data sheets to determine compliance with the specifications. It is required that product information for all items noted in the table be submitted to UPRR's Designated Representative through the Contracting Officer for their own review and approval of the material. The signed submittal and the Contracting Officer's review comments will be reviewed by UPRR or their consultant. If a consultant performs the reviews, the consultant may reply directly to the Contracting Officer or their Designated Representative after consultation with UPRR. Review of the submittals will not be conducted until after review by the Contracting Officer or their Designated Representative. Review of the material submittal items will require a minimum of twenty-one (21) calendar days after receipt from the Contracting Officer.

ITEM	DESCRIPTION	SETS REQD.	NOTES
1	Shop drawings	5	Steel and Concrete members
2	Bearings	5	For all structures
3	Concrete Mix Designs	5	For culvert
4	Rebar & Strand certifications	5	For superstructure only
5	28 day concrete strength	5	For superstructure only
6	Waterproofing material certifications	5	Waterproofing & protective boards
7	Structural steel certifications	5	All fracture critical members & other members requiring improved notch toughness
8	Test reports	5	All fracture critical members & other members requiring improved notch toughness
9	Foundation Construction Reports	5	Deep Soil Mix (DSM) piles, compressive strengths

3.10 APPROVAL OF DETAILS

The details of the construction affecting the UPRR tracks and property not already included in the contract plans shall be submitted to UPRR's Designated Representative through the Contracting Officer for review and approval before such work is undertaken. Review and approval of these submittals will require a minimum of three (3) weeks after receipt from the Contracting Officer.

3.11 CLEANING OF RIGHT-OF-WAY

Contractor shall, upon completion of the work to be performed by Contractor upon the premises, over or beneath the tracks of UPRR, promptly remove from the Right-of-Way of UPRR all of Contractor's tools, implements, and other materials whether brought upon the Right-of-Way by Contractor or any subcontractors, employee or agent of Contractor or of any subcontractor, and leave the Right-of-Way in a clean and presentable condition to satisfaction of UPRR.

3.12 MAINTENANCE OF RAILROAD FACILITIES

A. The Contractor shall be required to maintain all ditches and drainage structures free of silt or other obstructions which may result from Contractor's operations; to promptly repair eroded areas within UPRR right of way and to repair any other damage to the property of UPRR, or its tenants.

B. All such maintenance and repair of damages due to the Contractor's operations shall be done at the Contractor's expense.

C. The Contractor must submit a proposed method of erosion control and have the method approved by the office of the Chief Engineer Design prior to beginning any grading on the project site

3.13 UPRR REPRESENTATIVES

UPRR representatives, conductors, flag-person or watch-person will be provided by UPRR at expense of others to protect UPRR facilities, property and movements of its trains or engines. See ***the attached sample "Right of Entry" Agreement*** for further details. ***In case of discrepancies between this Section and the Right of Entry Agreement, the Agreement takes precedence.*** In general, UPRR will furnish such personnel or other protective services as follows:

A. When any part of any equipment is standing or being operated within 25 feet, measured horizontally, from centerline of any track on which trains may operate, or when any object is off the ground and any dimension thereof could extend inside the 25 foot limit, or when any erection or construction activities are in progress within such limits, regardless of elevation above or below track.

B. For any excavation below elevation of track subgrade if, in the opinion of UPRR's Designated Representative, track or other railway facilities may be subject to settlement or movement.

C. During any clearing, grubbing, excavation or grading in proximity to UPRR facilities, which, in the opinion of UPRR's Designated Representative, may endanger UPRR facilities or operations.

D. During any of contractor's operations when, in the opinion of UPRR's Designated Representative, railroad facilities, including, but not limited to, tracks, buildings, signals, wire lines, or pipe lines, may be endangered.

E. The Contractor shall arrange with the UPRR Designated Representative to provide the adequate number of flag persons to accomplish the work.

3.14 WALKWAYS REQUIRED

Along the outer side of each exterior track of multiple operated track, and on each side of single operated track, an unobstructed continuous space suitable for trainman's use in walking along trains, extending to a line not less than twelve feet (12') from centerline of track, shall be maintained. Any temporary impediments to walkways and track drainage encroachments or obstructions allowed during work hours while UPRR's protective service is provided shall be removed before the close of each work day. Walkways with railings shall be constructed by contractor over open excavation areas when in close proximity of track, and railings shall not be closer than 8' – 6" horizontally from center line of the nearest track, if tangent, or 9' – 6" , if curved.

3.15 COMMUNICATIONS AND SIGNAL LINES

If required, UPRR will rearrange its communications and signal lines, its grade crossing warning devices, train signals and tracks, and facilities that are in use and maintained by UPRR's forces in connection with its railroad operation at expense of the Contracting Officer. This work by UPRR will be done by its own forces and it is not a part of the Work under the Contract.

3.16 TRAFFIC CONTROL

Contractor's operations that control traffic across or around UPRR facilities shall be coordinated with and approved by the UPRR's Designated Representative.

3.17 CONSTRUCTION EXCAVATIONS

A. The Contractor shall be required to take special precaution and care in connection with excavating and shoring. Excavations for construction of footings, piers, columns, walls or other facilities that require shoring shall comply with requirements of AREMA and UPRR Standard drawing 106613 "General Shoring Requirements".

B. The Contractor shall contact UPRR's "Call Before Your Dig" at least 48 hours prior to commencing work at, 1-800-336-9193 (a 24-hour number) to determine location of fiber optics. If a telecommunications system is buried anywhere on or near railroad property, the Contractor will co-ordinate with UPRR and the Telecommunication Company(ies) to arrange for relocation or other protection of the system prior to beginning any work on or near UPRR property.

3.18 SITE INSPECTIONS BY UPRR'S DESIGNATED REPRESENTATIVE

A. In addition to the office reviews of construction submittals, site inspections may be performed by UPRR's Designated Representative at significant points during construction, including the following if applicable:

   1. Preconstruction meetings.

   2. Reinforcement and concrete placement for main bridge structure and/or superstructure.

   3. Erection of precast concrete or steel bridge superstructure.

   4. Placement of waterproofing (prior to placing ballast).

   5. Completion of the bridge structure.

B. Site inspection is not limited to the milestone events listed above; rather site visits to check progress of the work may be performed at any time throughout the construction as deemed necessary by UPRR.

C. A detailed construction schedule, including the proposed temporary horizontal and vertical clearances and construction sequence for all work to be performed, shall be provided by the Contractor to the Contracting Officer for submittal to UPRR's Designated Representative for approval prior to commencement of work. This schedule shall also include the anticipated dates when the above listed events will occur. This schedule shall be updated for the above listed events as necessary, but at least monthly so that site visits may be scheduled.

3.19 RAILROAD SAFETY ORIENTATION

Personnel employed by the Contractor and all subcontractors must complete UPRR "Orientation for Contractor's Safety", and be registered prior to working on UPRR property. This orientation can be completed through the Internet at www.contractororientation.com. This course is required to be completed annually.

END OF SECTION

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SECTION 02050

BRIDGE DEMOLITION

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SECTION 02050

BRIDGE DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

This work specified in this section pertains to the demolition of the existing UPRR Bridge No. 3 ***except the railroad ties, tracks, and ballasts, which will be removed by the Union Pacific Railroad (UPRR)***. The work includes demolition, salvage of identified items and materials, and removal of resulting rubbish and debris. In the interest of conservation, salvage shall be pursued to the maximum extent possible; salvaged items and materials shall be disposed of as specified. Bridge demolition work is considered work in the river channel and shall be performed within the in-channel construction period as specified in Section 01500; GENERAL REQUIREMENTS.

Demolition of UPRR Bridge No. 3 shall not be performed unless directed by the Contracting Officer.

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330; SUBMITTAL PROCEDURES.

SD-01 Data

Work Plan; GA.

Procedures proposed for the accomplishment of the work. The procedures shall provide for safe conduct of the work, careful removal and disposition of materials specified to be salvaged, protection of property which is to remain undisturbed, coordination with other work in progress, protection of channel integrity and existing vegetation in demolition work area from equipment damage, transportation of demolition materials to offsite disposal sites, and timely disconnection of utility services. The procedures shall include a detailed description of the methods and equipment to be used for each operation, and the sequence of operations.

1.3 PROJECT/SITE CONDITIONS

1.3.1 Dust Control

The amount of dust resulting from demolition shall be controlled in accordance with the provisions in Section 01354; ENVIRONMENTAL PROTECTION to prevent the spread of dust to occupied portions of the construction site and to avoid creation of a nuisance in the surrounding area. Use of water will not be permitted when it will result in, or create, hazardous or objectionable conditions such as ice, flooding and pollution.

1.3.2 Protection

1.3.2.1 Protection of Existing Property

Before beginning any demolition work, the Contractor shall carefully survey the site and examine the Drawings and Specifications to determine the extent of the work. The Contractor shall take all necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Government, and any damaged items shall be repaired or replaced as approved by the Contracting Officer at no additional cost to the Government. The Contractor shall carefully coordinate the work of this section with all other work and shall construct and maintain shoring, bracing and supports, as required. The Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

1.3.2.2 Environmental Protection

Contractor shall take all necessary precautions to cause as little damage as possible to the river channel and existing vegetation in the bridge demolition areas. Demolition debris will not be allowed to fall into live waters of Guadalupe River. Demolition work shall comply with the requirements of Section 01354; ENVIRONMENT PROTECTION.

1.3.3 Burning

The use of burning at the project site for the disposal of refuse and debris will not be permitted.

1.3.4 Use of Explosives

Use of explosives will not be permitted.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 SCOPE OF DEMOLITION

3.1.1 UPRR Railroad Bridge No. 3

UPRR Railroad Bridge No. 3 generally follows Southern pacific Transportation Company Common Standard Open Deck Frame Trestle Plan No. 1622. The railroad bridge shall be removed in its entirety to the extent indicated on the Drawings. Bridge piles shall be removed to three feet below finished grade as shown on the Drawings.

UPRR will remove the ballasts, railroad ties and tracks. The Contractor shall coordinate with UPRR.

3.2 UTILITIES

Existing utilities attached to the bridges shall be removed as indicated on the Drawings. When utility lines are encountered that are not indicated on the Drawings, the Contracting Officer shall be notified prior to further work in that area. Removal and accommodations for existing utilities shall be coordinated with the work.

3.3 FILLING AND GRADING

Holes resulting from demolition activities shall be backfilled. Excavation for demolition of bridge abutments shall be backfilled and shaped to match the natural channel side slopes. All backfill shall be placed in accordance with Section 02200; EXCAVATION AND BACKFILL.

3.4 DISPOSITION OF MATERIAL

Rubbish and debris shall be removed from within the limit of work daily to avoid accumulation at the demolition site. Materials that cannot be removed daily shall be stored in areas specified by the Contracting Officer. Title to materials and equipment to be demolished, except Government salvage and historical items, is vested in the Contractor upon receipt of notice to proceed. The Government will not be responsible for the condition, loss or damage to such property after notice to proceed.

3.4.1 Salvageable Items and Materials

Contractor shall salvage items and materials to the maximum extent possible. Material salvaged for the Contractor shall be stored as approved by the Contracting Officer and shall be removed from Government property before completion of the contract. Material salvaged for the Contractor shall not be sold on the site.

3.4.2 Unsalvageable Materials

Concrete, masonry, and other noncombustible materials, except concrete permitted to remain in place, shall be disposed of at an approved offsite facility. Refer to Section 01500; GENERAL REQUIREMENTS for approved disposal sites.

3.4.3 Preservative-Treated Timber

All timber impregnated with creosote or other wood preservative coatings shall be disposed at a in accordance with EPA, California State Department of Health Services, and local regulations. No chain of custody is required, but the landfill should be advised as to type of material being disposed. The Government will not be responsible for the condition, loss or damage to such property after notice to proceed.

3.5 CLEAN-UP

All debris from demolition work shall be removed from the site. Provisions shall be made to insure that no debris remain in the river channel. Debris shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply. Transportation of debris to offsite disposal sites shall follow only those routes approved by the City of San Jose for hauling of debris.

END OF SECTION

3.2.2.4 Other Excavations

During any work requiring excavation below the groundwater surface, the groundwater level shall be maintained below the bottom of the excavation until all work including backfilling has been completed.

3.2.3 Seepage

If seepage occurs from the face or base of the excavation, the Contractor shall immediately employ such methods and procedures as are required to maintain a stable excavation and to lower the groundwater so that such seepage does not occur. Methods may include increasing the number of wells or wellpoints in local areas, and providing treatment of the face with filters and other methods.

3.2.4 Records

The Contractor shall keep an accurate log of all dewatering installation operations, and shall deliver copies of these records to the Contracting Officer weekly or at such other times as may be directed. The following information shall be included in the records for each hole:

a. Hole designation for observation and dewatering wells
b. Depth of bottom of well.
c. Top and bottom of screened interval.
d. Size and type of pump installed.
e. Development times and any problems associated with well development.

3.2.5 Dewatering Shutdowns

Except for equipment maintenance shutdowns, no interruption in the approved control and disposal of water, or dewatering procedures, will be permitted during excavation and construction operations. Continuous surveillance and maintenance of the equipment shall be provided by the Contractor to avoid breakdowns. Personnel experienced in the operation and maintenance of pumping and other equipment shall be physically on site to ensure proper operation of the facilities at all times.

Headers, discharge lines and electric lines shall be installed in such manner that if a portion of the dewatering system becomes inoperative, that portion can be isolated and the remaining portion(s) of the operative dewatering system is capable of maintaining the water at the specified levels.

3.2.6 Standby Power

Standby power shall be provided, installed and ready to operate. The standby power shall be operated a minimum of one hour per week. Prior to excavation below the water level, it shall be demonstrated that if the power is interrupted, the standby power can be started and the dewatering system activated before the water level rises to within two feet of the bottom of the culvert excavation. The standby power system shall be capable of maintaining the specified groundwater levels. The Contractor shall install and have ready at all times redundant pumping capacity equivalent to 15 percent of the submitted pumping capacity for the dewatering system.

3.2.7 Removal of Dewatering System

Upon completion of the dewatering operations, the dewatering equipment shall be removed and the well screens, well holes, and well points shall be decommissioned in accordance with SCVWD Ordinance No. 90-1, California Well Standards Bulletin 74-90, and "Standards for the Construction and Destruction of Wells and Other Deep Excavation in Santa Clara County" published by the SCVWD.

3.2.8 Discharge Requirements

Discharge of water back into the Guadalupe River produced during dewatering operations shall be in accordance with discharge requirements set forth in Section 01354; ENVIRONMENTAL PROTECTION. Wastewater shall be treated using the Wastewater Treatment System only when contamination levels measured in the Wastewater influent are in exceedance of those set by the discharge requirements.

3.3 MONITORING REQUIREMENTS

3.3.1 Observation Wells

The Contractor shall furnish, install, protect and maintain observation wells at locations determined by the Contracting Officer. ~~Fifteen~~ ***Five*** observation wells shall be installed outside of the culvert excavation to establish groundwater levels prior to commencing excavation for the culvert. An additional . ~~fifteen~~ ***five*** observation wells shall be installed along the culvert excavation centerline in order to demonstrate compliance with paragraphs 3.2.2 and 3.2.6.

Observation wells installed outside of an area of excavation shall be installed and functioning prior to commencing dewatering in that area. Each observation well shall be tested to demonstrate that it is functioning properly. The Contractor shall replace observation wells that do not function properly, or are damaged or destroyed. If Contracting Officer considers the measurements from an inoperative observation well to be critical, the Contracting Officer will suspend work in that area until a functional replacement observation well has been installed and reliable measurements obtained. The additional costs for replacing non-functional observation wells and all costs related to the delay in the work in that area shall be borne by the Contractor. The Contractor shall record water levels in the observation wells daily and the records shall be submitted to the Contracting Officer within 24 hours.

3.3.2 Groundwater Sampling

Sampling and analysis of groundwater influent into the treatment system, effluent discharged into the Guadalupe River, and downstream receiving waters shall be conducted as specified in Section 01354; ENVIRONMENTAL PROTECTION.

3.4 DAMAGES

Any failure of the dewatering system or components of the system and any damages arising therefrom shall be the Contractor's responsibility. If at any time the installation, operation, or removal of the dewatering system, or any part of the dewatering system, causes damage to the adjacent area and/or

construction site, the Contractor shall immediately modify dewatering procedure to prevent a reoccurrence.

3.4.1 Foundation

If the foundation materials are disturbed, loosened or become unstable due to inadequacy or failure of a dewatering system, the Contractor shall excavate the affected material and backfill in accordance with the provisions of Section 02200; EXCAVATION AND BACKFILL at no additional cost to the Government.

END OF SECTION

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SECTION 02110

CLEARING SITE AND REMOVING OBSTRUCTIONS

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SECTION 02110

CLEARING SITE AND REMOVING OBSTRUCTIONS

PART 1 GENERAL

1.1 SUMMARY

The work specified in this section consists of furnishing all labor, materials, tools, equipment and incidentals and performing all operations required for clearing the site and removing obstructions. The work shall include, but not be restricted to, the removal of structures, ~~track~~, trees, stumps, logs, brush, other vegetation, debris, and rubbish of any nature. The work shall include protecting and maintaining existing trees not to be removed from the project site.

Bridge demolition is specified separately in Section 02050; BRIDGE DEMOLITION and well destruction is specified separately in Section 02081; WATER WELL DESTRUCTION.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The latest edition available on the date of Notice of Inviting Bids shall be used.

U.S. ARMY CORPS OF ENGINEERS

EM 385-1-1 Safety and Health Requirements Manual

1.3 PROJECT/SITE CONDITIONS

1.3.1 Protection

1.3.1.1 Protection of Existing Property

Before beginning any clearing and grubbing work, the Contractor shall carefully survey the site and examine the Drawings and specifications to determine the extent of the work. The Contractor shall take all necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Government, and any damaged items shall be repaired or replaced as approved by the Contracting Officer at no additional cost to the Government. The Contractor shall carefully coordinate the work of this section with all other work and shall construct and maintain shoring, bracing and supports, as required.

1.3.1.2 Environmental Protection

Contractor shall take all necessary precautions to cause as little damage as possible to the river channel and existing vegetation in the bridge demolition area and other demolition areas within the channel banks that will not be excavated. The work shall comply with the requirements of Section 01354; ENVIRONMENT PROTECTION.

3.3.2 Vegetation

Vegetation to be removed shall consist of all heavy growth of brush, grass, and weeds.

3.3.3 Structures and Obstructions

The Contractor shall clear the site, and remove and dispose of all existing structures and obstructions for work associated with excavation and construction of bypass culvert, channel improvements, path, utility relocations, and bridge demolitions, except as otherwise noted on the Drawings. Accommodations for existing utilities are included in the Drawings. In the event that the Contractor finds existing structures or obstructions not shown on the Drawings, the Contractor shall notify the Contracting Officer immediately. Existing structures and obstructions not shown on the Drawings shall be protected in place until directed otherwise by the Contracting Officer.

Any trenching excavation or removal of structures and obstructions shall be in accordance with the Corps of Engineers Safety and Health manual, EM 385-1-1.

3.3.4 Miscellaneous Items and Debris

The Contractor shall remove abandoned buildings or structures, ~~trackwork~~, foundations, stone, debris, fencing, and other material within the area to be excavated or to receive fill as indicated on the Drawings.

3.4 GRUBBING

Grubbing shall consist of the removal and disposal of all stumps, buried logs, roots larger than 3 inches in diameter, non-decomposed organic matter, old paving, and other objectionable matter from the designated grubbing areas. This material, together with logs, metallic debris, other organic matter, concrete, lumber, and debris not suitable for fill and channel foundation purposes, shall be removed to a depth of not less than 18 inches below the original surface level of the ground in areas indicated to be grubbed and in areas indicated as construction areas under this contract.

3.5 REMOVAL OF OBSTRUCTIONS

3.5.1 Utility Coordination

Prior to removing an obstruction, all applicable utility relocations shall have been coordinated.

3.5.2 Existing Structures

The required removal and disposal of all designated structures within the limits of construction shall be included in clearing operations. Existing manholes, catch basins, and other structures shown on the Drawings to be removed shall be removed to the full depth of the structure, including foundations. Voids resulting from abandoned or removed structures shall be filled with suitable material as specified in Section 02200; EXCAVATION AND BACKFILL. The bottom of abandoned drainage structures shall be perforated to prevent the entrapment of water.

3.5.3 Pipe Systems:

3.5.3.1 General

Pipe and conduit shall be removed as indicated on the Drawings. All pipe and conduit left abandoned in place shall be sealed at both ends, whether it be at free ends or at the structures in which they terminate.

SECTION 02152

TEMPORARY SHORING AT UPRR BRIDGE NO. 4

PART 1 GENERAL

1.1 SUMMARY

The work specified in this section includes but is not limited to the installation and testing of the temporary excavation shoring systems required for the construction of the concrete culvert between CE Line Sta. 18+42 and 20+00 where Deep Soil Mix (DSM) walls are shown on the Drawings. The temporary shoring in this area shall consist of a DSM walls fortified with a system of tiebacks and internal braces. Temporary shoring requirements for the construction of the other portions of the culvert and other project features are specified in Section 02151; TEMPORARY SHORING. Temporary shoring requirements for utility work are specified in Section 02222; EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITY SYSTEMS.

1.2 REFERENCES

The following publications of the issues listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The latest edition available on the date of the Notice Inviting Bids shall be used.

UNIFORM BUILDING CODE

AMERICAN INSTITUTE OF STEEL CONSTRUCTION
Manual of Steel Construction

POST-TENSIONING INSTITUTE
Recommendations for Prestressed Rock and Soil Anchors

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
Trenching and Shoring Manual

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

A 36	Carbon Structural Steel
A 252	Welded and Seamless Steel Pipe Piles
A 416	***Uncoated Seven-Wire Stress-Relieved Steel Strand for Prestressed Concrete***
A 490	Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength
A 563	Carbon and Alloy Steel Nuts
A 572	High-Strength Low-Alloy Columbium-Vanadium Structural Steel
A 641	Zinc-Coated (Galvanized) Carbon Steel Wire
A 722	Uncoated High-Strength Steel Bars for Prestressing Concrete
F 436	Hardened Steel Washers

crack monitoring points. Any changes in elevation or observed distress (cracks, movement, settlement) shall be reported immediately to the Contracting Officer's representative.

PART 2 PRODUCTS

2.1 STRUCTURAL STEEL

Structural steel shall conform to the following ASTM specifications:

Soldier piles	ASTM A 572, Grade 50
Walers	ASTM A 572, Grade 50
Pipe	ASTM A 252, Grade 50
Plates and Bars	ASTM A 36

2.2 TIEBACKS

Tiebacks shall consist of bars meeting ASTM A 722 ***or multistrand steel anchors with prestressing steel meeting ASTM A 416. Couplers for anchor bars may be used where space limitations exist. Couplers shall meet or exceed the capacity of the anchor bar.***

2.3 WASHERS

Washers shall conform to ASTM F 436.

2.4 BOLTS

Bolts shall conform to ASTM A 490.

2.5 NUTS

Nuts shall conform to ASTM A 563.

2.6 DSM

DSM shall be in accordance with Section 02435; DEEP SOIL MIXING (DSM) METHOD.

2.7 INSTRUMENTATION

See Section 13300; INSTRUMENTATION.

PART 3 EXECUTION

3.1 GENERAL

3.1.1 Design of Shoring System

The Contracting Officer has designed the temporary shoring system between CE Sta. 18+42 and 20+00 where DSM walls are shown on the Drawings. The Contractor shall confirm that the temporary shoring system in that area will be adequate for the Contractor’s use during construction. Contractor shall obtain design loads for the shoring system from the Contracting Officer, and ensure that

.

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SECTION 02225

PREPARATION OF SUBGRADE FOR MAINTENANCE ROAD/RIVERWALK

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SECTION 02225

PREPARATION OF SUBGRADE FOR MAINTENANCE ROAD/RIVERWALK

PART 1 GENERAL

1.1 SUMMARY

The work specified in this section includes, but is not limited to, furnishing all plant, labor, material, and equipment and performing all operations required for preparing the subgrade for the Maintenance Road, ~~and/or~~ Riverwalk, ***and railroad*** as specified herein and shown on the Drawings.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The latest edition available on the date of the Notice of Inviting Bids shall be used.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 117	Materials Finer Than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C 136	Sieve Analysis of Fine and Coarse Aggregates
ASTM D 1556	Density of Soil in Place by the Sand-cone Method
ASTM D 1557	Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft (2,700 kN-m/cu. m))
ASTM D 2216	Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil Aggregate Mixtures
ASTM D 2487	Classification of Soils for Engineering Purposes
ASTM D 2922	Density of Soil and Soil-Aggregate in Place by Nuclear Methods [Shallow Depth]

ASTM D 3017	Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods [Shallow Depth]
ASTM D 4318	Test Method for Liquid Limit, Plastic Limit, Plasticity Index of Soils

U.S. ARMY CORPS OF ENGINEERS

CESPK PAM 415-1-2	Construction Control Manual

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330; SUBMITTAL PROCEDURES:

SD-01 Data

Unstable Subgrade Remediation Plan; GA

The Contractor shall submit proposed remedial schemes for stabilizing the subgrade where wet materials are found for approval by the Contracting Officer.

SD-09 Reports

Testing; FIO

Within 24 hours of conclusion of physical tests, two copies of test results, including calibration curves and results of calibration tests.

1.4 DEFINITIONS

Satisfactory Materials - Satisfactory subgrade materials shall consist of any material except those classified by ASTM D 2487 as PT, OH, OL, MH, and CH and those materials for which no definite moisture-density relationship as determined by ASTM D 1557 occurs. Materials that will not compact to the density specified herein are not satisfactory and shall be considered unstable. Satisfactory materials shall have a maximum particle size of 3-inches.

Degree of Compaction - Degree of compaction is the ratio of field dry density to maximum dry density determined in the laboratory, expressed as a percentage of the maximum density. The field dry density and laboratory dry density shall be determined in accordance with paragraph 3.4.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 CLEARING SITE

Clearing, grubbing, and removal of obstructions shall be as specified in Section 02110; CLEARING SITE AND REMOVING OBSTRUCTIONS.

3.2 SUBGRADE PREPARATION

3.2.1 Construction

The Contractor shall construct Maintenance Road/Riverwalk ***and railroad*** on subgrade prepared to the lines and grades shown on the Drawings and in accordance with these specifications. The layout (staking) of the roads shall be inspected by the Contracting Officer prior to proceeding with construction. Contractor shall notify the Contracting Officer 48 hours in advance of inspection. Subgrade preparation shall include but may not be limited to plowing, disking, grading, moistening or aerating, compacting and finishing.

Unstable subgrade soils are expected along the riverwalk alignment outside the limits of excavation and backfill for other project features. The Contractor shall submit a Unstable Subgrade Stabilization Plan for remediating unstable subgrade conditions to the extent required to support its equipment, means, and methods for construction of the Riverwalk subgrade for approval by the Contracting Officer. Chemical stabilization methods will not be allowed. The approved Unstable Subgrade Remediation Plan shall be implemented as needed at no additional cost to the Government.

The subgrade soil has high shrinkage and swelling potential. Therefore, subgrade moisture loss must be controlled. Procedures shall include staging construction work to minimize subgrade exposure, and keeping the subgrade covered until just prior to placement of materials on it. After excavation, the subgrade soil moisture content shall be kept at or above optimum moisture content.

3.2.2 Compaction

Compaction of subgrade for Maintenance Road/Riverwalk ***and railroad*** shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment well suited to the type of material being compacted. Subgrade shall be compacted to at least 95 percent of maximum density, as determined by ASTM D 1557. Depth of compaction shall be a minimum of 6 inches below finished grade. The subgrade shall be moisture controlled to produce a moisture content of -2% to +2% of optimum moisture prior to compaction. Material that is too wet shall be spread and permitted to dry until moisture content is reduced to permit compaction. If

the material is too dry, the Contractor shall uniformly distribute sufficient water into each layer to raise the moisture content to the required level.

3.2.3 Finishing

The surface of all subgrade for Maintenance Road/Riverwalk ***and railroad*** shall be finished to a smooth and compact surface ***to receive the subsequent materials***. To ensure subgrade drainage occurs, the subgrade shall be finished with a 2 percent transverse slope. After final rolling, the surface of the prepared subgrade shall not show deviations greater than 3/8 inch when tested with a 10-foot straightedge applied both parallel and at right angles to the centerline of the road.

3.3 SUBGRADE PROTECTION

During construction, subgrade shall be kept shaped and drained. Ditches and drains along subgrade shall be maintained in such a manner as to drain effectively at all times. The finished subgrade shall not be disturbed by traffic or other operation and shall be protected and maintained by the Contractor in a satisfactory condition until base, or pavement is placed. The storage or stockpiling of materials on the finished subgrade will not be permitted. No base course or pavement shall be laid until the subgrade has been checked and approved as a Contractor Quality Control requirement, and in no case shall base, or pavement, be placed on a muddy, spongy, or frozen subgrade.

3.4 CONSTRUCTION CONTROL TESTING

Testing shall be the responsibility of the Contractor and shall be performed in accordance with the Corps of Engineers' Construction Control Manual at no additional cost to the Government. Testing for acceptance shall be performed by an independent commercial testing laboratory subject to approval by the Contracting Officer in accordance with Section 01451; CONTRACTOR QUALITY CONTROL. Test results shall be submitted to the Contracting Officer with 24 hours of test completion. When test results indicate, as determined by the Contracting Officer, that compaction is not as specified, the material shall be removed, replaced or reworked, and recompacted to meet specified requirements, at no additional cost to the Government.

3.4.1 Maximum Density

The maximum density shall be determined in accordance with ASTM D 1557. The soil used for each maximum density shall be classified in accordance with ASTM D2487, shall include a particle-size analysis in accordance with ASTM C117 and C136; Liquid limit and plastic limit shall be determined in accordance with ASTM D 4318. At least one (1) five-point maximum density test shall be made for each five (5) field density tests for the first 25 field density tests. Thereafter, additional maximum density tests shall be performed for each change in material. When maximum density is determined by ASTM D1557 and the type of soil is judged to be the same as previous soil tested, a one-point maximum density test on a sample with moisture content at optimum shall be made to verify that the soil is similar.

Maximum densities for backfill materials shall be determined during the initial grading work and the results provided to the Contracting Officer within 7 calendar days from the time of sampling.

3.4.2 In-Place Densities and Moisture Content

Field tests for compacted or in-place densities shall be made in accordance with ASTM D1556 or ASTM D2922. Field tests for moisture content will be made in accordance with ASTM D2216 or ASTM D3017. If ASTM D2922 and ASTM D3017 are used, the first five in-place density tests for each material type shall be determined by both ASTM D 1556 and ASTM D 2922 for correlation of sand and nuclear methods. Thereafter, every fifth nuclear test shall be verified by the sand cone method. If verification testing does not show adequate correlation as determined by the Contracting Officer, all tests shall be performed in accordance with ASTM D1556.

3.4.3 Testing Frequency

Two field density tests with moisture content determination shall be obtained for each increment or fraction of 1,500 s.y. prepared during each 8-hour shift. The Contracting Officer may direct additional tests if necessary.

3.4.4 Submittal of Test Results

The Contractor shall submit all test results in accordance with the Construction Control Manual to the Contacting Officer within one working day after tests are performed. Test supervision and report preparation shall be under the direction of a professional engineer licensed in the state of California. All reports shall bear said professional engineers signature and stamp. The format for reporting test results shall follow the Construction Control Manual.

END OF SECTION

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A6/A6M (2001)	General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
ASTM A36/A36M (2001)	***Standard Specification for Carbon Structural Steel***
ASTM A53 /A53M (2001)	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A307 (2001)	Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
ASTM A325 (2001)	Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A490 (2001)	Structural Bolts, Steel, Heat Treated, 150 ksi Minimum Tensile Strength
ASTM A500 (2001)	Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A563 (2001)	Carbon and Alloy Steel Nuts
ASTM A572/A572M (2001)	High-Strength Low-Alloy Columbium-Vanadium Structural Steel
ASTM A709/A709M (2001)	Carbon and High-Strength Low-Alloy Structural Steel Shapes, Plates, and Bars and Quenched-and-tempered Alloy Structural Steel Plates for Bridges
ASTM F436 (2000)	Washers, Steel, Hardened

ASME INTERNATIONAL (ASME)

ASME B46.1 (1995)	Surface Texture (Surface Roughness, Waviness, and Lay)

AMERICAN WELDING SOCIETY (AWS)

AWS A2.4 (1998)	Standard Symbols for Welding, Brazing and Nondestructive Examination
AWS D1.5M/D1.5:2002 (2002)	Bridge Welding Code
AWS QC1 (1996)	Standard and Guide for Qualification and Certification of Welding Inspectors.

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC Paint 25 (1991)	Red Iron Oxide, Zinc Oxide, Raw Linseed Oil and Alkyd Primer (without Lead and Chromate Pigments)

PART 2 PRODUCTS

2.1 STRUCTURAL STEEL

Per AREMA requirements, the structural steel shall conform to the following ASTM specifications:

Wide-Flange Shapes	ASTM A 709/A 709M, Grade 50
Channels, C or MC Shapes	ASTM A709/A 709M, Grade 36
Steel Plates	ASTM A709/A 709M, Grade 50
Angles, L shapes	ASTM A709/A 709M, Grade 50
Steel Rod	***ASTM A 36***
Steel Tubing	ASTM A 500, Grade B
Steel Pipe	API 5L, Grade X-42
Others (not included above)	ASTM A709/A 709M, Grade 36

2.2 RIVETS

Not Used.

2.3 HIGH STRENGTH BOLTS AND NUTS

High strength bolts shall conform to ASTM A 490, Type 1, with Heavy Hex carbon steel nuts conforming to ASTM A 563, Grade C or DH.

2.4 CARBON STEEL BOLTS AND NUTS

Carbon steel anchor bolts shall conform to ASTM A 307, Grade A with carbon steel nuts conforming to ASTM A 563, Grade A.

2.5 NUTS DIMENSIONAL STYLE

Carbon steel nuts shall be Heavy Hex style when used with ASTM A 307 bolts or Heavy Hex style when used with ASTM A 490 bolts.

2.6 WASHERS

Washers for use with High Strength Bolts shall conform to ASTM F 436, Type 1.

2.7 WELDING ELECTRODES

See AWS D1.5M/D1.5:2002, Table 4.1.

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SECTION 05650

RAILROADS

PART 1 GENERAL

1.1 SUMMARY

The work specified in this section includes ~~the requirements for railroad work including removal and salvage of rail materials, and restoration of railway after removal of the temporary steel structure~~ ***furnishing necessary hardware materials and crossing materials to Union Pacific Railroad (UPRR) to make connection to the steel bridge and at grade crossing. Coordination with UPRR shall be as specified in Section 01502.***

Removal of railroad ties, tracks and ballasts and installation of railroad, including ballasts, ties, and tracks will be performed by UPRR.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN ASSOCIATION
OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO HB-16(1996)	Standard Specifications for Highway Bridges

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ASNT CP-189(1995)	ASNT Standard for Qualification and Certification of Nondestructive Testing Personnel

AMERICAN RAILWAY
ENGINEERING & MAINTENANCE-OF-WAY ASSOCIATION (AREMA)

AREMA	Manual(2002) Manual for Railway Engineering (4 Vol.)
AREMA	Track Plans(2002) Portfolio of Track Work Plans

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 88(1999a)	Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

ASTM C 117(1995)	Materials Finer Than 75 micrometer (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C 127(1988; R 1993el)	Specific Gravity and Absorption of Coarse Aggregate
ASTM C 131(1996)	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 136(1996a)	Sieve Analysis of Fine and Coarse Aggregates
ASTM C 142(1978; R 1997)	Clay Lumps and Friable Particles in Aggregates
ASTM C 535(1996el)	Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 702(1998)	Reducing Samples of Aggregate to Testing Size
ASTM D 75(1987; R 1997)	Sampling Aggregates
ASTM D 1241(1968; R 1994el)	Materials for Soil-Aggregate Subbase, Base, and Surface Courses
ASTM D 1556(2000)	Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557(1991; R 1998)	Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))
ASTM D 4791(1999)	Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM E 11(1995)	Wire-Cloth Sieves for Testing Purposes

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

AWPA C2(2001)	Lumber, Timber, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes
AWPA C6(1999)	Cross Ties and Switch Ties Preservative Treatment by Pressure Processes
AWPA M2(2000)	Standard for Inspection of Treated Timber Products
AWPA M6(1997)	Brands Used on Forest Products
AWPA P2(1998)	Standard for Creosote Solutions

~~AMERICAN WELDING SOCIETY (AWS)~~

~~AWS D1.1/D1.1M(2000) Structural Welding Code - Steel~~

UNION PACIFIC RAILROAD (UPRR)

Standard Drawings

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330; SUBMITTAL PROCEDURES:

SD-01 Data

~~Wood Ties; GA~~

~~Name of the tie manufacturer, Rail Tie Association membership, the wood species proposed, the quantities of ties for each specie proposed, and product data for the ties to be furnished, including the type of seasoning to be utilized, prior to ordering the ties.~~

~~New Jointed Rail; GA~~
~~Relay Rail; GA~~
~~Joint Bars for Inner Guard Rail; GA~~

~~Manufacturer's data on new rail including: rail weight, rail section, drilling, rail length, date rolled, and the name of the mill where the rail was rolled. Include chemical analysis for Industrial Grade Rail. For relay rail the required information shall include weight, section, lengths, and the name of the supplier. The maximum allowable vertical wear on the rail head and the maximum allowable horizontal wear on the side of the rail shall be provided. The design of the joint bars joint bars proposed to be furnished with each rail section shall also be provided.~~

Pre-manufactured Crossing Material or Surface; GA

90 days prior to installation, the brand name of the premanufactured crossing material or crossing surface material proposed for use along with manufacturer's literature concerning the product; and for built-in-place crossings, the type of materials to be used along with manufacturer's literature.

Detailed installation procedure for the premanufactured crossing material or crossing surface material proposed for use 90 days prior to installation.

Miscellaneous Track Materials; GA

Manufacturer's data for all track materials to be furnished.

Materials and Samples; GA

A complete schedule of the materials ~~proposed for installation~~ 90 days prior to ***UPRR*** installation of the materials; the schedule shall include a list of ~~equipment~~ ***materials and quantities*** proposed for the work.

Hardwares shall include, but not limited to, spring clip, spring clip insulators, rail pads, and insulated weld-on shoulders.

~~Material Source; GA~~

~~The source of the ballast and subballast materials shall be selected 90 days prior to the time the material will be required in the work. Certified test results showing that each proposed source meets the requirements of this specification shall be submitted 30 days prior to the time that the material will be required for the work.~~

~~Thermite Welding Procedures; GA~~

~~A detailed statement covering the step-by-step procedures to be employed in making the welds, including a complete description of each of the following items, as applicable, and any other essential characteristics included in the welding procedures:~~

~~a. The manufacturer's trade name for the welding process.~~

~~b. The method used for cutting and cleaning the rail ends. Flame cutting of rail ends will not be allowed.~~

~~c. The minimum and maximum spacing between rail ends.~~

~~d. The method used for maintaining the rails in alignment during welding.~~

~~e. The method used for preheating, including time and temperature.~~

~~f. The tapping procedure, including the minimum time required to cool the weld under the mold insulation.~~

~~g. The method used, including a description of special tools and equipment, for removing the upset metal and finishing the weld to the final contour.~~

~~h. Quality control procedures to be followed.~~

~~i. The contractual agreements with any subcontractor employed by the Contractor in doing the work.~~

~~SD-08 Statements~~

~~Qualifications; GA.~~

Information demonstrating the experience required under paragraph 1.5. Provide personnel resumes of job experiences and appropriate documentation including names, addresses, and telephone numbers of organizations or associations that verify the information a minimum of 90 days prior to starting work. Approval of the proposed personnel responsible for heavy rail construction is required before work begins.

SD-09 Reports

Sampling and Testing; GA

One certified copy of Test Reports for each test performed on the ballast and subballast within 2 working days of the test completion.

Wood Ties; GA

Certified test and inspection reports for crossties subsequent to treatment, a minimum of seven calendar days prior to any ties being installed in track. Test and inspection reports shall contain the information required by Part 7 of AWPA M2.

SD-13 Certificates

Wood Ties; GA

Certificates of compliance prior to any ties being installed in track.

Ballast; GA
Subballast; GA

Certificates of Compliance for the ballast and subballast materials to be installed in this project.

Materials and Samples; GA

Manufacturer's certificates of conformance for the following materials:

a. Rail.
b. Tie plates.
c. Track bolts, nuts, and spring washers.
d. Joint bars.
e. Track spikes.

1.4 DELIVERY, STORAGE, AND HANDLING

1.4.1 Materials ~~and Samples~~

The Contracting Officer will notify the Contractor of the materials approved or disapproved. Disapproved materials that have already been delivered to the project site, shall be promptly segregated from the approved materials and removed from the premises. If materials are disapproved, acceptable replacement materials shall be provided at no additional cost to the Government. Initial approval by the Contracting Officer will not prevent the removal and replacement of materials that are materially defective or materials not meeting this specification that are discovered during construction and/or routine quality control/quality assurance operations.

The Contractor shall coordinate with UPRR for delivery.

~~1.5 QUALIFICATIONS~~

~~1.5.1 Track Construction~~

~~Track construction shall be performed under the direction of qualified and competent supervisory personnel experienced in railroad construction. The Contractor or subcontractor shall show that it has been engaged in the successful construction of heavy rail for at least five years. Supervisory personnel with at least 3 or more years experience in the construction of heavy rail shall be employed at the site. Provide personnel resumes of job experiences and appropriate documentation including names, addresses, and telephone numbers of organizations or associations that verify the information. Approval of the proposed supervisory personnel responsible for the construction of the railroad is required before work begins.~~

~~1.5.2 Welding~~

~~Welding shall be performed under the direct supervision of an experienced welding supervisor or foreman. Thermite welding shall be performed by a technician certified to meet ASNT CP-189, level II or III qualifications~~.

1.6 PROJECT/SITE CONDITIONS

1.6.1 Coordination

The Contractor shall coordinate rail work with UPRR in accordance with Section 01502; COORDINATION WITH UNION PACIFIC RAILROAD. UPRR forces will ***remove the*** tracks, ***ties, and ballasts*** at the locations shown on the Drawings and will ***install the tracks onto the steel bridge and*** reconnect the tracks after placement of the temporary steel bridge. ***Contractor shall furnish all hardware necessary for the connection of the tracks to the steel bridge.*** UPRR forces will cut the tracks ***and remove the tracks after*** ~~prior to~~ removal of the temporary steel bridge and will ***install the ballasts, ties and tracks, grade crossing (to be provided by Contractor), and*** reconnect the tracks after restoration of the railway over the completed box culvert between the rail cuts.

1.6.2 License Agreement

The work under this contract is being accomplished under a license agreement between the UPRR and the Contractor in accordance with Section 01502; COORDINATION WITH UNION PACIFIC RAILROAD. ***If conflict exists between the Agreement and this Section, the Agreement shall take precedence.***

PART 2 PRODUCTS

~~2.1 BALLAST~~

~~Prepared ballast shall be crushed stone, Size No. 4A conforming to Chapter 1, Part 2, of AREMA Manual for quality, soundness and gradation. In the portion retained on each sieve specified, the crushed gravel shall contain at least 90 percent by weight of crushed pieces having two or more freshly fractured faces with the area of each face being at least equal to 75 percent of the smallest midsectional area of the plane. When two fractures are contiguous, the angle between planes of the fractures shall be at least 30 degrees in order to count as two fractured faces. Flat and elongated particle dimension ratio used in ASTM D 4791 shall be 1:3. Ballast materials shall meet the property requirements shown in TABLE 05650-I.~~

~~TABLE 05650-I~~

~~Property~~	~~Maximum Value~~	~~Minimum Value~~	~~Test Method~~
~~Percent passing No. 200 Sieve~~	~~1.0 percent~~	~~--~~	~~ASTM C 136 ASTM C 117~~
~~Bulk specific gravity of rock~~	~~--~~	~~2.60~~	~~ASTM C 127~~
~~Absorption Rock~~	~~2.0 percent~~	~~--~~	~~ASTM C 127~~
~~Clay lumps and friable particles~~	~~2.0 percent~~	~~--~~	~~ASTM C 142~~
~~Degradation Soundness~~	~~0.5 percent~~	~~--~~	~~ASTM C 535~~
~~Sodium Sulfate – 5 cycles~~	~~35 percent~~	~~--~~	~~ASTM C 88~~
~~Flat or elongated particles~~	~~10 percent~~	~~--~~	~~ASTM D 4791~~

~~2.2 SUBBALLAST~~

~~Subballast shall consist of aggregate-soil materials conforming to an ASTM D 1241 Type I, Gradation C mixture.~~

~~2.3 JOINT BARS~~

~~Joint bars for inner guard rail shall be of the size, shape, and punching pattern to fit the rail being joined.~~

2.3.1 New Joint Bars

New joint bars shall be used with new rail, and shall be of the "toeless" and "head free design" to match rail section. New joint bars shall conform to the requirements of "Specifications For High-Carbon Steel Joint Bars" or "Specifications For Quenched-Carbon-Steel Joint Bars and Forged-Compromise Joint Bars" found in Chapter 4, Part 2 of AREMA Manual for the joint bar and assemblies recommended in Chapter 4, Part 1 of AREMA Manual.

2.3.2 Used Joint Bars

Used joint bars in good condition shall be used with relay rail only. The type of joint bar shall be "toeless" type. The used "long toe" type of joint bar shall not be employed where, because of the tie plate punching pattern, the spike slots are used to spike the rail to alignment at the joints. Used joint bars shall be straight, free from cracks, breaks, and other visual defects. Excessive rust, dirt, and other foreign materials on the joint bars are not permitted. Used joint bars shall be of the proper size to make good contact with the underside of the rail head and the top of the rail base on the rails being joined. Joint bars shall have alternating round and oval bolt holes. Bolt holes shall not show excessive wear that would prevent use of the oval neck track bolt normally used with that joint bar. Joint bars that have been flame-gouged, flame cut, or otherwise altered shall be considered scrap and shall not be used.

2.4 RAIL

2.4.1 Welded Rail

Relay rail shall conform to TABLE IV, 132 lbs. Relay rail that is to be welded shall meet the criteria specified in Chapter 4, Part 2 of AREMA Manual for welded rail. Mingling of new and relay rail will not be permitted.

Rail salvaged during removal of the track shall be reinstalled after the temporary steel bridge is removed and the track is restored.

2.5 TIE PLATES

2.5.1 General

Tie plates shall be of the dimensions and punching pattern (A or B) to fit the rail. New tie plates conforming to Chapter 5, Part 1 of AREMA Manual shall be used with new rail. Used tie plates in good condition may be used with relay rail and shall be the dimensions as originally specified by AREMA Manual. The used tie plates shall not be smaller 7-1/2 by 11 in double-shoulder for use with relay rail having nominal weights of 100 lbs/yd and greater. Both flat and canted plates will be required to match the existing tie plates that are in track. Canted tie plates shall be used in all new rail and relay out-of-face rail replacements.

2.5.2 Used Tie Plates

Used tie plates shall be free from excessive rust, pitting, mechanical damage, and dirt and other foreign materials. Cracked or broken plates shall be considered as scrap and shall not be used. Shoulders on the tie plates shall project a minimum of 1/4 in above the plane of the rail seat. The thickness of the tie

~~plate shall be at least 1/2 in when measured anywhere in the rail seat area. Spike holes shall be square and not corroded, worn, or mechanically enlarged.~~

~~2.6 WOOD TIES~~

~~Ties salvaged from removal of the track that are to be reused shall conform to requirements for ties that are considered salvagable as described in Chapter 30, Part 5 of AREMA Manual. Additional ties that are require shall be new. New ties shall be hardwood that have been preservative treated conforming to the requirements of Chapter 30 of AREMA Manual.~~

~~2.6.1 Crossties~~

~~Wood crossties shall be sawed and shall be not less than 7 in thick and 9 in wide. The length shall be 8.0 ft.~~

~~2.6.2 Tie Plugs~~

~~Tie plugs shall fit holes from which spikes are drawn. The plugs shall comply and be treated in accordance with Chapter 30, Part 1 Section 3.1.5 of AREMA Manual.~~

~~2.6.3 Anti-Splitting Devices~~

~~Crossties and switch ties shall be equipped on each end with gang nail end plates anti-splitting devices of the type specified, regardless of whether or not the wood has shown any tendency to split. Products used shall conform to Chapter 30, Part 1 Sections 3.1.6 and 3.1.7 of AREMA Manual.~~

2.7 GRADE CROSSINGS

2.7.1 Crossing Material or Surface

Roadway width shall be as indicated in the contract drawings. Crossing material or surface shall be premanufactured. Premanufactured, precast concrete panels for grade crossings shall be constructed of reinforced concrete having a minimum 28-day compressive strength of 5,000 psi. Each panel shall be manufactured to meet HS20-44 loading in accordance with AASHTO HB-16, with 30% impact increment. Loading shall be based on single axle loads of 32,000 lbs. Precast crossing panels shall be the product of a company regularly engaged in the manufacture of such panels, and whose products have been successfully used in the commercial railroad industry for at least 2 years.

The Contractor shall furnish all materials necessary for UPRR to install. The Contractor shall coordinate and consult with UPRR regarding the selection of crossing material and delivery details.

~~2.7.2 Rail~~

~~Rail within the road crossing and for at least 6 m 20 ft on either side of the crossing shall be 132RE as specified in paragraph 2.4.~~

2.7.3 Ties

Ties within the road crossing and for at least 20 ft on either side of the crossing shall be hardwood and shall be as specified in paragraph 2.6.

2.7.4 Track Materials

For premanufactured crossing surfaces or systems, tie plates, spikes or other rail fasteners, rail anchors, and other track materials shall conform to the manufacturer's recommendations. Unless specified by the crossing manufacturer, track materials shall be as specified in paragraph 2.8.

2.7.5 Threaded Fasteners and Screw Spikes

Threaded fasteners for use in grade crossings shall be of the sizes and lengths specified by the grade crossing manufacturer or as indicated for built-in-place crossings. Screw spikes shall have a minimum ultimate tensile strength of 60,000 psi and shall be galvanized for corrosion protection.

2.8 MISCELLANEOUS TRACK MATERIALS

Miscellaneous track materials shall be as follows:

2.8.1 Spikes

2.8.1.1 Track Spikes

Track spikes shall be new and shall conform to Chapter 5, Part 2 of AREMA Manual. Track spikes size 6 by 5/8 in shall be used with 100 lbs or heavier rail.

2.8.1.2 Bridge Spikes

Minimum 3/4 in diameter washer head screw spikes that allow a minimum of 5 in penetration into the stringers shall be used to connect the bridge ties to the stringers on an open deck bridge, in accordance with AREMA Manual, Chapter 7, Part 7.

2.8.2 Rail Anchors

Where special tools are required to install or remove anchors, the Contractor shall furnish a minimum of one tool for each 5,000 anchors, or fraction thereof, not to exceed 5 tools per job.

2.8.2.1 New Installation

Rail anchors shall be new or salvaged rail anchors that have been repinched. Sizes shall conform to the various sizes of rail on the project and conform to "Specifications for Rail Anchors" in Chapter 5, Part 7 of AREMA Manual. Anchors may be either drive-on or spring type.

2.8.3 Bolts, Nuts, and Spring Washers

New track bolts, nuts, and spring washers shall be used throughout the project for both new and relay rail. Bolts shall be used in both steel and timber bridge connections.

2.8.3.1 Bolts and Nuts

The various rail, joint bars, and rail drillings require various lengths and diameters of bolt assemblies. The Contractor shall determine the number of bolt assemblies of each size required. All bolt diameters

~~shall be the largest possible for a given rail drilling and joint bar punching. Track bolts and nuts shall conform to Chapter 4, Part 2 of AREMA Manual. Track bolts shall be long enough to leave at least two threads exposed after the nut is tightened.~~

~~**2.8.3.2 Spring Washers**~~

~~Spring washers and nuts shall be sized to ensure that the spring washer develops its full reactive force and does not jam into the joint bar hole. Spring washers shall be of the size to fit the bolt and nut used and shall conform to Chapter 4, Part 2 of AREMA Manual, and Section M12 of AREMA Track Plans.~~

2.8.4 Spring Clip Insulator, Spring Clip. Rail Pad, Insulated Weld-On Shoulder

Spring Clip Insulators shall be as shown on UP Standard Drawing 401.

Spring Clips shall be as shown on UP Standard Drawing 409.

Rail Pads shall be as shown on UP Standard Drawing 406.

Insulated Weld-On Shoulder Springs shall be as shown on UP Standard Drawing 413.

~~**2.8.5 Inner Guard Rail**~~

~~Inner guard rail shall be Class IV or better used rails as indicated in Part 2, Chapter 4, "Inspection Classification of Second Hand Rail for Welding", of AREMA Manual. Rail shall be 132 lbs/yd. All rails used at any one inner guard rail location shall be the same weight and section. Joint bars shall match the rail provided and shall be in good condition. Inner guardrail shall be as shown on UP Standard Drawing 4005.~~

~~**2.9 SALVAGED MATERIALS**~~

~~**2.9.1 Dunnage**~~

~~Pallets, sills, and other material used for packaging and stacking salvaged track items shall be clean, free of decay or other defect, and sufficiently sturdy for the service intended.~~

~~**2.9.2 Marking Paint**~~

~~Marking paint shall be a good quality oil-based spray marking paint or a good quality oil-based paint marker.~~

~~**2.9.3 Salvaging Rail**~~

~~The Contractor shall salvage rail as directed; the Government will make available salvaged rail to the Contractor subject to the following:~~

~~a. Nondefective and reclaimable rails salvaged from existing tracks may be used to execute spot rail replacement work at other locations of the project, subject to review and approval of the materials by the Contracting Officer.~~

~~b. Reclaimable defective rails may be used to construct inner guard rails provided all defects can be cropped off. Detailed inspection shall be made of such rails to ensure that rails which contain critical~~

defects such as transverse defects, head-web separations, vertical split heads, pipe, split webs, etc., are not incorporated in the work. Loose rails located along the right-of-way shall be inspected and used as directed.

2.9.4 Tie Plates

Tie plates salvaged from existing tracks, which are not either broken, cracked, or severely corroded or worn, may be used to execute the work subject to review and approval of the material by the Contracting Officer.

2.10 RAIL BONDING

2.10.1 Rail Bonds

Rail bonds shall be exothermic type ("Cadweld") bonds applied to the field side of the rail head, or 46 in bonds welded to the rail web. The bond cables shall be flexible bare copper stranded 1/0 AWG cables with preformed ends. Bond cables shall be flexible bare copper stranded cables with preformed ends and shall conform to applicable requirements of AREMA Manual Vol. 3.

PART 3 EXECUTION

3.1 REMOVAL, SALVAGE, AND DISPOSITION OF MATERIALS

Removal of track shall be coordinated with UPRR in accordance with Section 01502; COORDINATION WITH UNION PACIFIC RAILROAD. UPRR forces will cut UPRR Track 4 at the beginning of the first 68-hour window described in Section 01502. During removal of the track, ties, and ballast the thickness of ballast and subballast shall be measured and recorded. The recorded thickness shall be used during reconstruction of the track after the temporary steel bridge is removed. The following materials shall be salvaged by the Contractor for later use to reconstruct the track after removal of the temporary steel bridge.

3.1.1 Materials To Be Salvaged

Materials to be salvaged for later use include:

a. Rails, ties, tie plates, and rail anchors. Rail shall be marked so that upon reuse it can be relaid on the same side of the roadbed and in the same direction as it was prior to removal. The tops of ties that meet the requirements for salvage shall be marked so that they can be reused with the same side up during track reconstruction.

Other materials shall become the property of the Contractor and shall be removed from the project.

3.1.2 Methods and Procedures

The Contractor may use any methods to dismantle the track, provided proper measures are taken to ensure the safety of the laborers and the general public, and no damage is caused to track components to be salvaged or other tracks and structures which are indicated to remain.

3.1.3 Inventory of Track Materials

The Contractor shall keep a detailed inventory of excess and salvaged track materials stockpiled for later use. Detailed inventory shall be recorded in appropriate format and furnished to the Contracting Officer.

3.1.4 Inspection and Reconditioning of Used Track Materials

Salvaged track materials shall be cleaned and inspected for defects to determine their suitability for further use.

3.1.4.1 Cleaning By Hand or Mechanical Means

Rail, tie plates, rail anchors, and other materials shall be cleaned by hand or mechanical means to remove all adhering dirt and heavy rusting so that the bare steel can be examined.

3.1.4.2 Visual Examination of Rails

Rails shall be visually examined for evidence of defects such as those illustrated on Form 402-A found in Chapter 4 Part 3 of AREMA Manual. Such defects shall be brought to the attention of the Contracting Officer who will be the final judge as to the serviceability of the rail.

3.1.4.3 Visual Examination of Tie Plates and Rail Anchors

Tie plates and anchors shall be visually examined for cracks, breaks, excessive wear, and excessive corrosion. Track material with these defects shall be considered scrap, marked with bright red paint and stacked separately.

3.1.5 Transport and Stack Excess and Salvaged Materials

3.1.5.1 Stacking of Rails

Rails shall be stacked on approved sills a minimum of 6 in above the ground. Rails shall be stacked with the heads up and with the ends even. Each layer shall be separated by at least three 2 by 4 in wood strips evenly spaced along the length of the rail.

3.1.5.2 Stacking of Tie Plates

Tie plates shall be sorted by section, punching and condition and shall be stacked on pallets.

3.1.5.3 Containers

Rail anchors shall be sorted by type and size and placed in kegs, steel drums, or other approved containers. Containers shall be labeled with the rail weight and section.

3.1.6 Material to be Scrapped

All other materials shall be scrapped and shall become the property of the Contractor.

3.2 PLACEMENT OF BALLAST AND SUBBALLAST

Ballast and subballast shall be placed to the lines and grades determined during track removal and as required to match the existing track. Subgrade shall conform to the requirements of Section 02225, PREPARATION OF SUBGRADE FOR MAINTENANCE ROAD/RIVERWALK. Ballast and Subballast shall not be placed on soft, muddy, or frozen areas. Where the prepared subgrade

(roadbed) is soft, muddy, rutted, exhibits severe depressions, or is otherwise damaged, the ballast and subballast shall not be placed until the damaged subgrade has been repaired and the area has been approved by the Contracting Officer.

3.2.1 Subballast

3.2.1.1 Subballast Placement

Subballast shall be placed in uniform horizontal lifts of not more than 6 in for the full width of the cross-section to the total depth determined during removal of the track. Each subballast layer shall be shaped to a section conforming to the subballast section shown on the drawings and shall be thoroughly compacted.

3.2.1.2 Subballast Compaction

Each subballast lift shall be compacted using approved compaction equipment. The roller weights, vibration frequencies, tire pressures, and number of passes shall be sufficient to obtain in-place densities across the full width of the subballast and throughout the entire depth of the layer of not less than 95 percent of the ASTM D 1557 laboratory maximum dry density for the subballast material. Prior to placement of subsequent subballast layers the top of the previous layer shall be scarified to a depth of approximately 2 in to insure proper bond of the layers. Density shall be field measured in accordance with ASTM D 1556 (base plate, as shown in the drawing shall be used). Two field density tests shall be taken.

3.2.2 Ballast

3.2.2.1 Ballast Placement

Ballast shall not be distributed until the subballast has been approved by the Contracting Officer.

a. Ballast distribution shall be to the depth determined during removal of track.

b. Forming of ruts that would impair proper roadway drainage shall be prevented when distributing ballast from trucks and off track equipment. Any ruts formed greater than 1 in shall be leveled and graded to drain.

c. Ballast shall be unloaded as close as possible to the point of use so that unnecessary handling is prevented. Excess ballast shall be picked up and redistributed at the Contractor's expense. If additional ballast is required for dressing, it shall be added by the Contractor at no increase in unit price.

3.2.2.2 Ballast Below Ties

For new construction, the last 4 inches ballast below the tie, the shoulder ballast and the ballast in the tie cribs shall be placed subsequent to the rail and tie installation.

3.3 TRACK CONSTRUCTION

~~Track construction not covered specifically herein shall be in accordance with AREMA recommendations and recommended practices.~~

3.3.1 Roadbed Preparation

Subgrade preparation shall be performed in accordance with Section 02225; PREPARATION OF SUBGRADE FOR MAINTENANCE ROAD/RIVERWALK. Roadbed surface, grade, and drainage shall be approved prior to any distribution of construction material. Where the subgrade or roadbed is damaged during distribution of materials, ruts and depressions shall be filled and compacted and the roadbed surface reapproved prior to track construction.

~~3.3.2 Unloading the Materials~~

~~The use of picks in the handling of ties will not be permitted.~~

~~3.3.3 Ties~~

~~Standard center-to-center spacing of crossties shall be 18 in. Ties shall be laid perpendicular to the center line of the track with the grain up (heartwood side down). The ends of ties on one side of the track shall be parallel to the rail and the center of the tie shall be on the approximate center line of the track. The top surface of ties shall provide full bearing for the tie plates. Adzing shall be restricted to that necessary to provide a sound true bearing for the tie plate. Adzing in excess of 0.2 in will not be permitted. Where adzing is necessary, the cut surface shall be completely saturated with creosote or other approved preservatives.~~

~~3.3.4 Insulated Weld-On Shoulders~~

~~Weld-on shoulders shall be installed at the locations shown on the Drawings. Welding to track support beams shall be in accordance with Section 05120; STRUCTURAL STEEL.~~

~~3.3.5 Tie Plates~~

~~Tracks shall be fully tie-plated. Tie plates shall be free of dirt and other foreign material when installed. Tie plates shall be placed so that the rails will have full bearing on the plate, and the plate will have full bearing on the tie. Tie plates shall be set at right angles to the rail with the outside shoulder against the base of the rail, and centered on the tie.~~

~~3.3.6 Rail~~

~~The base of the rail and the surface of the tie and tie plate shall be free of dirt and other foreign materials prior to laying rail.~~

~~3.3.6.1 Laying Rail~~

~~Rail salvaged during removal shall be relaid without bumping or striking, to standard gage (4 ft 8-1/2 in between points 5/8 in below the top of the rail). Where rail is laid on the temporary steel bridge rail pads and spring clip insulators shall be installed as shown on the Drawings.~~

~~3.3.6.2 Joints~~

~~The joints in opposite rails shall be staggered one-half the rail length but not less than 12 ft apart, except closer joints may be required at turnouts and insulated joints. Rail less than 13 ft in length shall not be~~

installed in track. No joint shall be less than 6 ft from the ends of open-deck bridges. No joint shall be installed within 20 ft of a road crossing, outer perimeter of any structure, or any location which restricts access to the joint. Where joints are required in these areas, the joints shall be welded.

3.3.6.3 Matching Rails

Where relay rail is used, matching adjacent rails shall not cause lipped or uneven joints. Any mismatched rail ends shall be welded to provide proper match. Rail end mismatch shall not exceed 1/8 in on gage or tread portions of rail.

3.3.7 Joint Bars

Joint bars shall only be used for inner guard rails. Joint bars shall be clean. Rail joints shall be installed so that bars are not cocked between the base and head of the rail. Bars shall be properly seated in the rail and the full number of correct size bolts, nuts, and spring washers installed. Bolts shall be placed with nuts alternately on inside and outside of rail. A corrosion resistant lubricant shall be applied to the bolt threads prior to application of nuts.

3.3.8 Spiking

3.3.8.1 Spiking Procedures

Rail shall be spiked promptly after being laid. Spikes shall be started and driven vertically and square with the rail. Spikes shall be driven to allow approximately 1/8 to 3/16 in space between the underside of the spike and the top of the rail base. Spikes shall not be overdriven, or straightened while being driven. Spikes shall not be installed through the slots in skirted-type, slotted joint bars (angle bars). Spikes shall not be driven against the ends of joint bars.

3.3.8.2 Number of Spikes

Four rail-holding spikes shall be used on each tie on tangents and curves less than 4 degrees. Spikes on the gage side of the running rail shall be placed directly across from each other and the spikes on the field side of the running rail shall be placed directly across from each other. This pattern shall be held consistent. Eight rail-holding spikes shall be used on each tie through road crossings.

3.3.9 Spring Clips

Spring clips shall be installed at each insulated weld-on shoulder as shown on the Drawings.

3.3.10 Tie Plugs

If spikes are withdrawn, the holes shall be swabbed with creosote and plugged with creosoted tie plugs of proper size to fit the hole. If spikes are withdrawn and spikes are to be reinserted in existing spike holes, the holes shall be swabbed with creosote and plugged with creosoted tie plugs prior to redriving the spike. Tie plugs shall not be installed in prebored holes unless spikes have been driven and withdrawn.

3.3.11 Rail Anchor Placement

Rail anchors shall be spaced in accordance with UPRR standards. Rail anchors shall be installed to the gage side of the rail against the same tie face on opposite rails. Rail anchors shall grip the base of the

rail firmly and shall have full bearing against the face of the tie. Rail anchors shall not be moved by driving them along the rail. Rail anchors shall not be applied to track on an open deck bridge. Rail shall be anchored immediately after spiking and before rail has experienced a large temperature change.

3.3.12 Inner Guard Rails

Guard rails shall be installed on bridges and trestles as indicated. Guard rails shall be approximately 11 in from the gage side of track rails and shall extend a minimum of 50 ft beyond the structure. The ends shall be curved inward and beveled. Guard rails shall be fully bolted. Guard rails shall not be higher than the running rail and shall not be more than 1 in lower than the running rail. Each guard rail shall be spiked with two spikes to each tie but shall not be tie-plated. Unfit track rail in short lengths may be used for guardrails.

3.3.13 Preliminary Surfacing

The preliminary alignment and surfacing gangs shall follow the unloading of the ballast. Rail renewal, tie renewal, bolt tightening, and ballast placement shall be complete prior to commencement of surfacing and alignment work.

3.3.13.1 Lifts

a. The track, after being aligned, shall be brought to grade and surface in lifts not exceeding 4 in each. After each lift, the ballast shall be tamped. When using jacks, they shall be placed close enough together to prevent undue bending of rail or stress of rail and joint. Both rails shall be raised at one time and as uniformly as possible. The track shall be so lifted that after a period of not less that 5 train operations (70 metric ton ton ballast car) after the last lift, it will be necessary to give the track a final lift of between 1 and 2 in to bring it to grade.

b. In areas where major track resurfacing is not required, the Contractor shall perform a "skin lift" tamping operation to ensure that the ties are adequately tamped, the ballast section is adequately compacted and dressed, and to correct minor deficiencies in surface and alignment. The rise in skin lift areas shall be 1 in or less and usually will not require that additional ballast be placed.

c. A 2 in rise shall provide an average 2 in. raise in the track being surfaced.

d. A 4 in rise shall provide an average 4 in. raise in the track being surfaced, and shall be made in at least two lifts not to exceed 2 inches per lift.

e. A 6 in raise shall provide an average 6 in. raise in the track being surfaced, and shall be made in at least 2 lifts. The initial lift shall not exceed 4 in with the final lift not to exceed 2 1/2 in

3.3.13.2 Tamping

Raising and tamping of track shall be performed with an automatic, vibratory, squeeze type power tamper with 16 tamping heads, capable of raising both rails simultaneously and maintaining cross-level. The equipment to be used for surfacing operations is subject to approval by the Contracting Officer. Every tie in the track shall receive two or more full insertions of the tamping heads. Ballast shall be power-tamped under both sides of ties from each end to a point 12 in inside each rail. The center shall

be filled with ballast, but tamping will not be permitted in the center of the tie between the above stated limits. Both ends of the ties shall be tamped simultaneously and tamping inside and outside of the rail shall be done at the same time. Tamping tools shall not be used with more than 35% wear and shall be worked opposite each other on the same tie. Ballast under road crossing ties shall be tamped the entire length of each tie. All ties shall be tamped to provide solid bearing against the base of the rail after the track or turnout is raised to grade at final surfacing. All down ties shall be brought up to the base of rail and shall be machine tamped. The resultant track surface and alignment shall be uniform and smooth. Tamping of track in snow or frozen ballast conditions will not be permitted.

3.3.13.3 Replacement of Ties

After tamping has been completed and the jacks removed, all ties pulled loose shall be replaced to their proper position, respiked and retamped to provide full bearing against the rail.

3.3.13.4 Track Off The Ends of Open Deck Bridges

Track off the ends of open deck bridges shall maintain the same grade as the track on the bridge for a minimum of 25 ft beyond the bridge abutment and then transition smoothly to meet established track grades.

3.3.13.5 Runoff of Track Raises

The runoff at the end of a rise shall not exceed 0.5 inches in 31 ft of track unless otherwise approved by the Contracting Officer.

3.3.14 Final Surfacing

After preliminary surfacing has been completed, grade and line stakes shall be checked and the track brought to grade and alignment.

3.3.14.1 Final Tamping

Track shall be brought to grade and the ballast retamped in the manner described for preliminary surfacing, except that the tamping distance inside the rail shall be decreased from 12 to 10 in.

3.3.14.2 Final Alignment

The track shall be given a final aligning conforming to the established track centers.

3.3.14.3 Final Dressing

After the final alignment the ballast shall be dressed to the section indicated. After final dressing ballast shall not cover the tops of the ties. The portion of the subgrade outside the ballast line shall be left with a full, even surface and the shoulder of the subgrade shall be properly dressed to the indicated section to provide proper drainage away from the track.

3.3.14.4 Surplus Ballast

Surplus ballast remaining after final surfacing and dressing of the ballast section shall be distributed or otherwise disposed of as directed by the Contracting Officer.

3.3.15 Cleanup

Upon completion of the work, the Contractor shall remove all rubbish, waste, and discarded materials generated by the work from the project area.

~~**3.3.15.1 Shoulder Removal and Reconstruction**~~

~~Where track construction or rehabilitation operations result in deposition of materials along the track shoulders that would impede the free drainage of the track structure, the Contractor shall remove the material.~~

~~**3.3.15.2 Spoil Materials**~~

~~Spoil materials removed from the track shall be disposed of off site at the Contractor's expense. Spoil materials shall not be placed on the shoulders, in ditches, in drains, or in other areas where they would impede the flow of water away from the track.~~

~~**3.3.16 Final Adjustments**~~

~~Sixty calendar days after the track has been accepted and put into operation, the Contractor shall perform, at no cost to the Government, necessary resurfacing adjustments to leave the track in alignment and on grade.~~

~~**3.3.17 Tolerances for Finished Track**~~

~~Completed track shall meet the following tolerances. Track not meeting the tolerances specified below shall be repaired to meet these requirements, at no additional cost to the Government.~~

~~**3.3.17.1 Gage**~~

~~Track gage shall be within plus 1/4 in or minus 1/8 inch of standard gage.~~

~~**3.3.17.2 Alignment**~~

~~Alignment shall be measured as the deviation of the mid-offset of a 62 ft line, with the ends of the line at points on the gage side of the line rail, 5/8 in below the top of the railhead. Either rail may be used as the line rail on tangent track; however, the same rail shall be used for the entire length of the tangent. Alignment on tangents shall not deviate from uniformity more than 1/2 in.~~

~~**3.3.17.3 Track Surface**~~

~~Track surface shall meet the following requirements:~~

~~a. The runoff at the end of a raise shall not exceed 1/2 in in any 31 ft of rail.~~

~~b. The deviation from design profile on either rail at the mid-ordinate of a 62 ft chord shall not exceed 1/2 in~~

~~c. Deviation from zero cross level at any point on tangent shall not exceed 1/2 in.~~

~~d. The difference in cross level between any two points less than 62 ft apart on tangents shall not exceed 1/2 in.~~

3.4 MAINTENANCE ROAD CROSSING

The Contractor shall furnish all maintenance road crossing materials to UPRR to install ~~The maintenance road crossing shall be constructed~~ at the location shown on the Drawings. ***UPRR will***

also install ballast, railroad ties and tracks. The Contractor shall closely coordinate with UPRR for works in this area.

3.4.1 Subgrade

The subgrade shall be prepared in accordance with Section 02225; SUBGRADE PREPARATION FOR RIVERWALK/MAINTENANCE ROAD. Drainage areas shall be cleaned and sloped away from the crossing in both directions along the track and the roadway.

~~3.4.3 Ballast Placement and Surfacing~~

~~Ballast shall be placed and tamped as specified in paragraph 3.2 except that in crossings, the ballast between the ties shall be thoroughly compacted with a vibratory compactor, or other approved means, after each raise. The ballast shall be tamped for the entire length of the crossties. The track shall receive final alignment and surfacing prior to placement of the crossing surface. Final surfacing shall bring the track to the final grade and alignment as indicated on the drawings. The top of rail elevation shall be 2 to 4 in above surrounding pavement elevation, with a smooth transition of pavement. The ballast in the cribs and on the shoulders shall be compacted using a vibratory plate compactor or other approved means.~~

~~3.4.4 Ties~~

~~Hardwood ties shall be used. Spacing shall be 18 in center to center. For premanufactured grade crossings, ties shall conform to the manufacturer's recommendations for the type of grade crossing surface materials being used.~~

~~3.4.5 Tie Plates, Spikes, and Anchors~~

~~All ties within the crossing and for 20 ft beyond each end of the crossing shall be fully tie plated, and spiked with 4 rail holding spikes per tie plate. Each tie within the crossing shall be fully box anchored.~~

~~3.4.6 Rail~~

~~Rail shall be protected from corrosion by application of an approved rust inhibitor.~~

~~3.4.7 Lining and Surfacing~~

~~Rail shall be spiked to line and the track mechanically tamped and surfaced to the grade and alignment of the existing track and roadway..~~

~~3.4.8 Crossing Surface~~

~~The surface of the crossing shall be not greater than 1/4 in higher than the top of the rails for a distance of 2 ft outside of the rails for either single or multiple track crossings. A smooth transition shall be made between the crossing surface and the adjoining pavement.~~

~~3.4.8.1 Type 4A Prefabricated Concrete Panel Crossings~~

~~Type 4A crossings and crossing materials shall be installed in accordance with the crossing manufacturer's instructions. Tie spacings and track materials used in the crossing shall be in accordance with the installation instructions and manufacturer's recommendations.~~

3.4.9 Crossing Flangeways

Upon completion of the grade crossing installation, the flangeways through the crossing shall be a minimum of 2 in deep and between 2-1/2 and 3 in wide. The Contractor shall ensure that adequate flangeways are provided prior to installation of the final crossing surface.

3.4.9.1 Flangeway Filler

Except for Type I crossings all open crossing flangeways shall be filled with asphaltic concrete and compacted as indicated in Section 02513; BITUMINOUS COURSE (CENTRAL PLANT HOT MIX).

3.4.9.2 Clean Grade Crossing Flangeways

Where grade crossing flangeways are obstructed (filled in), the Contractor shall remove foreign material to provide a minimum 2 in depth and 2-1/2 in width flangeways on the gage side of the rails.

3.5 BONDING AND GROUNDING TRACK

Track shall be bonded and grounded as indicated. Where track is designated for bonding and grounding, the rails shall be bonded electrically continuous and effectively grounded. Connections shall be made by exothermite welds in accordance with the manufacturer's instructions.

3.5.1 Rail Cross-Bond and Ground

Rail cross-bond and ground shall be installed using an exothermic type bond. The cross-bond shall be applied to the rail head. One cross-bond and ground shall be provided. Connections between grounding system or ground rods and rails shall be made with bare stranded copper cable, installed at least 12 in below the bottom of the ties. Ground rods shall be driven vertically full length. The top of the ground rod shall be located at the toe of the ballast slope and shall be a minimum of 12 in below the top of the subgrade. Maximum resistance to ground from any grounded rail or structure shall not exceed 25 ohms. The Contractor shall make any corrections needed to reduce the resistance to below 25 ohms at no cost to the Government.

3.5.2 Removal of Bonds

Rail head pin-type and welded-type bonds shall be removed by shear cutting old cables immediately adjacent to the weld or pin. Rail web type pin bonds shall be removed by knocking the old pin out with a drift. Flames or torches shall not be used to remove defective bonds.

3.6 INSTALLATION OF MISCELLANEOUS TRACK MATERIALS

3.6.1 Tie Plates

Tie plates shall be furnished to the work sites as required.

3.6.2 Inner Guard Rails

Inner guard rails shall be installed at the location shown on the Drawings. Each rail shall be spiked to alternate crossties throughout the full length using two spikes per rail per tie; tie plates are not required.

Guard rails shall be installed using acceptable joint bars of the proper size to fit the rails being joined. Each joint shall be bolted with at least two bolts and one fully tightened bolt per rail.

3.7 THERMITE WELDING PROCEDURES

Thermite welding procedures shall be performed by a technician certified to meet ASNT CP-189, level II or III qualifications and comply with the following paragraphs:

3.7.1 End Preparation

Rails to be welded shall meet the requirements Section 2.2, "Specifications for Fabrication of Continuous Welded Rail" given in Chapter 4, Part 2 of AREMA Manual. The rail ends shall be aligned in accordance with paragraph 3.7.1.2. Rail ends shall show no steel defects, dents, or porosity before welding. Bolt holes shall not be made in, or permitted to remain in, the ends of the rail to be welded. One handling hole may be made in each end of welded string. Rail ends containing such holes shall be cut off during track construction. Rail which must be cut for any reason shall be cut square and clean by means of approved rail saws or abrasive cutting wheels in accordance with Chapter 5 of AREMA Manual, Section 10.3, "Recommended Practice For Use of Abrasive Wheels".

3.7.1.1 Cleaning

The rails to be welded shall be cleaned of grease, oil, dirt, loose scale, and moisture to a minimum of 6 in back from the rail ends, including the railhead surface. Cleaning shall be accomplished by use of a wire brush, to completely remove dirt and loose oxide and by use of oxygen-acetylene torch to remove grease, oil and moisture. A power grinder with an abrasive wheel shall be used to remove scale rust, burrs, lipped metal and mill brands which would interfere with the fit of the mold, for 2 in on each side of the ends.

3.7.1.2 Gap and Alignment

The minimum and maximum spacing between rail ends shall be as specified by the rail welding kit manufacturer and the approved welding procedures.

a. The ends of the rails to be welded shall be properly gapped and aligned to produce a weld which shall conform to the alignment tolerances below. Alignment of rail shall be done on the head of the rail. The rail gap and alignment shall be held without change during the complete welding cycle.

b. Vertical alignment shall provide for a flat running surface. Any difference of height of the rails shall be in the base.

c. Horizontal alignment shall be done so that any difference in the width of heads of rails shall occur on the field side. Horizontal offsets shall not exceed 0.04 in. in the head and/or 0.12 inch in the base.

3.7.2 Surface Misalignment Tolerance

Combined vertical offset and crown camber shall not exceed 0.04 inch/feet at 600 degrees F or less. Combined vertical offset and dip camber shall not exceed 0.01 inch/feet at 600 degrees F or less.

3.7.3 Gage Misalignment Tolerance

Combined horizontal offset and horizontal kink camber shall not exceed 0.04 inch/feet at 600 degrees F or less.

3.7.4 Thermite Welding

Welding shall be done in accordance with Chapter 4, Part 2,Section 2.5 of AREMA Manual, articles "Thermite Welding - Rail Joints" and Section 2.2 "Specification for Fabrication of Continuous Welded Rail", except as modified by these specifications. All welds shall be visually inspected at the time of welding.

3.7.4.1 Thermite Weld Preheating

The rail ends shall be preheated prior to welding to a sufficient temperature and for sufficient time as indicated in the approved welding procedures to ensure full fusion of the weld metal to the rail ends without cracking of the rail or weld.

3.7.4.2 Thermite Weld Cooling

The molds shall be left in place after tapping for sufficient time to permit complete solidification of the molten metal and proper slow cooling to prevent cracking and provide a complete weld with proper hardness and ductility.

3.7.5 Weld Finishing and Tolerances

Welded joints in the finished track shall be brought to a true surface and alignment by means of a proper grinding or planing machine (shear). Finish grinding shall be performed with an approved grinder operated by a skilled workman grinding evenly and leaving the joints in a smooth and satisfactory condition. Finishing shall eliminate all cracks. The completed weld shall be finished by mechanically controlled grinding in conformance with the following requirements:

a. A finishing deviation of not more than plus or minus 0.01 in of the parent section of the rail head surface will be allowed. The gage side of the rail head shall be finished to plus or minus 0.01 in of the parent section.

b. Welds produced by welding kits which are specially designed to produce reinforced welds need not be ground in the finishing area except as necessary to remove fins, burrs, cracks, etc.

3.7.6 Weld Quality

Each completed weld shall have full penetration and complete fusion and be entirely free of cracks or fissures. Welds shall meet the acceptance criteria given in AWS D1.1/D1.1M.

3.7.7 Weld Numbering

The Contractor shall semi-permanently mark a sequential weld number on the rail immediately adjacent to the weld, using a quality lead paint marker at the time the weld is made. Welds shall be numbered sequentially in the order in which they are made. The Contracting Officer will provide the Contractor with the initial weld number. Defective welds which are replaced shall be assigned a new sequential

number by adding a letter to the defective weld number (e.g., defective weld 347 would be replaced by 347A).

3.8 SAMPLING AND TESTING

Testing shall be the responsibility of the Contractor and shall be performed in accordance with the Corps of Engineers' Construction Control Manual at no additional cost to the Government. Testing for acceptance shall be performed by an independent commercial testing laboratory subject to approval by the Contracting Officer in accordance with Section 01451; CONTRACTOR QUALITY CONTROL. Test results shall be submitted to the Contracting Officer with 24 hours of test completion. When test results indicate, as determined by the Contracting Officer, that compaction is not as specified, the material shall be removed, replaced or reworked, and recompacted to meet specified requirements, at no additional cost to the Government.

3.8.1 Ballast and Subballast Samples

Periodic sampling and testing of ballast and subballast material shall be performed to ensure continued compliance with this specification. During construction, one representative sample of the ballast and subballast material shall be taken to determine the material gradation. Samples for material gradation shall be taken in conformance with ASTM D 75. Test samples shall be reduced from field samples in conformance with ASTM C 702. Sample sizes shall be sufficient to provide the minimum sample sizes required by the designated test procedures. If any individual sample fails to meet the gradation requirement, placement shall be halted and immediate corrective action shall be taken to restore the specified gradation.

3.8.2 Ballast and Subballast Tests

3.8.2.1 Sieve Analyses

Sieve analyses shall be made in conformance with ASTM C 117 and ASTM C 136. Sieves shall conform to ASTM E 11.

3.8.3 Tie Inspection

The Contractor shall be responsible for the quality of the treated ties. Each tie shall be permanently marked or branded by the producer in accordance with AWPA M6. Each treated wood tie shall be inspected, in accordance with AWPA M2, for conformance with the specified AWPA standards. The 100 percent inspection shall be performed by an independent inspection agency approved by the Contracting Officer. Inspection shall be made at the wood treatment site. The agency's report of inspection shall accompany delivery of the ties.

3.9 INSPECTION AND FIELD TESTING

Quality control inspection and field testing shall be performed by the contractor.

3.9.1 Track

Inspection shall be performed to ensure that all the requirements of these specifications are met. Bolted joints shall be inspected for loose bolts and for smooth transitions between rails of different sections.

Rail, tie plates, and ties shall be checked to ensure that the rail is properly seated and has full bearing on the tie plate and tie. Upon completion of construction, measurements of track gage, cross level, and alignment shall be taken and recorded at least once every 50 feet of track centerline length. A copy of these measurements shall be provided to the Contracting Officer.

3.9.2 Thermite Weld Joints Testing

Each thermite weld joint shall be ultrasonically tested following the visual inspection. The method of inspection and acceptance shall be in accordance with AWS D1.1/D1.1M. The Contractor shall correct or replace defective welds, at no additional cost to the Government. The method of correction shall be as approved by the Contracting Officer. Ultrasonic testing shall be performed by the Contractor after the rail has been installed in track. The testing will determine whether or not each weld meets the criteria of paragraphs Gap and Alignment, Weld Finishing and Tolerances, and Weld Quality. Welds made in the track which the Contracting Officer determines to be unacceptable shall be cut out of the rail and replaced by a section of new rail and two new welds. Saw cuts shall be made at least 6 in from the centerline of the faulty weld. Replacement welds and replacement rails shall be at the sole expense of the Contractor. Replacement welds shall be renumbered as indicated. Replacement welds made in track shall be ultrasonically tested.

END OF SECTION