



May 23, 2019

**Prospective Bidders for
Freight Intelligent Transportation System (FITS)
Radio Frequency Identification
Oakland, California**

ADDENDUM NO. 1

The following are revisions to the Project Manual for **FREIGHT INTELLIGENT TRANSPORTATION SYSTEM (FITS) - RADIO FREQUENCY IDENTIFICATION, OAKLAND, CALIFORNIA**, dated April 2019. Please transmit this information to your prospective sub-bidders, as applicable. This Addendum No. 1 is part of the Contract Documents and its receipt shall be acknowledged on Document 00400, Bid Form.

1. DOCUMENT 00010 – TABLE OF CONTENTS, page 00010-2

Under "Division 1 – General Requirements", ADD the following entry:

"01730 Special Requirements for Work on Port or Other Railroad Company Property"

2. DOCUMENT 00100 – INVITATION TO BID, page 00100-1

REVISE the first paragraph of the Invitation to Bid to read as follows:

"The CITY OF OAKLAND, acting by and through its BOARD OF PORT COMMISSIONERS (the "Port"), will receive sealed Bids at the office of the Secretary of the Board of Port Commissioners, located at Room 629, 530 Water Street, Oakland, California, until 12:00 noon on Monday, June 10, 2019, for the following public work:"

3. DOCUMENT 00200 – INSTRUCTIONS TO BIDDERS, page 00200-1

REVISE the first sentence of Paragraph 1, Receipt of Bids, to read as follows:

"The Port will receive sealed bids from Bidders until 12:00 p.m. on Monday, June 10, 2019."

4. DOCUMENT 00200 – INSTRUCTIONS TO BIDDERS, page 00200-2

REVISE the first sentence of Paragraph 8, Pre-Bid Conference and Site Visits, to read as follows:

“The Port will conduct a pre-Bid conference, at 11:00 a.m. on Wednesday, April 24, 2019, at the Harbor Facilities Center, 1st Floor, 651 Maritime Street, Oakland, California, to address insurance, bonds, Maritime and Aviation Project Labor Agreement, Port’s Non-Discrimination and Small/Local Business Utilization Policy and other non-technical issues related to the work and the Project.”

5. SECTION 01100 – SUMMARY OF WORK

DISCARD Section 01100, Summary of Work, and REPLACE with the attached Addendum No. 1 Section 01100.

The substantive modifications to Section 01100 consist of the following:

- deletion of two words from the description of Bid Item No.3;
- revision of subparagraph 1.04.A;
- deletion of final two sentences of subparagraph 1.04.E;
- deletion of subparagraph 1.07.D and renumbering of subsequent subparagraph; and
- revision of Paragraph 1.23.

6. SECTION 01331 – LIST OF SUBMITTALS, page 01331-2

DISCARD Section 01331, List of Submittals, and REPLACE with the attached Addendum No. 1 Section 01331.

The modification to Section 01331 consists of adding two submittals for Section 01100 at the top of page 01331-2.

7. SECTION 01556 – TRAFFIC CONTROL SYSTEMS, page 01556-2

REVISE the first sentence of Paragraph 1.03 to read as follows:

“Before commencing Work at the Site, as per the requirements of Section 01330, *Submittals*, the Contractor must prepare and submit a detailed Traffic Control Plan for all phases of construction work, signed and stamped by a Licensed California Traffic or Civil Engineer, to the Engineer for approval.”

8. SECTION 01730 – SPECIAL REQUIREMENTS FOR WORK ON PORT OR OTHER RAILROAD COMPANY PROPERTY

ADD the attached Addendum 1 Section 01730, Special Requirements for Work on Port or Other Railroad Company Property.

9. SECTION 344001 – SIGNAL POLES AND MAST ARMS

DISCARD Section 344001 – Signal Poles and Mast Arms, and REPLACE with the attached Addendum No. 1 Section 344001.

The modifications to Section 344001 consist of the following:

- deletion of subparagraph 3.1.F and renumbering of subsequent subparagraphs; and
- deletion of subparagraphs 3.8.A and 3.8.B.2 and consequent renumbering of subparagraphs.

Sincerely,



Robert Andrews
Acting Director of Engineering

Attachments:

Section 01100, Summary of Work

Section 01331, List of Submittals

Section 01730, Special Requirements for Work on Port or Other Railroad Company Property

Section 344001 - Signal Poles and Mast Arms

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01100

SUMMARY OF WORK

PART 1 - GENERAL

1.01 TABLE OF CONTENTS

The following is a summary of the Contents of this Section:

- 1.01 Table of Contents
- 1.02 General
- 1.03 Bid Items
- 1.04 Work Site Conditions and Restrictions
- 1.05 Coordination
- 1.06 Construction and Demolition Debris Waste Reduction
- 1.07 Special Environmental Requirements
- 1.08 Security and Safety
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- 1.10 Jobsite Administration
- 1.11 Contractor and Engineer Joint Site Inspection Prior to Work
- 1.12 Permits
- 1.13 Lines and Levels (Not Used)
- 1.14 Submittals
- 1.15 Traffic Control
- 1.16 Protection of Existing Structures and Utilities
- 1.17 Project Meetings
- 1.18 Construction-Related Utility Service Coordination (Not Used)
- 1.19 Construction-Related Utility Shut Downs (Not Used)
- 1.20 Port Occupancy Prior to Acceptance
- 1.21 Site Cleanup
- 1.22 Project Completion, Closeout, and Warranties
- 1.23 Project Address
- 1.24 Compensation Adjustments for Asphalt Price Index Fluctuation (Not Used)
- 2.01 Contractor-Furnished Products
- 2.02 Products Ordered in Advance (Not Used)
- 2.03 Port-Furnished Products (Not Used)

1.02 GENERAL

- A. The Work includes furnishing all labor, materials, equipment, Maintenance of Traffic, coordination with Terminal Operators, and all other Work required to install a new Radio-frequency Identification (RFID) Security System to the Port of Oakland Maritime Terminal Berth entrance and exit locations, including, but not limited to: installing conduit, innerduct, pull boxes, cellular modems, electrical power conductors, electrical transformers, electrical equipment, grounding and bonding of electrical systems, equipment cabinets, RFID equipment pole foundations and standards, RFID exciters and sensors, RFID head-end and communications switching equipment; integrating new RFID exciters and sensors

into existing truck management system and network; and performing all associated Work, all in accordance with the Contract Documents.

- B. The Work of this Contract comprises construction of all the Work shown on the Port Plans AA-4248 and as described by the Contract Documents. Section 5.1, *Intent of Document 00700, General Conditions* describes tasks that comprise "Work."
- C. The Work to be performed under this Contract will be located in the Port Maritime area on properties owned by the Port along the San Francisco Bay and the Oakland Estuary. The Contractor must consider these environmental factors when constructing the Project.
- D. Unless provided otherwise in the Contract Documents, the Contractor assumes all risk of loss to the Work covered by the Contract Documents until the Port's Final Acceptance of the Work.
- E. This Section references other Documents and Sections included in the Contract Documents. The references may not be complete, but are given solely for the convenience of the bidders and the Contractor.

1.03 BID ITEMS

- A. The Port may delete any Bid Item in total or in part prior to or after award of the Contract without compensation in any form or adjustment of other Bid Items or prices therefore.
- B. Unit Prices will be measured and paid as per this Section and as per Section 01200, *Measurement and Payment*. Unit Prices will apply to Work covered by unit prices so long as actual quantities performed on the Project are between 75% and 125% of the estimated quantities referenced herein, unless otherwise stated elsewhere in Article 1.03 D of this Section. If actual quantities exceed these parameters, then the Unit Price will be adjusted in accordance with Section 01200.
- C. The price for each Bid Item will include the costs for all Work as shown on the Plans, and as described elsewhere in the Project Manual. The Work for each Bid Item is not necessarily limited to the actual written descriptions, but must include all other Work necessary to prepare, execute, and complete the described Work. The unit prices and lump sum prices paid for these items will be full compensation for all Work necessary to complete the Work described in each individual item.
- D. Bid Item Descriptions:

ITEM 1: Mobilization is a General Lump Sum Item.

The Work of this Bid Item includes, but is not necessarily limited to, mobilizing and demobilizing equipment and labor for the Work described in the Bid Items below.

ITEM 2: Perform All General Conditions is a General Lump Sum Item.

The Work of this Bid Item includes providing and executing all health, safety, security, and environmental Plans; providing all site general conditions facilities; coordinating all railroad flagging and safety procedures; providing, set-up, maintaining, relocating and removing all temporary fencing, plates, K-rail, covers, and barricades to protect and secure work and storage areas and to assure safety within the Port and Terminal Operator property and in the vicinity of the construction site; and performing all other general conditions Work and all other Work shown on the Plans or specified herein other than Work separately provided for under other Bid Items, and as specified in the Contract Documents.

ITEM 3: Maintenance of Traffic is a General Lump Sum Item.

The Work of this Bid Item includes providing and executing traffic handling plans, including City of Oakland permits, and providing and installing all traffic control equipment as necessary to complete the Work, and as per the requirements of Section 01556, Traffic Control Systems.

ITEM 4: Perform System Integration and Testing of Field Equipment is a General Lump Sum Item.

The Work of this Bid item includes providing systems integration and acceptance testing of field assets into the Port's network according to the requirements of Section 272600, *System Integration, Testing, and Commissioning*.

ITEM 5: Furnish and Install 1-2" PVC Conduit by Trenching Method is a Unit Price Item to be measured and paid by the linear foot of conduit installed and accepted in place.

The Work of this Bid Item includes all efforts required to install conduit by trenching methods including: sawcutting and removing pavement or sidewalk; trenching; disposing of pavement rubble and excess soil offsite; furnishing and installing bedding; furnishing and installing conduit and connecting all fittings; furnishing and placing Controlled Low Strength Material (CSLM) fill, where required; furnishing and placing aggregate base and compacting; repaving and restoring the trench surface including a 2-inch grind and overlay for the entire effected vehicle lanes (bounded by the nearest parking or traveling lanes) when conduit is under pavement; restoring sidewalk, restoring disturbed earth to existing conditions prior to beginning Work, and performing all other related Work, all as per the Plans and Section 270543, *Underground Electrical and Telecommunications Conduits and Structures*.

ITEM 6: Furnish and Install 1-3" PVC Conduit with 2-1 1/4" Innerducts by Trenching Method is a Unit Price Item to be measured and paid by the linear foot of conduit installed and accepted in place.

The Work of this Bid Item includes all efforts required to install conduit by trenching methods including: sawcutting and removing pavement or sidewalk; trenching; disposing of pavement rubble and excess soil offsite; furnishing and installing bedding; furnishing and installing conduit and connecting all fittings; furnishing and placing Controlled Low Strength Material (CSLM) fill, where required; furnishing

and placing aggregate base and compacting; repaving and restoring the trench surface including a 2-inch grind and overlay for the entire effected vehicle lanes (bounded by the nearest parking or traveling lanes) when conduit is under pavement; restoring sidewalk, restoring disturbed earth to existing conditions prior to beginning Work, and performing all other related Work, all as per the Plans and Section 270543, *Underground Electrical and Telecommunications Conduits and Structures*.

ITEM 7: **Furnish and Install 1-3" PVC Conduit with 2-1 1/4" Innerducts by Directional Drill Method** is a Unit Price Item to be measured and paid by the linear foot of conduit installed and accepted in place.

The Work of this Bid Item includes all efforts required to install conduit by directional drilling methods including: sawcutting and removing pavement or sidewalk; excavating bore pits; disposing of pavement rubble and excess soil offsite; furnishing and installing conduit and connecting all fittings; repaving and restoring pavement, sidewalk, and disturbed earth due to bore pit excavation to match existing conditions prior to beginning Work, and performing all other related Work, all as per the Plans and Section 270543, *Underground Electrical and Telecommunications Conduits and Structures*.

ITEM 8: **Furnish and Install 2-1 1/4" Innerducts** is a Unit Price Item to be measured and paid by the linear foot of innerduct installed and accepted in place.

The Work of this Bid Item includes all efforts required to install innerducts in existing conduit and performing all other related Work, all as per the Plans and Section 270543, *Underground Electrical and Telecommunications Conduits and Structures*.

ITEM 9: **Furnish and Install Low Voltage Power Cables** is a Unit Price Item to be measured and paid by the linear foot of cable installed and accepted in place.

The Work of this Bid Item includes furnishing, installing, splicing, and terminating the conductors, grounding and bonding, labeling conductors, and performing all other related Work, all as per the Plans and Section 260519, *Low-Voltage Electrical Power Conductors and Cables* and Section 273246, *Radio Frequency Identification*.

ITEM 10: **Furnish and Install #8 Cables** is a Unit Price Item to be measured and paid by the linear foot of cable installed and accepted in place.

The Work of this Bid Item includes furnishing, installing, splicing, and terminating the conductors, grounding and bonding, labeling conductors, and performing all other related Work, all as per the Plans and Section 260519, *Low-Voltage Electrical Power Conductors and Cables*.

ITEM 11: **Furnish and Install #10 Cables** is a Unit Price Item to be measured and paid by the linear foot of cable installed and accepted in place.

The Work of this Bid Item includes furnishing, installing, splicing, and terminating the conductors, grounding and bonding, labeling conductors, and performing all other related Work, all as per the Plans and Section 260519, *Low-Voltage Electrical Power Conductors and Cables*.

ITEM 12: **Furnish and Install Type 27-3-100 Pole with 45' Mast Arm** is a Unit Price Item to be measured and paid per each pole furnished, installed, and accepted in place.

The Work of this Bid Item includes installing a cast-in-drilled hole foundation, pole, mast arm, and performing all other related work, as shown on the Plans, and specified in Section 344001, *Signal Poles and Mast Arms*.

ITEM 13: **Furnish and Install Type 28-5-100 Pole with 55' Mast Arm** is a Unit Price Item to be measured and paid per each pole furnished, installed, and accepted in place.

The Work of this Bid Item includes installing a cast-in-drilled hole foundation, pole, mast arm, and performing all other related work, as shown on the Plans, and specified in Section 344001, *Signal Poles and Mast Arms*.

ITEM 14: **Furnish and Install Type 60-5-100 Pole with 60' Mast Arm** is a Unit Price Item to be measured and paid per each pole furnished, installed, and accepted in place.

The Work of this Bid Item includes installing a cast-in-drilled hole foundation, pole, mast arm, and performing all other related work, as shown on the Plans, and specified in Section 344001, *Signal Poles and Mast Arms*.

ITEM 15: **Furnish and Install Type 1-A** is a Unit Price Item to be measured per each pole furnished, installed, and accepted in place.

The Work of this Bid Item includes installing a cast-in-drilled hole foundation, pole, and performing all other related work, as shown on the Plans, and specified in Section 344001, *Signal Poles and Mast Arms*.

ITEM 16: **Furnish and Install RFID Point Location Sensor** is a Unit Price Item to be measured and paid per each sensor furnished, installed, and accepted in place.

The Work of this Bid Item includes furnishing installing a wireless access point for reading RFID signals, mounting hardware, cabling, and performing all other related work, as shown on the Plans, and specified in Section 273246, *Radio Frequency Identification*.

ITEM 17: **Furnish and Install RFID Point Location Exciter** is a Unit Price Item to be measured and paid per each sensor furnished, installed, and accepted in place.

The Work of this Bid Item includes furnishing installing a RFID exciter for generating RFID signals via truck mounted RFID transponders, mounting hardware, cabling, and performing all other related work, as shown on the Plans, and specified in Section 273246, *Radio Frequency Identification*.

ITEM 18: **Furnish and Install No. 6 Pull Box** is a Unit Price Item to be measured and paid per each pull box furnished, installed, and accepted in place.

The Work of this Bid Item includes: sawcutting and removing pavement; trenching; disposing of pavement rubble and excess soil offsite; furnishing and installing bedding; furnishing, placing, and leveling pull boxes; furnishing and placing Controlled Low Strength Material (CSLM) fill around the boxes; furnishing and placing aggregate base and compacting; repaving and restoring the surface around the new box; and performing all other related Work as per the Plans and Section 270543, *Underground Electrical and Telecommunications Conduits and Structures*.

ITEM 19: **Furnish and Install No. 6 (E) Pull Box** is a Unit Price Item to be measured and paid per each pull box furnished, installed, and accepted in place.

The Work of this Bid Item includes: sawcutting and removing pavement; trenching; disposing of pavement rubble and excess soil offsite; furnishing and installing bedding; furnishing, placing, and leveling pull boxes; furnishing and placing Controlled Low Strength Material (CSLM) fill around the boxes; furnishing and placing aggregate base and compacting; repaving and restoring the surface around the new box; and performing all other related Work as per the Plans and Section 270543, *Underground Electrical and Telecommunications Conduits and Structures*.

ITEM 20: **Furnish and Install 135 Kip Rated Pull Box** is a Unit Price Item to be measured and paid per each pull box furnished, installed, and accepted in place.

The Work of this Bid Item includes: sawcutting and removing pavement; trenching; disposing of pavement rubble and excess soil offsite; furnishing and installing bedding; furnishing, placing, and leveling pull boxes; furnishing and placing Controlled Low Strength Material (CSLM) fill around the boxes; furnishing and placing aggregate base and compacting; repaving and restoring the surface around the new box; and performing all other related Work as per the Plans and Section 270543, *Underground Electrical and Telecommunications Conduits and Structures*.

ITEM 21: **Furnish and Install Pole-Mounted 336S Cabinet** is a Unit Price Item to be measured and paid per each cabinet furnished, installed, and accepted in place.

The Work of this Bid Item includes furnishing and installing a cabinet with internal equipment (power distribution assembly, TIA rack, din rail hardware, and other items not paid for separately) on a pole, flexible and rigid conduit for connection to the pole and other pole-mounted equipment, grounding, and performing all other related Work as per the Plans and Section 271116, *Communications Cabinets, Racks, Frames, and Enclosures*.

ITEM 22: **Furnish and Install Fused Disconnect Switch** is a Unit Price Item to be measured and paid per each disconnect switch furnished, installed, and accepted in place.

The Work of this Bid Item includes furnishing and installing a fused disconnect switch on a pole, flexible and rigid conduit for connection to the pole and other pole-mounted equipment, grounding, and performing all other related Work as per the Plans and Section 262300, *Disconnect Switch*.

ITEM 23: **Furnish and Install UPS with Battery Backup and Supplemental Power Strip** is a Unit Price Item to be measured and paid per each Uninterruptible Power Supply (UPS) furnished, installed, and accepted in place.

The Work of this Bid Item includes furnishing and installing a rack mounted UPS with internal batteries, supplemental power strip, and performing all other related Work as per the Plans and Section 263310, *Battery Backup System*.

ITEM 24: **Furnish and Install Access Switch** is a Unit Price Item to be measured and paid per each Ethernet switch furnished, installed, and accepted in place.

The Work of this Bid Item includes furnishing and installing a field hardened Layer 3 Ethernet Switch with power supply and cables in a cabinet, configuring, and performing all other related Work as per the Plans and Section 272100, *Data Communications Network Equipment*.

ITEM 25: **Furnish and Install Cabinet Monitoring System** is a Unit Price Item to be measured and paid per each cabinet monitoring system furnished, installed, and accepted in place.

The Work of this Bid Item includes furnishing and installing a cabinet monitoring system with power supply and cabling, configuring, connecting to the cabinet's door switch, and performing all other related Work as per the Plans and Section 272100, *Data Communications Network Equipment*.

ITEM 26: **Furnish and Install Cellular Modem** is a Unit Price Item to be measured and paid per each cellular modem furnished, installed, and accepted in place.

The Work of this Bid Item includes furnishing and installing a field hardened cellular modem with power supply, antenna, and cables in a cabinet, configuring, coordinating with the Port's cellular service provider to establish a connection, and all other related Work as per the Plans and Section 338323, *Cellular Modem*.

ITEM 27: **Furnish and Install 20 Amp Circuit Breaker** is a Unit Price Item to be measured and paid per each circuit breaker furnished, installed, and accepted in place.

The Work of this Bid Item includes furnishing and installing a 20 amp circuit breaker into an existing electrical panel to establish a connection to a new power circuit and all other related Work as per the Plans and Section 260050, *Electrical General Requirements*.

ITEM 28: **Furnish and Install Concrete Bollard** is a Unit Price Item to be measured and paid per each bollard installed and accepted in place.

The Work of this Bid Item includes: sawcutting and removing pavement; excavating; disposing of pavement rubble and excess soil offsite; furnishing and installing concrete bollard; repaving and restoring the surface around the bollard; and performing all other related Work as per the Plans and Section 323913, *Bollard*.

1.04 WORK SITE CONDITIONS AND RESTRICTIONS

- A. Access: The Contractor shall maintain Port access throughout the effort. For work nearby Port terminal ingress and egress points that will affect access, the Contractor shall develop traffic handling plans/detours. Approval from the Port will be required before implementing the traffic handling. The Contractor will verify the typical traffic handling plans are implemented accordingly to minimize terminal access impacts. Contractor shall notify through Port staff the affected port terminal operators/tenants for facilities that are impacted by a temporary terminal access plan.
- B. Parking: The Contractor and employees shall be permitted to utilize the Ampco Truck Lot parking area located at 1599 Maritime Street, Oakland, CA. The Contractor will be subject to current parking fees associated with various sized parking spaces made available. The Contractor shall notify the Port staff of the quantity and stall size required for each month parking is utilized for the duration of the project.
- C. Storage: The Contractor may store equipment and materials used on the project at the Site in areas designated by the Engineer. As per Subsection 16.1.2 of Document 00700, the Contractor is responsible for the security of material and equipment stored at the Site, and must confine all storage of products and equipment to those areas as allowed by these Contract Documents.
- D. Working Hours:
 - 1. For Working Hours requirements, refer to Section 15.1, *Time Allowances for Performance of the Work*, of Document 00700, particularly Subsections 15.1.4 through 15.1.6.
 - 2. Notwithstanding the allowances described in 15.1.5 of Document 00700, the Contractor may request that the work period be extended beyond eight (8) hours per day, and for all seven days of the week. Such requests, however, are subject to the approval of the Engineer, the Port's Risk Management Division, and the Port's Environmental Health and Safety Specialist.
 - 3. All Contract Work, whether it is performed in normal business hours or non-business hours, will be considered included in the Contract bid price.
 - 4. Normal working hours will be between the hours of Monday through Friday, 7 a.m. through 5 p.m. If desiring to work during nights, early mornings, weekends or holidays, the Contractor must apply and obtain approval for off-hours Site access from the Engineer.
 - 5. Work shall be performed to minimize work zone impacts on motorists and adjacent terminals/businesses. Work in these areas shall be coordinated with the Engineer. Lane closures are anticipated to occur within the Port and City of Oakland limits. The Contractor shall adhere to the following requirements:
 - a. Any nightwork would be performed in accordance within SCA NOI-1: Days/Hours of Construction Operation.
- E. Hauling: Near the Port of Oakland, several permitted heavy-weight container routes are identified in order to provide traffic flow from the Port to the adjacent

freeway system. Any heavy-freight movement shall follow these routes. The Contractor will assume responsibility for any damage caused by the Contractor's operations. The Contractor is responsible for sweeping the haul route any time material debris resulting from construction operations is generated. The Contractor is responsible for checking for debris on the haul route on a daily basis. The Contractor must equip flaggers with Contractor-supplied hand-held Transceivers. Each flagger will be subject to review by Port staff to determine whether or not they are competent to perform flagging duties. Key routes include:

1. Maritime Street (for I-80 West and I-580 East)
2. Middle Harbor Road (for Port access)
3. 7th Street (for I-880)

F. Construction Organization:

1. The Contractor must plan, prepare, and organize each work shift so as to bring all necessary workforce, equipment, work trucks, and general conditions items - including sanitary facilities and adequate water supplies - into the work zone at the beginning of the shift. The Contractor's Employees must not make avoidable repeated trips in and out of the work zone during a work shift.
2. At the end of a work shift, the Contractor must clean up the work zone. The Contractor must return all equipment, supplies and incidentals to any prescribed or approved staging areas at the end of each work shift, unless otherwise allowed by the Engineer, and not including those items necessary for a work shift immediately following the concluding shift.

1.05 COORDINATION

For all coordination requirements, refer to Section 6, *Construction Work by Port or by Separate Contractors*.

A. General:

1. All of the Contractor's coordination with other contractors working on other projects, Port tenants, and Port forces must be through the Engineer (refer to Document 00700, Section 6.3, *Port Authority over Coordination*).
2. Refer to Subsection 15.4.1 of Document 00700 for the Port's right to sequence the Work as a consequence of the Contractor's failure to coordinate and cooperate.

B. Work under Other Contracts: As per Document 00700, Section 6.2, *Mutual Responsibility*, the Contractor must coordinate the Work with construction work, at or adjacent to the Site, performed by the Port, other contractors, or utilities.

Construction Work at or adjacent to the Site includes, but is not necessarily limited to the following:

1. Construction Package No. 1: Joint TMC/EOC
 2. Construction Package No. 3: ATMS (Construction)
 3. Construction Package No. 4: ATMS (Integration)
 4. Construction Package No. 5: Basic GoPort Application
 5. Construction Package No. 6: Smart Parking System
- C. Other Activities: The activities described below are anticipated to be in progress by others on or adjacent to the Site before and during the Work under this Contract. The Contractor must coordinate the Work fully and must coordinate shared access fully with others performing these other activities and other work.
1. 7th Street Grade Separation Project East
 2. 7th Street Grade Separation Project West
- D. Container and Rail Terminal Operations:
- Active container terminals and railyards commonly operate between 8:00 AM to 5:00 PM weekdays, and on occasion, outside of those hours and on Saturdays and Sundays. At the railyards and terminals, trains and ships are loaded and unloaded and containers are moved in and out by trucks and other equipment. The exact scope and scheduling of these activities cannot be accurately predicted.
1. Railyard and terminal operations must continue uninterrupted during the time of this Contract. The Contractor must schedule all Work of this Contract so as to avoid conflicts with terminal activity.
 2. The Contractor must not obstruct or in any way interfere with railyard or container terminal operation without prior approval of the Engineer.
 3. The following terminal activities are anticipated to be in progress on or adjacent to the work sites during the work under this Contract:
 - a. Industrial traffic within railyards and terminals.
 - b. Container handling operations within railyards and terminals.
 - c. Shipping operations within railyards and terminals.

1.06 CONSTRUCTION AND DEMOLITION DEBRIS WASTE REDUCTION

In accordance with the Port of Oakland Resolution No. 01197, included as Attachment 1 to Document 00455, *Construction and Demolition Debris Waste Reduction Requirements*, at least 50% of construction and demolition debris resulting from the project must be diverted from landfill. The City of Oakland has construction and demolition debris waste recycling goals of 65% of all construction debris, and 100% of all asphalt and concrete waste. To meet these goals, the Contractor must complete and submit the City of Oakland recycling forms as specified below, and must satisfy any waste reduction requirements established by the City of Oakland pursuant to the building permit.

- A. The Contractor must complete the Construction and Demolition Debris Waste Reduction and Recycling Plan form (WRRP form), included in the Project Manual as Attachment 2 to Document 00455, and submit it with the Bid, in accordance with the provisions of Document 00200, *Instructions to Bidders*.
- B. The Construction and Demolition Debris Material Tracking Sheet and Construction and Demolition Debris Recycling Planning Sheet, included in the Project Manual as Attachments 3A and 3B to Document 00455, are provided for Contractor's convenience. Use of these sheets is optional.
- C. At the conclusion of the Project and prior to final inspection by the Port, the Contractor must, in accordance with the provisions of Resolution 01197, Section 7(a), complete the Construction and Demolition Debris Recycling Summary Report form (SR), included in the Project Manual as Attachment 4 to Document 00455, and submit said form to:

Port of Oakland
Permit Coordinator
530 Water Street, 2nd Floor
Oakland, CA 94607

1.07 SPECIAL ENVIRONMENTAL REQUIREMENTS

Refer to Section 16.8, *Environmental Controls* of Document 00700, and Section 01340, *Safety and Environmental Submittals*.

- A. Refer to the permit requirements described in Article 1.12 of this Section.
- B. The Contractor must complete all submittals as required by Section 01340, *Safety and Environmental Submittals*, and must not commence Work without approval by the Port. The Contractor must comply fully with the requirements of such approved submittals and all other requirements of the Contract Documents that apply to such activities. The Contractor must comply with the NEPA Categorical Exclusion (Caltrans, August 2018).
- C. The Work **may** require the Contractor to remove, handle, transport and dispose of contaminated and hazardous substances.
- D. The Contractor must prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) as per the requirements of Section 01345, *Storm Water Pollution Prevention, Erosion and Sediment Control*, and must execute the approved SWPPP during performance of the Work.

1.08 SECURITY AND SAFETY

Refer to Section 16.2, *Protection of Work, Persons, and Property* and Section 16.3, *Responsibility for Safety and Health* of Document 00700, Document 00831, *Construction Safety Standard Manual*, Section 01340, *Safety and Environmental Submittals*, and Section 01343, *Safety Program and Safety Representative Requirements*.

- A. The Contractor will be responsible for security of the Work and of equipment and materials at the Site.

B. The Contractor must follow the rules and requirements of Section 01561, *Maritime Area Security*. In general, the Contractor must:

1. Ensure that all employees and subcontractor's employees working at the Site have a Transportation Worker Identification Credential (TWIC).
2. At all times, exercise control over any persons or vehicles, other than those from regulating agencies, visiting the work Site.
3. Coordinate security activities with other contractors who may be working within the project limits during the work of this Contract.
4. Following the Terminals' security and safety rules.

1.09 SCHEDULES

A. The Contractor must follow the requirements of Section 01320, *Construction Schedules and Reports*.

1.10 JOBSITE ADMINISTRATION

The Contractor must adequately and continuously administer the Work at the Site in accordance with Section 01310, *Jobsite Administration*.

1. Contractor's Field Office: Notwithstanding the requirements of Section 10.2, *Contractor's Office at the Work Site*, Document 00700, for this Project the Contractor is not required to maintain an office at the Site, but must keep and maintain all documents necessary to construct the project at the Site or in a work vehicle adjacent to the Site and immediately accessible.
2. Not having a designated office at the Site does not relieve the Contractor of posting signs and information as required by regulatory agencies, Section 01310, *Jobsite Administration*, and other Documents and Sections included in the Contract Documents.

1.11 CONTRACTOR AND ENGINEER JOINT SITE INSPECTION PRIOR TO WORK

Prior to commencement of Work, the Contractor and the Port must jointly survey the area adjacent to the Project area making permanent note and record of such existing damage at or adjacent to the Site. This record will serve as a basis for determination of subsequent damage to structures, conditions or other existing improvements due to the Contractor's operations. All parties making the survey must sign the official record of existing damage. The Contractor must report cracks, sags, or damage of any nature to the adjacent Project area, not noted in the original survey but subsequently noted, immediately to the Engineer.

1.12 PERMITS

All Contract Work must conform strictly to all permits, authorizations and requirements. Refer to Section 13.1, *Laws and Regulations* and Section 13.2, *Permits and Taxes*, of Document 00700, *General Conditions*, Section 01410, *Regulatory Requirements*, and Section 01411, *Regulatory Requirements for Hazardous Materials*.

- A. The Port will make available on-line copies of applicable permits, authorizations and requirements, including mitigations adopted by the Board of Port Commissioners, that have been issued prior to the time of the Bid.
- B. The Port will provide to the Contractor copies of permits, authorizations and requirements relevant to this Contract that have been issued to the Port by the regulatory agencies or that have been adopted by the Board of Port Commissioners.
- C. The Contractor is responsible for coordinating and cooperating with the Port to fulfill the terms of all applicable permits, authorizations, and requirements, including those issued after award of the Contract.
- D. The Contractor is responsible for the costs and results of all delays and fines resulting from the Contractor's failure to comply with the permits, authorizations and requirements.
- E. The Contractor must obtain any other required permits that have not been applied for by the Port, and must pay all remaining fees due. The Contractor must submit copies of all permits to the Engineer prior to commencing Work. The Contractor must provide any required submittals that may be necessary for the City to complete plan review. The Port will reimburse all applicable permit fees to the Contractor as per Paragraph 13.2.1 of Document 00700.
- F. If any new Environmental Permit or addendum to an existing permit applicable to the Work is issued after the time of opening of Bids, and changes to the Work are required in order to comply with new permit requirements, the Contractor may request additional compensation for such changes, pursuant to Document 00700, *General Conditions*, provided that: Such changes materially alters the Work in the Contract Documents; and such change could not be reasonably expected by the Contractor given the ordinarily encountered and generally recognized conditions under similar permits as the Environmental Permits that inherently apply to the performance of the Work provided in the Contract Documents.
 - 1. The Contractor must pay all costs of evaluating the implications for the Work of the terms, conditions and restrictions of the Environmental Permits, and of responding to any Requests for Proposals or Field Changes of Port that are issued in connection with the issuance of the Environmental Permits.
 - 2. Subject to the foregoing, the provisions of Section 01250, *Modification Procedures*, apply to any change in scope of the Work arising from the issuance of the Environmental Permits.
- G. As per Subsection 9.2.2 of Document 00700, the Contractor has full responsibility for arranging and obtaining inspections, tests, or approvals from permitting bodies as required, and furnishing the Port with the with the required certificates of inspection or approval.
- H. Permits applying to the Work will not limit or restrict the obligation of the Contractor in the performance of the Work to comply with any and all other permits that are described in the Contract Documents or that apply to the performance of the Work.

1.13 LINES AND LEVELS

Not Used.

1.14 SUBMITTALS

The Contractor must provide all submittals for the Port's review in accordance with Section 01330, *Submittals*. The required submittals for this project are generally, but not necessarily completely, compiled in Section 01331, *List of Submittals*.

Submittals specifically required by this Section include:

- A. An Underground Facility Location and Protection Plan.
- B. Records of all underground facilities located from the execution of the accepted Underground Facility Location and Protection Plan.

1.15 TRAFFIC CONTROL

Refer to Document 00700, Section 16.5, *Use of Roadways and Walkways*.

Prior to any Work requiring traffic control, the Contractor must submit a Traffic Control Plan as per the requirements of Section 01556, *Traffic Control*. Upon approval of the Traffic Control Plan, the Contractor must comply with its requirements.

1.16 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

Refer to Section 8.4, *Existing Utilities*, Section 13.4, *Notice of Concealed or Unknown Conditions*, and Section 16.2, *Protection of Work, Persons, and Property* of Document 00700 and Section 01725, *Preservation of Property*.

- A. As per 8.4.3 of Document 00700, prior to performing Work at the Site, the Contractor must layout the locations of all known existing utilities and other significant known underground structures.
- B. As per 13.4.1 of Document 00700, the Contractor is fully responsible for locating and protecting underground facilities, and the Contractor must:
 - 1. As per 01330, *Submittals*, submit an Underground Facility Location and Protection Plan. At minimum, the Plan should include provisions for:
 - a. Notifying Underground Service Alert (USA).
 - b. Locating all other underground facilities that members of USA will not or cannot locate.
 - 2. As per 01330, *Submittals*, submit records of all underground facilities located from the execution of the accepted Underground Facility Location and Protection Plan.
 - 3. Protect all underground known and discovered facilities as per the approved accepted Underground Facility Location and Protection Plan, and as required.

- C. As shown on the Plans, and as directed by the Engineer, the Contractor must pothole to locate utilities.
1. Prior to the start of Work, the Contractor must attend a Pre-Work Pothole Meeting with the Engineer to confirm pothole locations. This meeting will take place after USA markings have been completed.
 2. The Contractor must record all measurements taken from the top of the utility to the existing pavement surface. Measure to the nearest 0.1 foot.
 3. When potholing, the Contractor must:
 - a. Provide all special equipment, skilled personnel, and location services.
 - b. Provide traffic control, including materials, labor, and equipment in accordance with the requirements of the appropriate jurisdictions.
 - c. Neatly cut and remove existing pavement, generally 12" square for depths to 10 feet.
 - d. Remove the soil above the utility using vacuum excavation and compressed air to loosen the material, in order to safely expose the top of the utility. Provide dust control. The Contractor must not inject water during potholing without the written approval of the Engineer.
 - e. Backfill and compact with Class 2 aggregate base, and in paved areas, re-surface with cold asphalt to match the existing pavement section.
 - f. Clean up site after completion of work.
 - g. Furnish and install PK nails and high visibility "whiskers" in paved areas, and stakes in unpaved areas, directly above the center-line of the utility.
 - h. Provide a table that indicates the utility reference number, description of the utility including size and material.
- D. The Plans indicate existing above and below grade structures, drainage lines, storm drains, sewers, water, gas, electrical, hot water and other similar items and utilities that are known to the Port. All utilities shown on the Plans are shown in their approximate locations.
- E. The Contractor, at its own expense, must repair all damage to roadways resulting from the Contractor's hauling operation or other construction activities.

1.17 PROJECT MEETINGS

- A. The Contractor must attend weekly Progress Meetings as described in Section 01315, *Project Meetings*. The Port or the Engineer may also schedule daily meetings at the Engineer's prerogative and as required by the nature of the Work.

B. Prior to mobilization, the Contractor and the Engineer may hold a Site Mobilization Meeting at the Project Site, if requested by the Port. Topics may include:

1. Site access.
2. Environmental controls, including those required by the Approved Storm Water Pollution Prevention Plan (SWPPP).
3. Materials and equipment storage areas.
4. The Contractor's use of existing facilities.
5. Coordination with Port tenants, Port Staff, and other contractors.
6. Boundaries of Work areas.
7. Traffic Control.
8. Existing utilities, structures, monuments, and observation wells.

1.18 CONSTRUCTION-RELATED UTILITY SERVICE COORDINATION

A. Not Used.

1.19 CONSTRUCTION-RELATED UTILITY SHUT DOWN

A. Not Used.

1.20 PORT OCCUPANCY PRIOR TO ACCEPTANCE

- A. The Contractor must allow the Port to take possession of and use any completed or partially completed portion of the Work as soon as the Port's possession and use is possible without interference to any remaining Work.
- B. The Contractor will not be held responsible for damage to the occupied or used portions of the Work resulting from the Port's occupancy.
- C. Possession or use by the Port of Work or any part thereof as contemplated by this Article must not in any case be construed as constituting acceptance of Work or any part thereof. Such use will neither relieve the Contractor of any responsibilities under the Contract Documents, nor act as waiver by the Port of any of the conditions thereof.
- D. Use or occupancy by the Port prior to Final Acceptance of Work does not relieve the Contractor of its responsibility to maintain insurance and bonds required under the Contract Documents until the entire Work is completed and accepted by the Port.
- E. Prior to date of the Port's Final Acceptance of the Work, the Contractor must make all necessary repairs or renewals in the Work or those parts thereof so used, not due to ordinary wear and tear, but due to defective materials or workmanship or to the operations of Contractor, as required in Document 00700, *General Conditions*, Paragraph 9.3, *Correction of Defective Work*.

- F. Refer to Subsection 9.3.4, of Document 00700 for allowable modifications to the correction period start date for portions of the Work that the Port has taken possession or prior to Final Acceptance.

1.21 SITE SANITATION AND CLEANUP

Refer to Document 00700, Section 16.1, *Use of Site/Sanitary Rules*, in particular Subsections 16.1.1 and 16.1.3, and Section 16.2, *Protection of Work, Persons, and Property*.

The Contractor must:

- A. Maintain the work site in a clean and orderly condition during the Contract.
- B. Legally remove and dispose of spoils and debris resulting from the Work.
- C. As per Subsection 16.2.1 of Document 00700, the Contractor must abate, on a daily basis if necessary, any vandalism at the Site.
- D. Ensure that all materials and equipment are properly secured and the Site is left in a clean and orderly condition at the end of each work day and whenever the Contractor leaves the Site.
- E. Provide all necessary labor and equipment to fully collect, contain and legally dispose of all solid wastes generated by the Work of this contract.

1.22 PROJECT COMPLETION, CLOSEOUT, AND WARRANTIES

For Substantial Completion, Final Completion, Contract Closeout, and Warranty requirements, refer to Section 9.3, *Correction of Defective Work* of Document 00700, Section 01770, *Contract Closeout*, and Section 01780, *Project Record Documents*.

- A. As per Subsection 9.3.3 of Document 00700, the minimum correction period for all Work is one (1) year after the date of Final Acceptance. Refer also to Subsection 9.3.4 of Document 00700 and Article 1.20 F of this Section.
- B. As per the Technical Specifications, specific materials, equipment, or installations may have special warranties that exceed the terms of those stated in Section 9.3 of Document 00700. Those special warranties include, but are not necessarily limited to the following:

| Warranty Title | Specification Section and Article | Section Title |
|---------------------------------|-----------------------------------|--------------------------------------|
| 1-Year Electrical Work Warranty | 260519 – 1.6 | Electrical General Requirements |
| Low Voltage Transformer | 262200 – 1.6 | Low Voltage Transformers (120V-600V) |

| Warranty Title | Specification Section and Article | Section Title |
|--|--|---|
| Pole-Mounted Disconnect Switch | 262300 – 1.4 | Disconnect Switch |
| UPS Module | 263310 – 1.7 | Battery Backup System |
| UPS Battery | 263310 – 1.7 | Battery Backup System |
| 1-Year Warranty | 270543 – 1.7 | Underground Electrical and Telecommunications Conduits and Structures |
| Data Communications Network Equipment (3-Year Limited) | 272100 – 1.7 | Data Communications Network Equipment |
| Radio-Frequency Identification (3-Year Warranty) | 273246 – 1.10 | Radio-Frequency Identification |
| Cellular Modem – Manufacturer's Warranty | 338323 – 1.5 | Cellular Modem |
| 3-Year Warranty against defects in material, installation, workmanship, and operation. | 344001 – 1.6 | Signal Poles and Mast Arms |

1.23 PROJECT ADDRESS

For permitting and other purposes, the address associated with this project is 651 Maritime Street, Oakland, California.

1.24 COMPENSATION ADJUSTMENTS FOR ASPHALT PRICE INDEX FLUCTUATION

A. Not Used.

PART 2 - PRODUCTS

2.01 CONTRACTOR-FURNISHED PRODUCTS

Unless otherwise stated, as per Subsection 9.1.1 of Document 00700, Contractor-supplied

manufactured products must be new, and the Contractor must be able to produce an original bill of sale for any product so to provide proof that the product is authentic and new, and other proof to prove that the product is not re-conditioned for sale as new.

PART 3 - EXECUTION

Not applicable to this section.

END OF SECTION

SECTION 01331

LIST OF SUBMITTALS

The following submittals shall be numbered as indicated below.

| Submittal Number | Specification Section | Document Title and/or Comments * |
|------------------|--|---|
| 1. | 01320 Construction Schedules and Reports | Interim Baseline Construction Schedule (IBCS) Baseline Construction Schedule (BCS) |
| 2. | 01320 Construction Schedules and Reports | Monthly CPM Schedule Update (MUCS) |
| 3. | 01310 Job Site Administration | Information Regarding Contractor's Project Management Team |
| 4. | 01330 Submittals | Schedule of Submittals |
| 5. | 01340 Safety and Environmental Submittals | Health and Safety Plan for Potential Hazardous Waste Operations |
| 6. | 01340 Safety and Environmental Submittals | Storm Water Pollution Prevention Plan (SWPPP) |
| 7. | 01340 Safety and Environmental Submittals | Soil and Groundwater Management Plan |
| 8. | 01345 Storm Water Pollution Prevention, Erosion and Sediment Control | Debris Containment Plan |
| 9. | 01415 Air Pollution Management and Equipment Idling | Air Pollution Management and Equipment Idling Plan |
| 10. | 01563 Dust Control | Dust Control Plan |
| 11. | 01200 Measurement and Payment | Schedule of Values |
| 12. | 01561 Maritime Area Security | Construction Site Security Plan |

*** The Contractor shall ensure that all submittals required by the technical specification sections and other Contract Documents, whether or not listed herein, are submitted in accordance with Section 01330. The Contractor shall refer to the individual specification sections for complete and detailed information for all submittals listed in the specifications.**

Submittals: Technical Sections/Project Record Documents

The following submittals are listed in the order in which they appear in the Project Manual.

For the submittals listed below, submittal numbers shall be assigned by the Contractor at the time of submittal. Submittals listed below shall be numbered in the order in which they are submitted, beginning with the number “ 13.”

| Submittal Number | Specification Section | Document Title and/or Comments * |
|------------------|--------------------------------|--|
| | 01100 Summary of Work | Underground Facility Location and Protection Plan |
| | 01100 Summary of Work | Records of all underground facilities located from the execution of the accepted Underground facility location and protection plan |
| | 01556 Traffic Control Systems | Traffic Control Plan |
| | 01780 Project Record Documents | Project Record Documents |
| | 032100 Reinforcement Bars | Evidence of Materials Conformance |
| | 032100 Reinforcement Bars | Welder Qualification Test Records |
| | 032100 Reinforcement Bars | Manufacturer's Cut Sheets |
| | 032100 Reinforcement Bars | Shop Drawings |
| | 033000 Cast-in-Place Concrete | Aggregate Gradation Information |
| | 033000 Cast-in-Place Concrete | Certificate of Compliance for Cementitious Materials |
| | 033000 Cast-in-Place Concrete | Concrete Mix Design |
| | 033000 Cast-in-Place Concrete | Weighmaster Certificate |
| | 033000 Cast-in-Place Concrete | Plan for Protecting Concrete |
| | 033000 Cast-in-Place Concrete | Concrete Test Results |
| | 033100 Structural Concrete | Aggregate Gradation Information |
| | 033100 Structural Concrete | Certificate of Compliance for Cementitious Materials |
| | 033100 Structural Concrete | Certificate of Compliance for Admixtures |

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| Submittal Number | Specification Section | Document Title and/or Comments * |
|------------------|---|--|
| | 033100 Structural Concrete | Certificate of Compliance for Curing Compound |
| | 033100 Structural Concrete | Concrete Mix Design |
| | 033100 Structural Concrete | Weighmaster Certificate |
| | 033100 Structural Concrete | Plan for Protecting Concrete |
| | 260519 Low-Voltage Electrical Power Conductors and Cables | Electrical Cable Product Data and Manufacturer's Instructions |
| | 260526 Grounding and Bonding for Electrical Systems | Product Information for Grounding and Bonding Equipment |
| | 260526 Grounding and Bonding for Electrical Systems | Manufacturer's Qualifications |
| | 260529 Hangers and Supports for Electrical Systems | Product Information for Hangers, Supports, and Fasteners |
| | 260553 Identification for Electrical Systems | Product Information and Samples for Nameplates, Wire/Cable Tags, and Underground Warning Markers |
| | 262200 Low-Voltage Transformers (120V-600V) | Product Information for Transformers and Disconnect Switches |
| | 262200 Low-Voltage Transformers (120V-600V) | Installer Credentials |
| | 262200 Low-Voltage Transformers (120V-600V) | Identification and Tagging Plan |
| | 262200 Low-Voltage Transformers (120V-600V) | Sample Low Voltage Transformer Warranty |
| | 262200 Low-Voltage Transformers (120V-600V) | Sample Pole-Mounted Disconnect Switch Warranty |
| | 262300 Disconnect Switch | Disconnect Switch Shop Drawings |
| | 262300 Disconnect Switch | Disconnect Switch Warranty |

*** The Contractor shall ensure that all submittals required by the technical specification sections and other Contract Documents, whether or not listed herein, are submitted in accordance with Section 01330. The Contractor shall refer to the individual specification sections for complete and detailed information for all submittals listed in the specifications.**

| Submittal Number | Specification Section | Document Title and/or Comments * |
|------------------|--|---|
| | 262300 Disconnect Switch | Disconnect Switch Maintenance Manual |
| | 263310 Battery Backup System | Product Information |
| | 263310 Battery Backup System | Shop Drawings |
| | 263310 Battery Backup System | Records Drawings |
| | 263310 Battery Backup System | Test Reports |
| | 270543 Underground Electrical and Telecommunications Conduits and Structures | Product Information for Underground Conduits |
| | 270543 Underground Electrical and Telecommunications Conduits and Structures | Product Information for Underground Conduit and Duct Bank Accessories |
| | 270543 Underground Electrical and Telecommunications Conduits and Structures | Product Information for Innerducts |
| | 270543 Underground Electrical and Telecommunications Conduits and Structures | Product Information for Weld Kits and Tools |
| | 270543 Underground Electrical and Telecommunications Conduits and Structures | Product Information and Shop Drawings for Pull Boxes |

*** The Contractor shall ensure that all submittals required by the technical specification sections and other Contract Documents, whether or not listed herein, are submitted in accordance with Section 01330. The Contractor shall refer to the individual specification sections for complete and detailed information for all submittals listed in the specifications.**

| Submittal Number | Specification Section | Document Title and/or Comments * |
|------------------|--|---|
| | 270543 Underground Electrical and Telecommunications Conduits and Structures | Bore Profiles |
| | 271116 Communications Cabinets, Racks, Frames, and Enclosures | Shop Drawings for Enclosures |
| | 271116 Communications Cabinets, Racks, Frames, and Enclosures | Shop Drawings for Cabinet Foundations |
| | 271310 Single-Mode Fiber Optic Cable and Equipment | Product Data and Factory Certifications for Single-Mode Fiber Optic Cable, Underground Splice Closures, Fiber Optic Jumper Cables, Fiber Optic Pigtails, and Fiber Interconnect Centers |
| | 271310 Single-Mode Fiber Optic Cable and Equipment | Personnel Qualifications |
| | 271310 Single-Mode Fiber Optic Cable and Equipment | Warranty Information |
| | 271310 Single-Mode Fiber Optic Cable and Equipment | Log of Pulling Tension Values |
| | 271310 Single-Mode Fiber Optic Cable and Equipment | Record of Splices and Terminations |
| | 271310 Single-Mode Fiber Optic Cable and Equipment | Product Information for Permanent Identification Tags/Labels |
| | 272100 Data Communications Network Equipment | Installer Credentials |
| | 272100 Data Communications Network Equipment | Network Switch Product Information |
| | 272100 Data Communications Network Equipment | Fiber Optic Transceiver Product Information |

*** The Contractor shall ensure that all submittals required by the technical specification sections and other Contract Documents, whether or not listed herein, are submitted in accordance with Section 01330. The Contractor shall refer to the individual specification sections for complete and detailed information for all submittals listed in the specifications.**

| Submittal Number | Specification Section | Document Title and/or Comments * |
|------------------|---|--|
| | 272100 Data Communications Network Equipment | Link Testing Results |
| | 272100 Data Communications Network Equipment | Identification and Tagging Plan |
| | 272600 System Integration, Testing, and Commissioning | Equipment Integration Plan |
| | 272600 System Integration, Testing, and Commissioning | Acceptance Test Plan |
| | 273246 Radio-Frequency Identification | Product Data |
| | 273246 Radio-Frequency Identification | Cut Sheet for RFID Hardware |
| | 273246 Radio-Frequency Identification | Cut Sheet for RFID Software |
| | 273246 Radio-Frequency Identification | Test and Inspection Summary Report |
| | 312319 Dewatering | Dewatering Control Plan |
| | 312319 Dewatering | Daily Field Report for Dewatering Activities |
| | 312333 Trenching and Backfilling | Imported Material Samples |
| | 312333 Trenching and Backfilling | Imported Material Test Results |
| | 312333 Trenching and Backfilling | Potholing Submittal |
| | 315000 Excavation Support and Protection | Excavation Support System Plans |
| | 315000 Excavation Support and Protection | Trench Safety Plan (as required) |
| | 315000 Excavation Support and Protection | Structural and Topographical Protection Plan (as required) |
| | 321217 Small Quantity Asphalt Concrete Pavement | Aggregate Certifications |

*** The Contractor shall ensure that all submittals required by the technical specification sections and other Contract Documents, whether or not listed herein, are submitted in accordance with Section 01330. The Contractor shall refer to the individual specification sections for complete and detailed information for all submittals listed in the specifications.**

| Submittal Number | Specification Section | Document Title and/or Comments * |
|------------------|---|--|
| | 321217 Small Quantity Asphalt Concrete Pavement | Asphalt Concrete Job Mix Formulas |
| | 321217 Small Quantity Asphalt Concrete Pavement | Recycled Asphalt Pavement Formulas (as required) |
| | 321600 Curbs, Gutters, Sidewalks, and Driveways | Concrete Mix Design |
| | 323913 Bollard | Product Information for Bollard |
| | 338323 Cellular Modem | Catalog Cut-Sheets |
| | 338323 Cellular Modem | Configuration and Integration Settings Documentation |
| | 338323 Cellular Modem | Warranty for Cellular Modem |
| | 338323 Cellular Modem | Bandwidth Availability and Utilization Documentation |
| | 344001 Signal Poles and Mast Arms | Shop Drawings and Product Information |
| | 344001 Signal Poles and Mast Arms | Manufacturer's Maintenance Instructions and Product Warranty |
| | 344001 Signal Poles and Mast Arms | List of Equipment and Materials |
| | 344001 Signal Poles and Mast Arms | As-Built Plans |

END OF SECTION

*** The Contractor shall ensure that all submittals required by the technical specification sections and other Contract Documents, whether or not listed herein, are submitted in accordance with Section 01330. The Contractor shall refer to the individual specification sections for complete and detailed information for all submittals listed in the specifications.**

SECTION 01730

SPECIAL REQUIREMENTS FOR WORK ON PORT OR OTHER RAILROAD COMPANY PROPERTY

PART 1 – GENERAL

1.01 SUMMARY

This Section describes requirements for work on or near railroad tracks and work adjacent to and on the property of other railroad companies. This contract may include work adjacent to Union Pacific Railroad property. Railroad track to be maintained under this Contract will be used by both the Union Pacific Railroad (UPRR) and BNSF Railway Company (BNSF). The Port is a track owner as described in regulation of the Federal Railroad Administration and is required to institute the same safety requirements for Roadway Workers under the Code of Federal Regulations, Part 214 as the operating railroads (UPRR and BNSF).

1.02 GENERAL REQUIREMENTS

- A. All work within ten feet of the Port's railroad tracks shall be in compliance with the rules and procedures outlined in the Port of Oakland Roadway Worker Protection Plan.
- B. The Contractor shall obtain approval from the Engineer prior to the start of any work within ten feet of the Port's railroad tracks. The Contractor shall also notify the Engineer when the work is complete so that the Engineer can direct the Port's Roadmaster to inspect the track for safe operation and for removal of any track closure devices (i.e., derails, switch locks, etc.), prior to the reopening of the track.
- C. All work within 25 feet of UPRR railroad track and on UPRR property shall be in compliance with the Contractor's Roadway Worker Protection Plan (RWP). The Contractor's RWP shall be developed to comply with the requirements of both the UPRR and BNSF.
- D. The Contractor shall obtain approval from the UPRR and BNSF as required by either railroad before working on UPRR or BNSF property or within 10 feet of Port railroad track that either railroad may be entitled to operate on. The Contractor shall comply with all requirements of either the UPRR or BNSF when authorized to work on UPRR property, BNSF Property, or Port track that either railroad may be entitled to operate upon including railroad flagger coordination, approval of workplan details, and payment to the UPRR or BNSF for flagger services.

- E. Contractor shall have a background investigation performed on all employees that will be working on UPRR or BNSF property. The background screening shall at a minimum meet the criteria defined by the e-RAILSAFE program outlined at <http://www.e-railsafe.com> in addition to any other applicable regulatory requirements. The e-RAILSAFE program uses rail industry background screening standards. The Contractor shall obtain consent from all employees screened in compliance with the e-RAILSAFE program criteria to release completed background information to the Port, UPRR, or BNSF. The Contractor shall be subject to periodic audit to ensure compliance. The Contractor shall not permit its employees, subcontractors, or agents to perform services on UPRR or BNSF property who are not approved under e-RAILSAFE program standards. The Port, UPRR, or BNSF shall have the right to deny entry onto UPRR or BNSF property to any of Contractor's employees, subcontractors, or agents who do not display the authorized identification badge issued by a background screening service meeting the standards set for the e-RAILSAFE program or who pose a threat, in the reasonable opinion of the Port, UPRR, or BNSF, to the safety or security of railroad operations or property.
- F. Contractor's employees, subcontractors, agents, or invitees shall have completed the UPRR or BNSF Engineering Contractor Safety Orientation found at the web site www.contractororientation.com before entering UPRR or BNSF property. Contractor must ensure that each and every one of its employees, subcontractors, agents, or invitees possesses a card certifying completion of the UPRR or BNSF Engineering Contractor Safety Orientation before entering UPRR or BNSF property. The Contractor is responsible for the cost of Engineering Contractor Safety Orientation and must ensure that the certification is annually renewed.
- G. The Contractor's employees, subcontractors, agents, or invitees shall comply with the requirements of Attachment A, *Port of Oakland Roadway Worker Protection Plan*, Attachment B, *Minimum Safety Requirements for Union Pacific Contractors*, and Attachment C, *Requirements for Contractors Working on BNSF Right of Way*.

PART 2 — PRODUCTS {Not Used}

PART 3 — EXECUTION

3.01 REQUIREMENTS FOR WORK ON OR NEAR PORT RAILROAD TRACK AND SYSTEM

- A. The Contractor shall comply with the rules and regulations of the Port's railroad system, or the instructions of the Port Engineer in relation to the proper manner of protecting the tracks and property of the Port's railroad system, its tenants or licensees, at and in the vicinity of the work during the period of construction.

- B. The Contractor shall perform his work in such manner and at such times as shall not endanger, or interfere, with the safe operation of the tracks and property of the Port's railroad system, and traffic moving on such tracks, as well as wires, signals and other property of the Port's railroad system, its tenants or licensees, at or in the vicinity of the work.
- C. When any personnel, equipment or materials are within 10 feet, measured horizontally from the closest rail on which a train may operate, such a condition is considered fouling. The Contractor shall notify the Engineer preferably 7 calendar days, but not less than 3 calendar days prior to commencing any work on or over the Port's railroad system fouling space so that the Engineer can schedule a meeting with the Contractor and the Port's Roadmaster. The Contractor shall meet with the Roadmaster and the Engineer at least 48 hours before beginning such work.
- D. The Contractor shall take protective measures necessary to keep the Port's railroad system facilities, including track ballast, free of sand, or debris, resulting from his operations.
- E. As per the requirements of Section 00700, *General Conditions*, any damage to the Port's railroad facilities resulting from Contractor's operations will be repaired or replaced by the Contractor at Contractor's expense.
 - 1. If such work is not completed in a timely manner, the Port may elect to do the work itself and the cost of such repairs or replacement shall be deducted from the Contractor's payment.
 - 2. If working on active track, such repairs must be completed and approved by the Engineer before the end of the day.
- F. The Contractor shall not pile or store any materials, nor park any equipment when not in use, closer to the center of the nearest track, than permitted by the following permanent clearances:
 - 1. 15'-0" Horizontally from centerline of track
 - 2. 22'-0" Vertically above the top of any rail
- G. Above the top of any rail, the placement of falsework, forms, bracing or other construction supports, or the placement or driving of piles, shall not be closer to the center of the nearest of the Port's railroad system track than that allowed by the following temporary construction clearances:
 - 1. 10'-0" Horizontally
 - 2. 22'-0" Vertically

3.02 CONTRACTOR RESPONSIBILITY

The Contractor shall be responsible for identifying and complying with all UPRR or BNSF requirements similar to those listed in this Section.

PART 4 - ATTACHMENTS

Attachment A, Port of Oakland Roadway Worker Protection Plan

Attachment B, Minimum Safety Requirements for Union Pacific Contractors

Attachment C, Requirements for Contractors Working on BNSF Right of Way

[1]

SECTION 01730 – ATTACHMENT A

Port of Oakland Roadway Worker Protection Plan

The purpose of this plan is to prevent accidents and casualties caused by moving railroad cars, locomotives or roadway maintenance machines striking roadway workers or other roadway maintenance machines. This plan has been developed in response to the regulations in 49CFR214, Subpart C.

This Roadway Worker Protection Plan will be maintained and readily available to all roadway workers. Each Employee-in-Charge of the roadway safety of others (EIC), and each lone worker, will be provided with and must maintain a copy of this plan on the jobsite at the time of fouling the track.

Roles and Responsibilities

Responsibilities of the Port of Oakland

The Port of Oakland is responsible to ensure that its employees and contractors working within ten feet of Port of Oakland railway, or within twenty-five feet of other agencies' track, understand and comply with the rules and procedures outlined in this plan. Any work to be performed in that space must be approved by the Road Master or his Assistant before work is begun. The Road Master must also be notified when work is finished, and s/he must inspect the job before working limits are removed.

Every employee has the absolute right to challenge the work procedures on a roadway worksite in good faith if s/he believes they do not meet the rules set forth in this plan. If an employee does challenge the work procedures, s/he has the right to remain clear of the track until the challenge is resolved. In order to quickly and fairly resolve these challenges, this plan sets forth the following procedure:

The job foreman or EIC of crews may check with the Road Master to determine if there are new or altered on-track safety procedures. The Road Master will resolve any safety issue that comes up, with the input of the EH&SC Safety Unit. In the case of new or previously unrecognized hazards, the Road Master may consult with the Federal Railroad Administration staff for guidance. Written challenges to roadway safety issues will be resolved through existing procedures, such as grievances.

Responsibilities of Individual Roadway Workers

Each roadway worker is responsible for following the on-track safety rules of the railroad upon which s/he is located. Roadway workers may not foul a track except when necessary for the performance of the maintenance work they are undertaking. All roadway workers have the right to refuse to violate an on-track safety rule, and must inform their employer whenever they determine in good faith that the track safety provisions do not comply with the on-track safety rules of the railroad.

Supervisors' Responsibilities

Supervisors (including Foremen) who assign work that calls for an employee to foul a track must ensure that employee(s) are provided with a job briefing that includes information on the means by which on-track safety is to be provided, and instruction on the on-track safety procedures to be followed. The job briefing for on-track work is only considered complete when the employee(s) acknowledge understanding of the information presented.

Every roadway work group whose duties require fouling a track will have one EIC designated to provide on-track safety for all members of the group. The EIC will be qualified under the rules of the Port of Oakland to provide the protection necessary for the on-track safety of each individual in the group. The EIC may be designated generally, or specifically for a particular work situation.

Before any new members of a roadway work group foul a track, the designated person providing on-track safety for the group must hold a job briefing to inform them of the on-track safety procedures to be used. The EIC must also inform each worker any time the on-track safety procedures change during the work period. This notification must precede the change in procedures, except in case of emergency. If there is an emergency that does not allow for all employees to be notified prior to a change in safety procedures, each worker must immediately leave the track area. The employees may not return to the track area until on-track safety is restored.

On-Track Safety Procedures

Working limits, generally.

Working limits established on non-controlled track shall conform to the provision of § 214.327 inaccessible track. Working limits established under any procedure shall, in addition, conform to the following provisions:

214.319(a)

(a) Only a roadway worker who is qualified in accordance with § 214.353 of this part shall establish or have control over working limits for the purpose of establishing on-track safety.

214.319(b)

(b) Only one roadway worker shall have control over working limits on any one segment of track.

214.319(c)

(c) All affected roadway workers shall be notified before working limits are released for the operation of trains. Working limits shall not be released until all affected roadway workers have either left the track or have been afforded on-track safety through train approach warning in accordance with § 214.329 of this subpart.

Working Limits on Non-Controlled Track

All of the Port of Oakland's railroad tracks are non-controlled. For work within ten feet of this type of track, working limits must be established by rendering the track within working limits physically inaccessible to trains at each possible point of entry by one of the following features:

- a) A watchman/lookout with instructions and capability to hold all trains and equipment clear of the working limits;
- b) A switch or derail aligned to prevent access to the working limits and secured with an effective securing device by the roadway worker in charge of the working limits; and/or
- c) A discontinuity in the rail that precludes passage of trains or engines into the working limits.

On-Track Safety Procedures for Roadway Work Groups

No roadway worker who is a member of a roadway work group may foul a track without having been informed by the EIC that on-track safety is provided. The EIC must also notify the Road Master of such work prior to fouling the track or taking the track out of service for maintenance or repairs.

On-Track Safety Procedures for Lone Workers

A lone worker who fouls a track while performing routine inspection or minor correction may use individual train detection to establish on-track safety only when permitted by the Road Master. Each lone worker retains an absolute right to use on-track safety procedures other than individual train detection if s/he deems it necessary, and to occupy a place of safety until such other form of on-track safety can be established.

Individual train detection may be used to establish on-track safety only:

- a) By a lone worker who has been trained, qualified, and designated to do so by the employer in accordance with the procedures outlined below;
- b) While performing routine inspection and minor correction work;

- c) Where the lone worker is able to visually detect the approach of a train from 200 feet moving at the maximum speed authorized on that track (10 mph for Class 1 track), and move to a previously determined place of safety, not less than 15 seconds before the train would arrive at the location of the lone worker; and
- d) Where the ability of the lone worker to see and hear approaching trains and other on-track equipment is not impaired by background noise, lights, precipitation, fog, passing trains, or any other physical condition.

The place of safety to be occupied by a lone worker upon the approach of a train may not be on a track, unless working limits are established on that track.

A lone worker using individual train detection for on-track safety while fouling a track may not occupy a position or engage in any activity that would interfere with that worker's ability to maintain a vigilant lookout for, and detect the approach of, a train moving in either direction as prescribed in this section. The lone worker using individual train detection for on-track safety must first complete a written Statement of On-Track Safety. The statement must designate the limits of the track for which it is prepared and the date and time for which it is valid. The statement must show the maximum authorized speed of trains within the limits for which it is prepared, and the sight distance that provides the required warning of approaching trains. The Statement of On-Track Safety must be produced by the lone worker for inspection when requested to do so by a representative of the Federal Railroad Administration.

Blank Statement of On-Track Safety forms are available from the Road Master. All completed forms must be returned to the Road Master within 2 days of filling out. Completed Statements of On-Track Safety will be on file for a minimum of three years after the completion of the work referenced. These records will be available for Federal Railroad Administration inspecting during regular business hours.

Audible Warning from Trains

The locomotive whistle must be sounded, and the locomotive bell be rung, by trains approaching roadway workers on or about the track. Such audible warning shall not substitute for other required on-track safety procedures.

Operation of On-Track Machines and Equipment

On-Track Safety for employees who operate or work near roadway machines shall comply with the following instructions in:

- a) On-Track Safety procedures outlined in this manual, and
- b) Rules governing on-track machines and equipment. These rules include:
- c) Speed requirements
 - 1. Movement over grade crossings
 - 2. Following cars or trains
 - 3. Signal to stop
 - 4. Passing trains
 - 5. Operating over switches, frogs, and derails

Instruction for Safe Operations

Any employee who operates on-track machines must be assured that On-Track Safety has been provided. The type of On-Track Safety to be used will be determined by the Employee In Charge of the work group, as discussed in job briefings.

Operators must make a running test of brakes immediately upon movement of work equipment.

The type of On-Track Safety will comply with the provisions of this manual.

***Training and Qualification for Operators of On-Track Machines and Equipment**

The training and qualifications as a roadway worker for operating on-track equipment shall include, as a minimum:

- a) Procedures to prevent a person from being struck by the machine when working around equipment.
- b) Procedures to prevent any part of the machine from being struck by a train or other equipment on another track.
- c) Procedures to provide for stopping the machine short of other machines and/or
- d) Methods to determine safe operating procedures for each machine which the operator is expected to operate.

Note: An initial and annual performance evaluation for the qualification of operator or roadway maintenance machines must be tested by demonstrated proficiency.

Procedures to Prevent Being Struck by Maintenance of Way Machine or Roadway Equipment

Job Briefing/Communication

Machine operator will attend a job briefing conducted by the Employee in Charge (EIC), that will include:

- a) Responsibilities of operators,
- b) Responsibilities of ground employees,
- c) Passing of trains,
- d) Unattended or tying up of equipment
- e) Knowledge and understanding of signaling devices, and
- f) Hand signals to be used.

Responsibilities of Ground Employees

Know and understand the work and safety zones around equipment:

Work Zone – extends from a point at least 15 feet in front of the machine to a point at least 15 feet behind the machine.

Safety Zone – all employees on the track as well as self-propelled machines and equipment have a 15-foot safety zone. This zone will not be entered without a job briefing, and without a notification to and understanding by operators that employees are near the machine.

Ground employees must know and understand the signaling devices that may be used:

- a) Police whistle
- b) Air horn
- c) White disk
- d) Locomotive whistle/horn
- e) On-track equipment whistle/horn

Responsibilities of Operators

Operators of track machines, roadway machines or equipment are charged with the responsibility of knowing that their machines or equipment are in safe operative condition before starting the day's work.

Operators must assure themselves that proper protection is being afforded their operation.

- a) The operator's manual must be kept with each machine. This manual must include instructions for the safe operation of the machine.
- b) Operators must not approach within 15 feet of employees fouling the tracks without first communicating with them.
- c) Machines such as cranes and ballast regulators require lateral and side clearance to ensure the safety of the employee. Operator must notify employees working in the vicinity of these machines before they are operated.
- d) Pre-arranged signals to move must be decided upon. Suggested signals are:
 - Train approaching: Siren or many long blasts until train is seen by everyone.

- Forward movement: Two short blasts at least one second apart.
- Reverse movement: Three short blasts at least one second apart.
- e) Maintain proper clearance at all times between power lines and booms. When in doubt of safe clearances between power poles and machines, the operator will notify the EIC before beginning work.
- f) Locomotive cranes, hy-rails with booms or other on-track equipment will not be turned or swung when moving, unless it is determined the boom angle and load weight will permit safe operation. Special care must be taken when operating on curves or other location where the track is super elevated.
- g) While working, a minimum distance of at least 50 feet must be maintained between machines, unless specified in a job briefing.
- h) Machines shall keep at least 200 feet apart while traveling.
Exception: When necessary to "bunch" up to move over road crossings at grade, a distance of at least 50 feet between machines will be maintained.
- i) When two or more machines are moving together, the operators will hold a job briefing and agree on the signal that will be used when stopping.

Passing of Trains

Pile drivers, wrecking cranes, wrecking derricks, on-track machines or other equipment must not be operated when trains or other moving equipment are passing on an adjacent tracks.

When unloading ballast or other material from a train, work must be stopped when trains or engines or passing on an adjacent track.

Unattended or Tying-Up of Equipment

When leaving or tying-up equipment, observe the following requirements:

- a) Set brake and secure booms or other extensions to prevent fouling adjacent tracks.
- b) Lower devices attached to booms, such as clam shells, so they rest on the ground, idler car, or work bed, as applicable.
- c) Stop motor.
- d) Lock ignition.
- e) Machine operators will dismount machine on the field side of the track, away from traffic. Operators will stand beside the machine and direct the next piece of equipment to a stop. Each operator will do the same in turn.
- f) Operators and employees will remain next to their equipment and not go between machines until all machines have come to a stop and brakes are set.
- g) When the EIC gives the all-clear sign, the operator will secure equipment with lock and chain.
- h) All vandalism protective covers and devices must be locked (if equipped).
- i) On grades, wheels must be securely blocked and chained to the rail.
- j) Keys must be in possession of operator or other authorized employee.
- k) When leaving equipment on the track, properly line, lock and tag switches to prevent movement onto the occupied track.

Training and Qualification of Port Roadway Workers

The Port will not assign an employee to perform the duties of a roadway worker unless that employee has received training in the on-track safety procedures associated with the assignment; and has demonstrated the ability to fulfill the required on-track safety procedures.

Initial and Recurrent Training

The Port, through its Road Master, in coordination with the EH&SC Safety Unit, will provide all roadway workers with initial training on this plan and on on-track safety rules and procedures. Refresher training will be provided to all roadway workers at least annually.

Training Contents

All training for roadway workers will include, as a minimum, the following:

- a) Recognition of railroad tracks and understanding of the space around them within which on-track safety is required;
- b) The functions and responsibilities of various persons involved with on-track safety procedures;
- c) Proper compliance with on-track safety instructions given by persons performing or responsible for on-track safety functions;
- d) Signals given by watchmen/lookouts, and the proper procedures upon receiving a train approach warning from a lookout;
- e) The hazards associated with working on or near railroad tracks, including review of the Port's on-track safety rules and procedures.

Training and Qualification for Lone Workers

Each lone worker will be trained and qualified to establish on-track safety in accordance with the requirements of this Plan. The training and qualification will include, as a minimum, consideration of the following factors:

- a) Detection of approaching trains and prompt movement to a place of safety;
- b) Determination of the distance along the track at which the trains must be visible in order to provide the prescribed warning time.

Initial and periodic qualification of a lone worker shall be evidenced by demonstrated proficiency, through a testing procedure or on-site evaluation of work practices. This evaluation will be carried out by the Road Master in coordination with the EH&SC Safety Unit.

Train approach warning provided by watchmen/lookouts.

Roadway workers in a roadway work group who foul any track outside of working limits shall be given warning of approaching trains by one or more watchmen/lookouts in accordance with the following provisions:

214.329(a)

(a) Train approach warning shall be given in sufficient time to enable each roadway worker to move to and occupy a previously arranged place of safety not less than 15 seconds before a train moving at the maximum speed authorized on that track can pass the location of the roadway worker.

214.329(b)

(b) Watchmen/lookouts assigned to provide train approach warning shall devote full attention to detecting the approach of trains and communicating a warning thereof, and shall not be assigned any other duties while functioning as watchmen/lookouts.

214.329(c)

(c) The means used by a watchman/lookout to communicate a train approach warning shall be distinctive and shall clearly signify to all recipients of the warning that a train or other on-track equipment is approaching.

214.329(d)

(d) Every roadway worker who depends upon train approach warning for on-track safety shall maintain a position that will enable him or her to receive a train approach warning communicated by a watchman/lookout at any time while on-track safety is provided by train approach warning.

214.329(e)

(e) Watchmen/lookouts shall communicate train approach warnings by a means that does not require a warned employee to be looking in any particular direction at the time of the warning, and that can be detected by the warned employee regardless of noise or distraction of work.

214.329(f)

(f) Every roadway worker who is assigned the duties of a watchman/lookout shall first be trained, qualified and designated in writing by the employer to do so in accordance with the provisions of § 214.349.

214.329(g)

(g) Every watchman/lookout shall be provided by the employer with the equipment necessary for compliance with the on-track safety duties which the watchman/lookout will perform.

Training and Qualification for Watchmen/Lookouts

The training and qualification for roadway workers assigned the duties of watchmen/lookouts will include, as a minimum, consideration of the following factors:

- a) Detection and recognition of approaching trains;
- b) Effective warning of roadway workers of the approach of trains;
- c) Determination of the distance along the track at which trains must be visible in order to provide the prescribed warning time;
- d) Rules and procedures of the Port of Oakland for working on non-controlled tracks.

Initial and annual qualification for a watchman/lookout will be evidenced by demonstrated proficiency.

Training and Qualification of Employees-in-Charge (EIC) who Provide On-Track Safety for Roadway Work Groups

The training and qualification of roadway workers who provide for the on-track safety of groups of roadway workers through the establishment of working limits, or through the assignment and supervision of watchmen/lookouts, shall include, as a minimum:

- a) All the on-track safety training and qualification required of the roadway workers to be supervised and protected;
- b) The content and application of the Port of Oakland roadway rules pertaining to the establishment of working limits;
- c) The relevant physical characteristics of the territory of the Port upon which the roadway worker is qualified.

Initial and annual qualification for a roadway worker to provide on-track safety of groups will be evidenced by a recorded examination.

Training Records

Training records will be maintained by the EH&SC Safety Unit for a minimum of three years. These records will be available for inspection and photocopying as requested by the Federal Railroad Administration.

Qualifications of Contractor Roadway Workers

Before work begins, Contractor Roadway Workers must provide to the Roadmaster documentation on the qualifications and training of:

- a) Employee-in-Charge
- b) Watchmen/Lookouts
- c) Lone Workers

Evaluation of Roadway Worker Protection Plan

This Roadway Worker Protection Plan will be reviewed annually by the Principal Port Safety Administrator, and any accidents, near misses, and the nature of roadway work will be investigated to determine whether changes to the Plan are necessary. Any changes to the Plan will be promptly disseminated with roadway workers and other involved individuals.

Definitions

Adjacent Tracks: Two or more tracks with track centers spaced less than 25 feet apart.

Controlled Track: Track upon which all movements of trains must be authorized by a control operator.

Employee-in-Charge: A Roadway Worker designated, trained, and qualified to provide on-track safety for members of a Roadway Work Group.

Exclusive Track: A method of establishing working limits on controlled track in which movement occupancy authority of trains and other equipment is withheld by the control operator or restricted by flagmen.

Fouling a Track: Placement of an individual or a piece of equipment in such a proximity to a track that the individual or equipment could be struck by a moving train or on-track equipment, or in any case is within ten feet of the field side of the near running rail.

Fouling Space: The fouling space includes the track itself and the area surrounding the track, to a distance of ten feet out from the rail on each side.

Inaccessible Track: A method of establishing working limits on non-controlled track by physically preventing entry and movement of trains and equipment.

Individual Train Detection (ITD): Procedure by which a lone worker acquires On-Track Safety by seeing approaching trains and leaving the track before they arrive.

Lone Worker: An individual Roadway Worker who is not being afforded On-Track Safety by another Roadway Worker, who is not a member of a Roadway Work Group, and who is not engaged in a common task with another Roadway Worker.

Non-Controlled Track: Track upon which trains are permitted by railroad rule or special instruction to move without receiving authorization from a Train Dispatcher or Control Operator. Typical examples include yard tracks and industrial side tracks.

On-Track Safety: A state of freedom from the danger of being struck by a moving train or equipment, provided by operating and safety rules that govern track occupancy by personnel, trains, and on-track equipment.

Roadway Work Group: Two or more Roadway Workers organized to work together on a common task.

Roadway Worker: Any employee of a railroad, or of a contractor to a railroad, whose duties include inspection, construction, maintenance or repair of railroad track, bridges, roadway, signal and communication systems, electric traction systems, roadway facilities or roadway machinery on or near track or with the potential of fouling a track.

Train Approach Warning: A method of establishing On-Track Safety by warning workers of the approach of trains in ample time for them to move to or remain in a place of safety.

Watchman/Lookout: An employee who has been annually trained and qualified to provide warning to Roadway Workers of approaching trains or on-track equipment. Watchmen/Lookouts shall be properly equipped to provide visual and auditory warning such as a whistle, air horn, red flag, or lantern. A Watchman/Lookout's sole duty is to look out for approaching trains/on-track equipment and provide at least 15 seconds warning to employees before the equipment's arrival.

Working Limits: A segment of track with definite boundaries upon which trains and engines may move only as authorized by the roadway worker having control over that defined segment of track. Working limits may be established through exclusive track occupancy, foul time, or inaccessible track.

Speed/Distance Table

| 15 Second Travel Distance | |
|----------------------------------|-------------------------|
| Train speed (m.p.h.) | Distance in feet |
| 10 | 220 |
| 20 | 440 |
| 30 | 660 |
| 40 | 880 |
| 50 | 2200 |
| 60 | 1320 |
| 70 | 1540 |
| 80 | 1760 |
| 90 | 1980 |
| 100 | 2200 |
| 110 | 2420 |
| 120 | 2640 |

- END OF ATTACHMENT A -

SECTION 01730 – ATTACHMENT B

Minimum Safety Requirements for UPRR Contractors

Union Pacific Railroad

Revised 3/17/11

Minimum Safety Requirements for UPRR Contractors

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The Union Pacific Railroad is committed to providing the safest workplace possible for, not only our own employees, but also the Contractors employees. Adherence to these minimum safety requirements, plus additional instructions at the job site, will help to ensure an injury-free project. The railroad employee in charge is authorized to take any actions necessary to prevent injuries to any person, damage to railroad property, disruption of railroad operation, and the safety of the public.

1.0 General Safety Requirements

The safety of personnel, property, rail operations, and the public is of paramount importance in execution of the work pursuant to this agreement. The terms Contractor, Contractor-in-Charge and Contractor Employees as used in this document refer to all Employees of the contractor as well as all Employees of any subcontractor.

The Contractor shall be responsible for the safety of his workers and subcontractors in compliance with Federal, State, and Local Regulatory Agencies including but not limited to the Occupational Safety Health Administration and the Federal Railroad Administration. As reinforcement and in furtherance of overall safety measures to be observed by the Contractor (and not by way of limitation), the following special safety rules shall be followed:

The Contractor shall keep the job site free from safety and health hazards and ensure that its Contractor Employees are competent and properly trained in all safety and health aspects of the job. Specifically, the Contractor must ensure that:

The Contractor shall have proper first aid supplies available on the job site and someone trained as a 1st responder so that prompt first aid services can be provided to any person that may be injured on the job site.

The railroad is promptly notified of any reportable injury (as defined by the U. S. Occupational Safety and Health Administration) to an employee that occurs during the performance of work at the job site.

The railroad is promptly notified of any damage to railroad property.

Contractor Employees do not use, be under the influence of, or have in their possession any alcoholic beverage or illegally obtained drug, narcotic, or other substance while on railroad property.

All waste is properly disposed of in accordance with applicable federal and state regulations.

No open fires are permitted on railroad property.

All contractors vehicles stop at all railroad crossings to ascertain the way is clear.

Seat belts must be worn on vehicles and equipment so equipped.

All service vehicles and fuel trucks must be equipped with an audible backup warning device, fire extinguisher and first-aid kit.

Headlights must be turned 'on' when operating motor vehicles on Railroad property. In addition, four-way flashers must be turned 'on' while operating in intermodal facilities. It is permissible to turn headlights off when stopped on railroad property at night to prevent "blinding" other personnel working in the same area.

Strobe lights on fuel trucks shall be illuminated when operating on Railroad property and while fueling equipment; and service trucks equipped with strobe lights shall be illuminated while servicing equipment.

Always keep vehicles a safe distance away from the outside of the rail, and **DO NOT** park vehicles or equipment foul of a railroad track.

Contractor-In-Charge or Contractor Employees will notify UP representative of any hazardous material spill observed in their work area. Any spill from a locomotive or car is to be reported immediately.

Contractor Employees will participate in and comply with any job briefings conducted by the Railroad Representative. During these briefings, the Contractor and the Railroad Representative will specify safe work procedures, the potential hazards of the job, and Emergency Response Procedures. If any participant has any questions or concerns about the work, he/she must voice them during the job briefing. Additional job briefings will be conducted during the work as conditions, work procedures, or personnel change.

Contractor and Contractor Employees must take every precaution to prevent injury to themselves, other employees, and the public.

All track work performed by the Contractor meets the minimum safety requirements established by the Federal Railroad Administration's Track Safety Standards 49CFR213.

All excavations, holes and trenches are protected to prevent injuries to other workers, railroad employees or the public.

Ensure that the Union Pacific policy of NO SMOKING on company property is enforced.

All Contractor and Contractor Employees must comply with the following safety procedures when working around any railroad track:

Always be on the alert for moving equipment. Contractor Employees must always expect movement on any track, at any time, in either direction.

Do not step or walk on the top of the rail, frog, switches, guardrails, or other track components.

In passing around the ends of standing cars, engines, roadway machines or work equipment, leave a minimum of 20 feet between yourself and the end of the equipment. Do not go between pieces of equipment if the opening is less than 100 feet as a minimum.

Avoid walking or standing on a track unless authorized by the Railroad Representative.

Before stepping over or crossing tracks, look in both directions first.

Do not sit on, lie under, or cross between cars except as required in the performance of your duties and only when equipment has been protected against movement and authorized by the Railroad Representative.

No tools or materials are left close to the track when trains are passing.

All Contractor Employees comply with all Federal, State and local regulations concerning Workplace Safety.

All Contractor Employees must have and be wearing a badge or readily shown identification showing employment with the Contractor.

1.1 Regulatory Training Requirements

The railroads insist on 100% training compliance that is required by all Federal, State and Local Safety Regulations depending on the scope of the work. Contractors must be aware of, understand and comply with ALL Federal, State and Local Workplace Safety Regulations, including, but not limited to, the following:

- **Fall Protection**

The contractor must ensure that its employees comply with fall protection requirements contained in:

- FRA's Bridge Worker Safety regulations 49 CFR 214, Subpart B when working on railroad bridges, and
- OSHA's Fall Protection regulations 29 CFR 1926, Subpart M when working on all other elevated structures.

The contractor must review the fall protection plan with the railroad's employee in charge before commencing work.

- **Confined Spaces**

The contractor must ensure that its employees comply with OSHA's Confined Space regulations 29 CFR 1910.146. If it will be necessary to enter or work in a confined space (permit-required or non-permit required), the contractor must review the confined space entry plan with the railroad's employee in charge. Examples of confined spaces on Railroads are:

- Sanitary and storm sewer systems
- Sand towers
- Underground utility vaults
- Boilers
- Pipe/utility tunnels
- Enclosed railroad cars (covered hoppers, tank cars, etc.)
- Pits

In addition, the contractor must:

- Obtain any available information regarding permit-required confined space hazards and entry operations from the railroad's entry supervisor.
- Coordinate entry operations with the railroad's Employee In Charge, when both railroad employees and contractor personnel will be working in or near the permit-required confined spaces, so employees of both the railroad and the contractor do not endanger each other.

- **Tunnel Safety**

Prior to working in any railroad tunnel, the contractor must review the specific tunnel safety plan with the railroad's employee in charge. The contractor must anticipate that employees may be required to wear respirators while working in the tunnel. Therefore, the contractor's employees should be medically cleared and fit-tested for the appropriate respirators prior to commencing work.

The contractor's employees must participate in all job briefings pertaining to their work in the tunnel and comply with instructions given in the job briefings.

- **Excavation Work**

The contractor must ensure that all employees comply with OSHA's Excavations regulations 29 CFR 1926, Subpart P. If it will be necessary to work in or around an excavation, the contractor must review the excavation safety plan with the railroad's employee in charge prior to commencing work.

- **Hazardous Chemicals**

In accordance with the Hazard Communication Standard (HCS) issued by the Occupational Safety and Health Administration (29 C.F.R. Part 1910.1200), the UPRR has developed and implemented its Hazard Communication Program. At the specific UPRR facilities where potentially hazardous chemicals may be present, the UPRR maintains a copy of its Hazard Communication Written Plan ("Written Plan") which, among other things, includes a list of the hazardous chemicals that may be present at the facility involved and the availability of Material Safety Data Sheets (MSDS). The Written Plan is available for review by the Contractor and any of its officers, employees and agents.

The Contractor shall determine if the Work to be performed by Contractor under normal conditions or in a foreseeable emergency will expose the Contractor, its officers, employees or agents to any hazardous chemicals on UPRR property as listed in the Written Plan and if so shall (1) review the Written Plan for the specific facility involved, and (2) inform its officers, employees and agents of such hazardous chemicals and that they may review the UPRR's Written Plan and obtain copies of applicable MSDS.

The HCS also requires that the parties to this Agreement exchange MSDS, as well as any additional information about precautionary measures necessary to protect both parties' employees where exposure may occur. The Contractor shall provide such information to the UPRR, its officers, employees and agents, before the Contractor uses any hazardous chemicals (as defined in the HCS) in, on or about any premises or **facilities of the UPRR.**

In the event of a spill involving hazardous chemicals, the contractor must immediately contact the railroad's Employee In Charge.

- **Asbestos**

The contractor must ensure that all employees comply with OSHA's Asbestos regulations 29 CFR 1926.1101 when working with any materials known to contain asbestos. The contractor must review with the railroad's employee in charge their plan to protect all personnel from the hazards of airborne asbestos.

- **Lead**

The contractor must ensure that all employees who are exposed to lead comply with OSHA's Lead regulations 29 CFR 1926.62. Each contractor must have a program that protects its employees and others who are in or near the work site from the hazards of airborne lead. Work processes covered in this program include but are not limited to routine and emergency maintenance of bridges, buildings, overhead cranes, sand towers, tanks, scales and other steel structures with lead-based coatings.

The contractor must review with the railroad's employee in charge their plan for protecting all personnel from exposure to lead before commencing work.

- **Roadway Worker Protection**

The contractor must ensure that all Engineering Contractors comply with the FRA's Roadway Worker Protection regulations as required by 49 CFR 214.343 when they are working within 25 feet of any track. Written documentation of training and qualification must be carried by Contractor employees.

- **Fire Risk – "Hot Work"**

As referenced in this section, "Hot Work" is defined as any work activity that produces sparks or open flame. Hot Work includes, but is not limited to, use of abrasive wheels to cut or grind; thermite welding; flash-butt welding; arc welding; cadweld bonding; and use of a torch. No Hot Work shall be performed by the Contractor unless the contractor has first (1) contacted the Railroad's local supervisor to review the applicable department's "Fire Prevention Plan", and (2) determined all preventive measures to be taken based on the risk assessment. Any UPRR contractor performing Hot Work must:

- Have a copy of UPRR's applicable department "Fire Prevention Plan" in its possession.

- Have a completed Fire Risk Assessment in its possession.
- Be in strict compliance with the preventive measures required for the Hot Work being conducted and the level of fire risk identified in the risk assessment.

2.0 Clothing

The Contractor-In-Charge is responsible to ensure that all Contractor Employees will be suitably dressed to perform their duties safely and in a manner that will not interfere with their vision, hearing, or free use of their hands or feet. Specifically, the Contractor Employees must wear:

- Waist length shirts with sleeves.
- Trousers that cover the entire leg. If flare-legged trousers are worn, the trouser bottoms must be tied to prevent catching.

Contractor Employees must not wear loose or ragged clothing, neckties, finger rings, or other loose jewelry while operating or working on machinery.

3.0 Personal Protective Equipment

The Contractor-In-Charge shall require its Employees to wear personal protective equipment as specified by OSHA and Railroad rules and regulations. In particular, the protective equipment to be worn shall be:

- Hard hat that meets the American National Standards Institute (ANSI) Z89.1 latest revision. Eye protection that meets the ANSI standard for occupational eye and face protection, Z87.1 latest revision. Additional eye protection must be provided to meet specific job situations such as welding, grinding, burning, etc. During fueling operations, splash goggles or face shield with safety glasses is required and face shield must be in the down position when standing directly behind the fuel nozzle.
- Hearing protection that affords enough attenuation to give protection from noise levels that will be occurring on the job site. Hearing protection, in the form of plugs or muffs, must be worn when Contractor Employees are within:
 - 100 feet of a locomotive/Refrigeration Car or roadway/work equipment
 - 15 feet of power operated tools
 - 150 feet of jet blowers or pile drivers
 - 150 feet of retarders in use (when within 10 feet, Contractor Employees must wear dual ear protection plugs and muffs)

Safety-toed footwear that conforms to the American National Standards Institute (ANSI) must be worn while on the job. Shoes must have a defined heel and no thin soled or canvas style shoes shall be worn.

Other types of personal protective equipment, such as respirators, fall protection equipment, orange reflectorized vests, and face shields, must be worn as directed by the working conditions or area the Contractor Employees are in.

- Effective November 24, 2008, federal regulation (23CFR634) mandates that anyone working in the right-of-way of a federal-aid highway must be wearing high-visibility clothing that meets the requirements of ANSI / ISEA 107;2004 edition class 2 or 3. High-visibility clothing is defined to mean personal protective safety clothing that is intended to provide conspicuity during both daytime and nighttime usage.

4.0 On Track and Off Track Work Equipment

It is the responsibility of the Contractor-In-Charge to ensure that all on track and/or off track work equipment is in a safe condition to operate. There must be a written inspection process regarding daily, weekly and other periodic inspections for work equipment operated on Union Pacific property, including inspections mandated by FRA, AAR, OSHA and/or other government agencies. In addition to the inspection process there must be a written maintenance process that includes timelines regarding resolution of safety sensitive defects. If, in the opinion of the Railroad Representative, any of the Contractors equipment is unsafe for use, the Contractor shall remove such equipment from the railroads property. The Contractor-In-Charge must ensure that there is a written training and qualification process for operators and support personnel regarding operation of such equipment. Written documentation of training and qualification must be carried by Contractor employees. In addition:

- The operators of all work equipment must be properly trained and competent in the safe operation of the equipment. Operators must be:
 - Familiar and comply with OSHA regulations on lockout/tagout of work equipment.
 - Familiar and comply with FRA Regulation Title 49CFR214 Subpart D dealing with Roadway Maintenance Machine Safety.
 - Trained in and comply with the applicable operating rules if operating any hy-rail equipment on-track.
 - Trained in and comply with the applicable air brake rules if operating any equipment that moves rail cars or any other rail-bound equipment.
- The operators manual, which includes instructions for safe operation, must be kept with each machine.
- All self-propelled equipment is equipped with fire extinguisher and audible back-up warning device.
- Unless otherwise authorized by the Railroad Representative, all unattended equipment is parked a minimum of 25 feet from any track and minimum of 250 feet from any road crossing. Before leaving any equipment unattended, the operator must stop the engine and properly secure the equipment against movement.
- Cranes are equipped with three orange cones that will be used to mark the working area of the boom and load and the minimum clearances to overhead power lines. All overhead lines are considered to be high voltage.
- All moves are well communicated by the Contractor-In-Charge and coordinated with other Contractor Employees and the Railroad Representative at the job site. Emergency signals to stop movements may be given by anyone.
- No equipment is moved or coupled into while under any color signal protection of workmen.
- No handbrakes are released on rolling equipment unless authorized by Railroad Representative.
- No deraills are applied or removed without Railroad Representative permission.
- The Contractor shall provide its own Hazardous Energy Control (Lock-out/Tag-out) procedures and devices to prevent injury to Railroad and Contractor Employees from unexpected energization, start-up, or release of stored power in machines with which they are working.

- The Contractor shall comply with all requirements of the U.S. Occupational Safety and Health Administration (OSHA) Standard 29 CFR 1910.147 on controlling hazardous energy

5.0 Working Around Live Tracks (Red Zones)

Prior to beginning work on live track the Contractor-In-Charge must notify a Railroad representative and a job briefing must be conducted with the Railroad representative. Engineering Department Contractors are governed by FRA Roadway Worker Protection regulations, referenced in 49CFR214, Subpart C, which requires some form of On-Track Safety prior to fouling any track.

Red Zones are defined as that area within an arms length of the track, or any physical position, which places the employee in a life-threatening situation. The following two rules are key to Red Zone compliance.

Alert to Train Movement

Contractor Employees must expect the movement of trains, engines, cars or other moveable equipment at any time, on any track and in either direction.

Sufficient Distance

Maintain a safe distance from equipment and DO NOT:

- Cross or step foul of tracks closely in front of or behind moving equipment or close to the end of equipment.
- Go between standing equipment if the opening is less than 100 feet.
- Cross tracks in front of or behind standing equipment unless there is at least 20 feet between the employee and the equipment.

Use three-point contact when getting on and off locomotives and cars.

In locomotive and car repair facilities where equipment has been spotted for repair, and the distance between that equipment or around the end of equipment is less than specified, Contractor Employees may go between or around the equipment provided that the equipment is under Blue Signal Protection of Workmen in accordance with GCOR Rule 5.13 and the employee knows that no movement will be made by the equipment.

These are two of many Red Zone rules that deal with moving equipment. Any questions that arise related to working in the Red Zone should be directed to the Railroad Representative.

6.0 Engineering Department Contractors Only

6.1 On-Track Safety

The Contractor is responsible for compliance with the Federal Railroad Administrations Roadway Worker Protection regulations (49CFR214, Subpart C) and UPRRs On-Track Safety rules. Under 49CFR214, Subpart C, railroad contractors are responsible for the training and qualifications of their employees on these regulations. Contractor employees must have documentation of their training and qualifications while on the work site. At a minimum, each contractor employee must be trained as a Roadway Worker. Additional training and qualification requirements for the positions of Machine Operator, Lookout or Lone Worker must be met for those contractor employees performing those functions.

In addition to the instructions contained in FRAs Roadway Worker Protection regulations, all contractor employees must:

- Maintain a distance of at least 25 feet to any track unless the railroads EIC is present to authorize movements.
- Wear an orange, reflectorized vest or similar orange, reflectorized workwear approved by the railroads EIC. (High visibility safety apparel must be worn when working adjacent to Federal highway)
- Participate in a job briefing that will specify the type of On-Track Safety for the type of work being performed. Contractors must take special note of limits of track authority, which tracks may or may not be fouled, and clearing the track. They will also receive special instructions relating to the work zone around machines and minimum distances between machines while working and traveling.

6.2 Lockout / Tagout Procedures on MofW Equipment

The Contractor -in-Charge must be aware of and Contractor Employees must adhere to applicable State, Federal and Railroad rules and regulations on lockout/tagout.

A. Lockout/Tagout Procedures During Work.

Follow these steps when servicing, maintaining, adjusting, or repairing equipment during the course of work when On-Track Safety has been established:

1. Notify the employee in charge and the equipment operators on both sides of your equipment that a lockout/tagout is in progress. Let them know where you are located and in which direction you are working, so they will know whether you are behind them or in front of them.
2. Place 1 orange cone in the center of the track at least 15 feet from each end of your equipment.
Note: Other equipment operators are required to stop when approaching an orange cone and may not proceed until it is removed.
3. Tagout the equipment according to the procedures in Section D.
4. After completing the maintenance or repair, promptly notify the employee in charge and all affected employees that you are discontinuing the lockout/tagout process.
5. Remove the cones and tags.

B. Lockout/Tagout Procedures When Equipment Is Tied Up.

When equipment is tied up on a track, follow these steps to service, maintain, adjust, or repair equipment:

1. Ensure that switches leading to the equipment have been lined against the track the equipment is on.
 - Ensure that switches are spiked, clamped, tagged, and locked to prevent movements onto that track.
 - If the switches cannot be locked, or if it is necessary to use part of the track for train or track car movements, you may protect equipment with a derail that is locked in the derailling position 150 feet or as conditions warrant in advance of the equipment.

2. Apply your scissors lock, personal padlock, and tag to these switches or derails. Note: The scissors lock allows others working on equipment to place their personal padlocks and tags to ensure their own lockout/tagout protection.

EXCEPTION: When equipment is tied up under the direct supervision of an employee in charge:

- The employee in charge may provide protection as long as he or she can prevent any movements onto that track.
 - Before beginning work, the operator or mechanic must inform the employee in charge of the operator or mechanic's presence and request permission to work on the equipment.
 - The employee in charge must not release the limits or allow movements onto the track until he or she communicates with all affected employees to make sure they are in the clear.
3. Place 1 orange cone on each side of your equipment.
EXCEPTION: If other equipment is within 15 feet, place the orange cones as far in advance of your equipment as possible.
 4. Tagout the equipment according to the procedures in Section D. Note: If other employees are present, conduct a job briefing to discuss the lockout/tagout process being used.
 5. After completing the maintenance or repair, promptly notify the employee in charge and all affected employees that you are discontinuing the lockout/tagout process.
 6. Remove the cones, tags, and locks.
 7. When the last lock is removed, remove the scissors lock.

C. Tagout Procedures Inside Shops

When performing service, maintenance, adjustments, or repair inside a shop, place the MW roadway machine and work equipment in a safe area and secure it according to the general tagout procedures described in Section D.

D. General Tagout Procedures.

Follow these steps to tagout equipment:

1. Apply the equipment's parking brake.
2. Test the brake to make sure it holds the equipment in position. If the brake does not hold, or if you are not sure it will hold, block the equipment to prevent any unexpected movement.
3. Lower all hydraulic components to the ground or secure them with their locking devices.
4. Mechanically secure all equipment components in a safe condition.
Note: Components must be mechanically locked or blocked to prevent any movement of the equipment or component, which could endanger workers in the area.

5. Shut down the equipment at the operator's controls.
6. Attach a railroad approved "Do Not Operate" tag at the operator's controls for each worker.
7. Remove the key from the ignition switch of engine powered equipment such as welders, light plants, small compressors, etc. If the ignition key does not remove all electrical control sources, or if the equipment does not have an ignition key switch, place the main battery switch in the OPEN position and secure the battery box. Attach a "Do Not Operate" tag. If the equipment does not have a battery disconnect switch, disconnect the battery leads and attach a "Do Not Operate" tag to the battery lead. Place as many tags as necessary to ensure that the equipment will not be started or energized unexpectedly.
8. Remove any sources of stored energy, including:
 - Electrical
 - Mechanical
 - Hydraulic
 - Pneumatic
 - Chemical
 - Thermal
 - Any other sources that may activate a component
9. Follow any special manufacturer procedures to ensure that the equipment is safe for performing maintenance or service.
10. Test the security of the tagout. If the equipment cannot be started and the components cannot be energized, you can start maintenance or service safely.

E. Unsafe Equipment

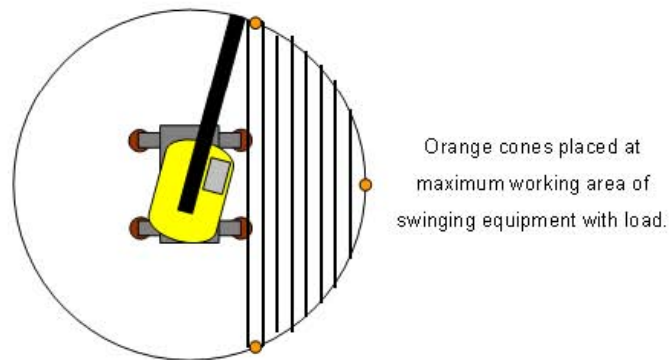
Place a red tag marked "Unsafe" on equipment that is removed from service and unsafe to use. Sign and date the tag. Only the employee who places this tag should remove it.

EXCEPTION: If the employee who placed the tag cannot be located, the employee in charge may remove the tag, but only after a mechanic thoroughly inspects the equipment to ensure it is safe to operate.

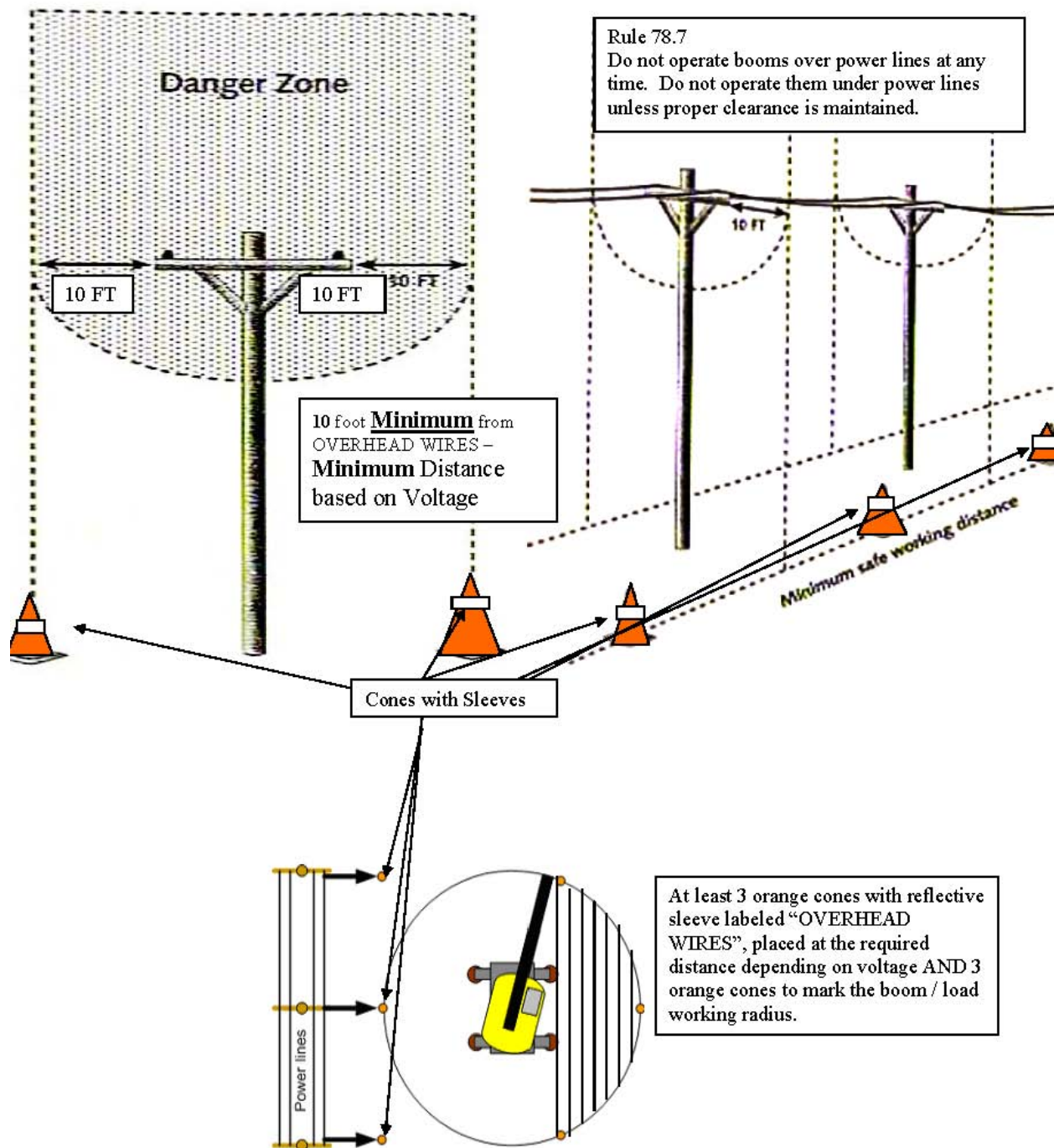
6.3 Orange Cone Policy

There are five required uses of orange cones in the Engineering Department:

1. **To mark the maximum working area of swinging equipment and its load at a stationary worksite.** This would include but is not limited to cranes, backhoes, trackhoes and trucks with knuckle, articulated or telescopic booms. The purpose of marking this working area is to remind employees from inadvertently fouling the working area where material and equipment is being handled. In addition, the cones will also serve as a visual reminder of the working area for the operator. Unless absolutely necessary (e.g. employee guiding load with a non-conducting tagline) and a job briefing with the operator has been conducted, employees are prohibited from entering this working area while the equipment is in operation. **(Note: This prohibition also applies to non-stationary worksites where cones are not required i.e. a pick and carry situation or when a piece of equipment works while moving down a track.)**

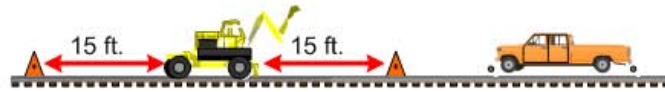


2. **To mark overhead power lines at stationary worksites per Rule 78.7.2 and where equipment with the capability to reach within 10 feet of them will be traveling / moving.** Cones used for this purpose must be equipped with a reflective sleeve (PB-21957 "Overhead Wires") that slips over the cones. If these sleeves are unavailable a flagman must be stationed by the cones to warn the operator when the boom approaches the danger zone. Additionally, per rule 78.7, Do not operate booms over power lines at any time.



3. **To isolate a piece of equipment that is being worked on from other M/W equipment.** Chief Engineers Instruction Bulletin 135.3.2 (Lockout/Tagout of M/W Equipment) states:

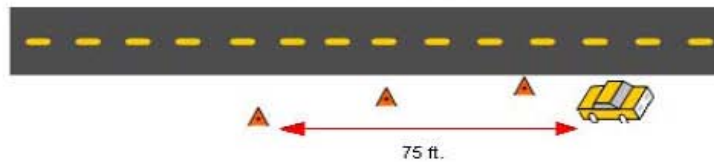
A.2 Place one orange cone in the center of the track at least 15 feet from each end of the equipment.



4. **To protect an employee who is responding to an emergency call at a highway road crossing or who is parked foul of the traveled portion of any public road.** Chief Engineers Instruction Bulletin 137.3.3 (Emergency Work Zone Traffic Control) states:

B. Note C: Place 3 orange emergency cones (if available) at approximately 25 foot increments behind the parked vehicle below to warn oncoming traffic. If cones are not available, use highway flagging reflectors."

If orange cones are not available, highway flagging reflectors must be used.



NOTE: In some cases, (because of State or Local requirements) employees may be required to carry and use 7 cones with reflective collars for flagging protection.

5. **As a reminder to remove a track shunt as stated in Chief Engineers Instruction Bulletin 137.2.3 C,4 & 5.**

4." The EIC places the track shunt and documents the shunt location on the track authority form to serve as an additional reminder to remove the shunt before releasing the protection. In all cases, **place an orange cone alongside the track shunt** as a reminder to remove the track shunt when the work is completed."

5." When the work in the approach is completed, the employee in charge removes the track shunt and the orange cone."

Vehicles that must be equipped with orange cones

All Engineering Department vehicles, except passenger sedans, must be equipped with 3 orange cones at all times and used as described in this policy. **NOTE:** Equipment with booms will require 6 cones when working within 10 feet of power lines. Passenger sedans must carry a highway flagging kit to protect employees and vehicle at road crossings and when parked foul of a public road. Orange cones may be ordered through store stock:

For trucks less than 15,000 lbs. GVW and equipment without booms:

Item 380-0675 Cone, Safety, full skirt design, flexible, high visibility fluorescent orange, 18" high with a 6" reflective collar

For trucks greater than 15,000 lbs. GVW and all equipment with booms:

Item 380-0652 Cone, Safety, full skirt design, flexible, high visibility fluorescent orange, 36" high
OR

Item 380-0654 Cone, Traffic Safety 28", with 4" and 6" reflective collars

Item PB-21957 Reflective sleeve that fits over cones and labeled " OVERHEAD WIRES "

If you have any questions about this policy, please ask your manager, director, or manager of safety.

NOTE: Safety Rule 78.7.1 Proper Clearances and 77.4 Groundman are attached for reference.

78.7.1: Proper Clearances

If booms must be operated near energized lines, the following clearances must be maintained:

- Lines rated 50 KV (50,000 Volts) or less, minimum clearance between the lines and any part of the crane or load must be 10 feet.
- Lines rated over 50 KV (50,000 Volts) and less than 170 KV (170,000 Volts), minimum clearance between the lines and any part of the crane or load must be 15 feet.
- Lines rated over 170 KV (170,000 Volts), minimum clearance between the lines and any part of the crane or load must be 15 feet plus 1/2 inch per KV in excess of 170 KV (170,000 Volts).
- When in transit, with no load and boom lowered, the equipment clearance must be a minimum of 8 feet for voltages less than 15 KV and 10 feet for voltages 15 to 50 KV. For voltages 50 to 470 KV, the clearance must be increased 1/2 inch per KV in excess of 50 KV.

A groundman must be designated to observe equipment clearance and give timely warning for all operations when it is difficult for the operator to observe clearance.

77.4: Groundman

When a crane or similar unit is being used, when needed, the helper or supervisor in charge, must act as groundman or assign a competent person as groundman.

The groundman is responsible for directing and safe-guarding all machine movements. Before signaling boom or machine movement, the ground man must see that the load, cab or boom will not come in contact with nearby wires, structures or other objects and persons. Groundmen required to move cars or on-track equipment must be qualified on the use of their braking systems.

7.0 MECHANICAL DEPARTMENT CONTRACTORS

7.1 Fueling and Supplying/ Loading and Unloading Cars & Locomotives Red Flag Protection

Contractors fueling and supplying locomotives/cars including loading and unloading freight cars and loading or unloading at intermodal ramps shall use Red Flag protection against movement as outlined in 7.2 below.

7.2 Signs Protecting Equipment (GCOR Rule 5.14)

When a sign reading Stop Tank Car Connected; Stop-Men Working; Employees Working; Service Connections or a similar warning is displayed on a track or car, the car must not be coupled to or moved. Other equipment must not be placed on the same track in a manner that would block or reduce the view of the sign.

7.3 Blue / Red Flag Protection for Fueling and Servicing Reefers

Contractors fueling and servicing refrigerated railcars and intermodal equipment shall comply with rules governing the use of 'Red Flags' in Section 7.0 and 'Blue Signal Protection' in Section 8.0 for protection against movement and all applicable procedures and policies related to Direct to Locomotive (DTL) Fueling. Blue Signal Protection (Blue Flags) may be required in lieu of Red Flags at some locations or when servicing refrigerated equipment, as determined by the Railroad representative.

7.4 Protection of Loading and Unloading Operations (Safety Rule 83.1.3)

Contractors will follow the procedure and policy as outlined below to comply with OSHA standards:

1. Effective Lockout Protection

Line the switch away from movement or place a derail at least 150 feet (50 feet if track speed is 5 MPH) from end of rolling equipment and secure the switch or derail with an effective locking device. The derail or switch must be able to restrict access to the portion of track where work is being performed.

One Locking Device. Use one locking device if the employees being protected: Are assigned to work together as a unit under a common authority. Communicate with each other while working.

Additional Locking Devices. If more than one working group exists, the employees must communicate and apply an additional locking device to the derail or switch.

2. Red Flag.

At each lockout position, display a red flag that can be clearly seen during the day. At night, display a red light with the flag. Do not place a derail or switch in the lockout position until red flag protection is in place. Do not remove the red flag protection until lockout protection is removed.

3. Common Authority.

Common authority must be established. The person or persons in authority must:

- Communicate with all employees being protected by a red flag and lockout device.
- Control the red flag and the only keys to the lockout protection.
- Be responsible for the safety of all employees in the working area.

Do not work on the track or railroad rolling equipment until both ends of the track have a red flag and lockout protection.

- Contractors fueling Remote Control Locomotives (RCL) and/or Distributed Power Locomotives (DPU) shall also be governed by the related policies in 7.4 which also covers red flag requirements when fueling manned and unmanned DPU trains.

7.5 Cars Being Loaded or Unloaded (Safety Rule 81.17)

Personnel who load or unload cars are responsible to:

- Remove and clear platforms, boards, tank car couplings and connections, conveyers, loading or unloading spouts, similar appliances or connections, vehicles and other obstructions.
- Ensure plug-type and swinging doors on cars are closed.

- Make sure persons in, on or about cars have vacated cars before allowing switching.
- Avoid damaging lading of partly loaded cars.
- If cars are equipped with bridge plates, raise and lock the plates.

Preventing Uneven Loads. When loading or unloading cars, take precautions to prevent the load from becoming unevenly distributed which may cause the car to overturn or derail.

- Do not handle cars with improper or uneven loads if the load could shift or fall from the car or the car could derail or overturn.

7.6 Remote Control Locomotive (RCL) and Direct to Locomotive (DTL) Fueling Policy

Yards with Remote Control Locomotives (RCL's) have warning signs at each entrance to yard. RCL locomotives are also marked with decals on the car body. Policy for DTL fueling is as follows:

1. RCL locomotives will DTL fuel at designated fueling locations only.
 2. DTL vendor must secure permission from a UPRR Yardmaster or local manager before fueling at yards with RCL operations.
 3. DTL vendor must be informed the RCL locomotive is in manual mode by a UPRR Yardmaster, local manager or RCL operator before fueling.
 4. The DTL vendor must confirm that the locomotive strobe light is not flashing before he may begin fueling.
 5. DTL vendor will set red flags / red lights after receiving permission from UPRR to fuel.
- At most locations, the DTL vendor notifies the UPRR when fueling is completed.

Distributed Power Locomotives (DP's) - DTL Fueling Policy

DP trains are operating in several corridors and the program will continue to expand. At several locations DTL fuel DP trains with crews on the equipment. DP fueling policy will cover manned and unmanned DP trains. Manned will be the most common scenario at this time. Locations such as North Platte, NE may have additional requirements to establish protection. This information will be issued by the Service Unit.

Manned DP Fueling Policy

1. DTL vendor must have working UPRR radio. Information to establish protection may be relayed by radio in emergency only.
2. DTL vendor will contact train ordered to fuel by radio to establish protection prior to entering the "red zone". Vendor is to use train symbol or lead locomotive number to contact the crew. Vendor should use their company name in all radio conversations. Crew will give permission to enter red zone and inform vendor the train is "set and centered". Set and centered means the air brakes are set and the locomotive reverser is centered.
3. DTL vendor can initiate fueling without setting red flags after receiving permission to enter red zone.
4. When all locomotives are fueled, DTL vendor will contact train crew and inform them the train is

fueled and they are clear of the red zone.

Unmanned DP Fueling Policy

1. DTL vendor must secure permission from Dispatcher, Yardmaster or local manager before fueling.
 2. DTL vendor will set red flags / red lights at both ends of DP train prior to fueling and after receiving permission from the railroad to fuel. Prior to placing red flag protection on non-manned DPU trains the DTL vendor must secure permission and be aware of the controlling DPU locomotive. The red flag must be placed on the controlling DPU locomotive in the train.
 3. DTL vendor will remove red flags / red lights and notify the UPRR that the train is fueled.
- Contractors loading and unloading freight cars shall be governed by 7.4.

8.0 Working on Cars and Locomotives Blue Signal Protection

The Blue Signal protection rule is designed to protect the Contractor and the Contractor Employees and Railroad Employees while working on, under or between locomotives or railcars. Contractor Employees performing any task requiring the workmen to work on, under or between rolling equipment, where workmen are exposed to potential injury from rolling equipment are required to be trained in and follow the local Blue Signal Rules. Blue signal Protection is required (but not limited to) the following tasks:

- Those assigned to inspect, test, repair, or service railroad equipment or components, including brake systems.
- Troubleshooting, obtaining downloads, load testing, power testing, wheel truing, drop pit operations, use of any test equipment directly attached to the locomotive.
- Performing startup, inbound & outbound checks, and testing and card tasks.
- Opening a carbody door, electrical door or electrical panels and the vertical plane of the door or panel is broken with any part of the body other than when starting or shutting down a locomotive or servicing tools inside the carbody.
- Inspecting trucks or other components under the main frame carbody and the vertical plane is broken with any part of the body.
- Contractor Employees working on Remote Control Locomotives (RCL) will be governed by the following SALART 94-14R10:

***** SAFETY IS MY RESPONSIBILITY *****

MECHANICAL DEPARTMENT SALERT

Number: 94-14R10

SUBJECT: BLUE SIGNAL PROTECTION OF WORKERS 5.13

EFFECTIVE: 03/15/94

REVISION: 10

REVISED 12/29/05

REFER TO UPRR RULE 5.13 (BLUE SIGNAL/FLAG PROTECTION OF WORKERS), SECTION B. (HOW TO PROVIDE PROTECTION), AND C. (BLUE SIGNAL READILY VISIBLE TO ENGINEER).

ADDITIONAL TASKS REQUIRING BLUE SIGNAL/FLAG PROTECTION INCLUDE:

- TROUBLESHOOTING, OBTAINING DOWNLOADS, LOAD TESTING, POWER TESTING, WHEEL TRUING, DROP PIT UNITS OR THE USE OF ANY TEST EQUIPMENT DIRECTLY ATTACHED TO THE LOCOMOTIVE.
- PERFORMING STARTUP, INBOUNDING & OUTBOUNDING CHECKS, TESTING AND CARD TASKS.
- OPENING A CARBODY DOOR, ELECTRICAL DOOR OR ELECTRICAL PANELS AND THE VERTICAL PLANE OF THE DOOR OR PANEL IS BROKEN WITH ANY PART OF THE BODY OTHER THAN WHEN STARTING OR SHUTTING DOWN A LOCOMOTIVE OR "SERVICING" TOOLS INSIDE THE CARBODY.
- INSPECTING TRUCKS OR OTHER COMPONENTS UNDER THE MAIN FRAME CARBODY AND THE VERTICAL PLANE IS BROKEN WITH ANY PART OF THE BODY.

INDIVIDUAL TAG

- EACH LOCOMOTIVE DEPT. EMPLOYEE WILL AFFIX A BLUE ID TAG WITH HIS/HER NAME AND CRAFT TO THE BLUE SIGNALS/FLAGS. A SEPARATE RED TAG "WORKING BELOW" MAY BE CLIPPED TO THE BLUE ID TAG TO INDICATE WHO IS WORKING BELOW.
- WHEN WORK IS COMPLETED EACH EMPLOYEE WILL REMOVE THEIR BLUE TAG (S) FROM THE BLUE SIGNAL/FLAG. THE LAST EMPLOYEE TO REMOVE THEIR BLUE TAG WILL CHECK TO BE CERTAIN THAT NO OTHER EMPLOYEES ARE ON, UNDER, OR BETWEEN THE EQUIPMENT AND THEN REMOVE THE BLUE SIGNALS/FLAGS.
- MECHANICAL LOCOMOTIVE EMPLOYEES MAKING REPAIRS OUTSIDE OF A DESIGNATED FACILITY MUST APPLY A BLUE ID TAG TO THE ISOLATION SWITCH OF THE LEAD UNIT.
- WHEN BOARDING EQUIPMENT VISUALLY CHECK FOR A BLUE TAG ON THE ISOLATION SWITCH OF THE CONTROLLING LOCOMOTIVE. IF A BLUE TAG IS PRESENT, THE CONTROLS (INCLUDING THE HORN, BELL, AND ELECTRICAL SWITCHES) MUST NOT BE OPERATED UNTIL THE BLUE TAG IS REMOVED.

REMOTE CONTROL LOCOMOTIVES (RCL)

PRIOR TO PLACING BLUE SIGNAL/FLAG PROTECTION, ENSURE THAT THE REMOTE CONTROL FUNCTION HAS BEEN DISABLED.

- RCL LOCOMOTIVES (INCLUDING RCL SLUG UNITS) MUST HAVE THE REMOTE CONTROL SELECTOR SWITCH PLACED IN THE "MANUAL POSITION". WHEN APPLICABLE, THE REMOTE CONTROL AIR BRAKE ISOLATION VALVE MUST BE PLACED IN "MANUAL POSITION".

- WHEN OUTSIDE OF A DESIGNATED FACILITY ALL MECHANICAL DEPT. EMPLOYEES MAKING REPAIRS TO A REMOTE CONTROL LOCOMOTIVE (RCL) OR ROLLING EQUIPMENT ATTACHED TO RCL AND/OR RCL SLUG UNITS MUST APPLY A BLUE ID TAG TO THE REMOTE/MANUAL SELECTOR SWITCH.
- RCL EQUIPPED LOCOMOTIVES MAY BE PLACED IN REMOTE MODE UNDER BLUE FLAG PROTECTION TO SERVICE RCL EQUIPMENT/FUNCTIONS ONLY WHEN ALL OF THE FOLLOWING REQUIREMENTS ARE MET:
 1. EMPLOYEE PLACING LOCOMOTIVE IN RCL HAS BEEN TRAINED TO REPAIR AND OPERATE RCL EQUIPMENT.
 2. ALL EMPLOYEES INVOLVED ON THE UNIT AND/OR TRACK ARE JOB BRIEFED AND WARNED AGAINST POSSIBLE INADVERTENT MOVEMENT OF LOCOMOTIVE.

DISTRIBUTIVE POWER UNITS (DPU) – SERVICING OR REPAIRING

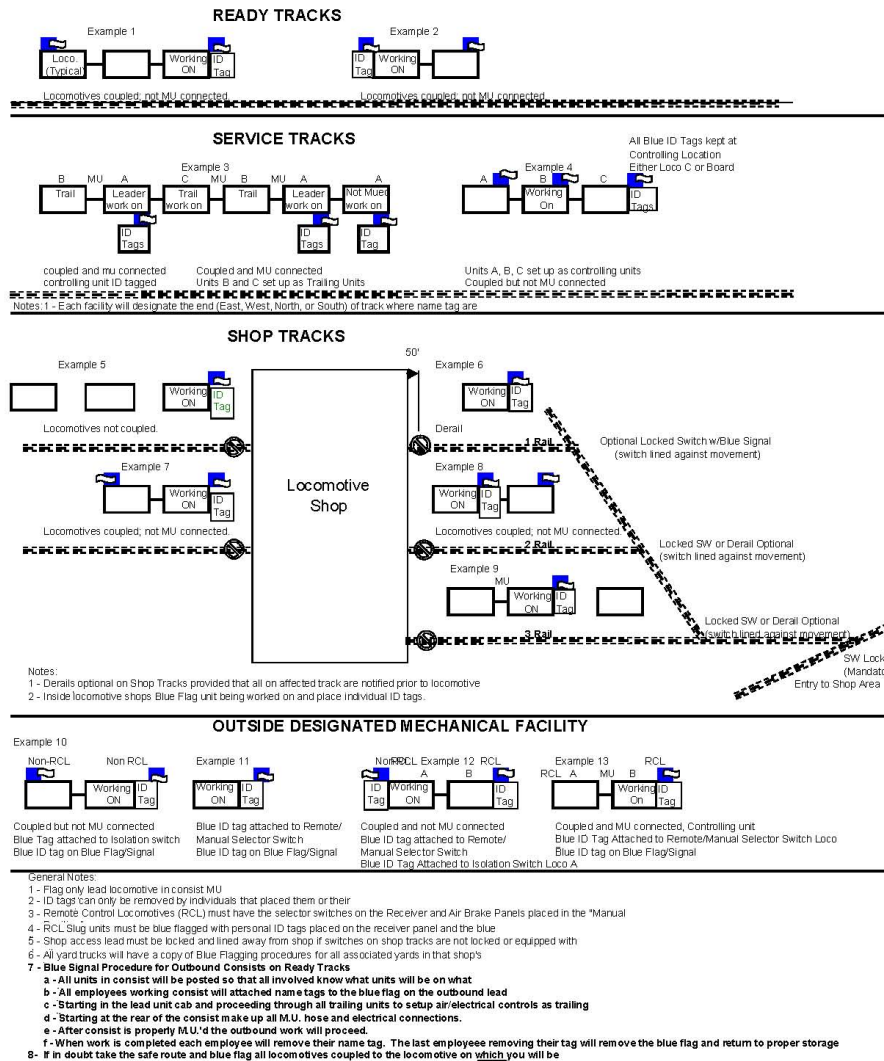
- BLUE FLAGS AND LOCKS MUST BE PLACED TO THE FRONT AND REAR OF A DPU CONSIST OR DPU TRAIN.
- BLUE FLAG WITH INDIVIDUAL TAG (S) MUST BE PLACED ON THE LEAD CONTROLLING DP UNIT OR CONSIST WHEN SERVICING OR REPAIRING CONTROLLING DP UNIT OR CONSIST.
- BLUE FLAG WITH INDIVIDUAL TAG (S) MUST BE PLACED ON THE LEAD CONTROLLING DP UNIT. ALSO, THE REMOTE CONTROLLING UNIT MUST BE FLAGGED. IF THE REMOTE CONTROLLING UNIT IS NOT IN THE REAR MOST POSITION, THE REAR MOST UNIT MUST ALSO BE FLAGGED WHEN SERVICING OR REPAIRING INTERMEDIATE DP UNITS OR REAR DP CONSIST OR UNIT.
- BLUE FLAG IS NOT REQUIRED BY LOCOMOTIVE AND CAR DEPARTMENT WHEN ONLY DOING RADIO LINKING.

MINIMUM BLUE SIGNAL REQUIREMENTS - SYSTEM STANDARD

MANAGEMENT AT EACH FACILITY MUST DEVELOP AN OUTLINE SPECIFYING HOW BLUE SIGNAL RULES AND PROCEDURES APPLY TO THAT PARTICULAR FACILITY. THIS OUTLINE MUST COMPLY AT A MINIMUM WITH BLUE SIGNAL PROTECTION AS SHOWN IN THE ATTACHED EXCEL DOCUMENT:

BARRY KANUCH
CHIEF MECHANICAL OFFICER

UPRR Mechanical Dept
Minimum Blue Signal Requirements - System Standard
 Attachment to SALERT 94-14R9



Details of Blue Flag requirements are found in 8.1 below.

8.1 Blue Signal Protection of Workmen (GCOR Rule 5.13)

Blue Signal Protection of Workmen

This rule outlines the requirements for protecting railroad workmen who are inspecting, testing, repairing, and servicing rolling equipment. In particular, because these tasks require the workmen to work on, under or between rolling equipment, workmen are exposed to potential injury from moving equipment. As used in this rule, the following definitions apply:

WORKMEN. Railroad employees assigned to inspect, test, repair, or service railroad equipment or components, including brake systems. Train and yard crews are excluded, except when they perform the above work on rolling equipment not part of the train or yard movement they are handling or will handle.

- "Servicing" does not include supplying cabooses, engines, or passenger cars with items such as ice, drinking water, tools, sanitary supplies, stationery, or flagging equipment.
- "Testing" does not include an employee making visual observations while on or alongside a caboose, engine, or passenger car. Also, testing does not include repositioning the activation switch or covering the photo-electric cell of the marker when the rear of the train is on the main track. The employee inspecting the marker must contact the employee controlling the engine to confirm that the train will remain secure against movement until the inspection is complete.

GROUP OF WORKMEN. Two or more workmen of the same or different crafts who work as a unit under a common authority and communicate with each other while working.

ROLLING EQUIPMENT. Engines, cars, and one or more engines coupled to one or more cars.

BLUE SIGNAL. During the day, a clearly distinguishable blue flag, or light, and at night, a blue light. The blue light may be steady or flashing.

The blue signal does not need to be lighted when it is attached to the operating controls of an engine and the inside of the engine cab area is lighted enough to make the blue signal clearly distinguishable.

EFFECTIVE LOCKING DEVICE. When used in relation to a manually operated switch or derail, a lock that can be locked or unlocked only by the craft or group of workmen applying the lock.

CAR SHOP REPAIR AREA. One or more tracks within an area where rolling equipment testing, servicing, repairing, inspecting, or rebuilding is controlled exclusively by mechanical department personnel.

ENGINE SERVICING AREA. One or more tracks within an area where engine testing, servicing, repairing, inspecting, or rebuilding is controlled exclusively by mechanical department personnel.

SWITCH PROVIDING DIRECT ACCESS. A switch that if used by rolling equipment could permit the rolling equipment to couple to the equipment being protected.

A. What a Blue Signal Signifies. A blue signal signifies that workmen are on, under, or between rolling equipment and requires that:

1. Rolling equipment must not be coupled to or moved, except as provided in "Movement in Engine Servicing Area" and "Movement in Car Shop Repair Area" of this rule.
2. Rolling equipment must not pass a blue signal on a track protected by the signal.

3. Other rolling equipment must not be placed on the same track so as to block or reduce the view of the blue signal. However, rolling equipment may be placed on the same track when it is placed on designated engine servicing area tracks or car shop repair area tracks, or when a derail divides a track into separate working areas.
4. Rolling equipment must not enter a track when a blue signal is displayed at the entrance to the track.

Blue signals or remote control blue signals must be displayed for each craft or group of workmen who will work on, under, or between rolling equipment.

Protection Removed. Blue signals may be removed only by the craft or group who placed them. Remote control display may be discontinued when directed by the craft or group that requested the protection. When blue signal protection has been removed from one entrance of a double-ended track or from either end of rolling equipment on a main track, that track is no longer under blue signal protection.

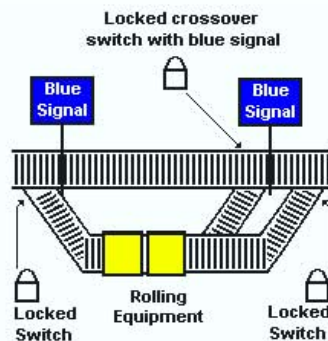
Diagram A

B. How to Provide Protection. When workmen are on, under, or between rolling equipment and exposed to potential injury, protection must be provided as follows:

On a Main Track. A blue signal must be displayed at each end of the rolling equipment.

On Other than a Main Track. One of these three methods of protection or a combination of these methods must be provided:

1. Each manually operated switch, including any facing point crossover switch that provides direct access must be lined against movement onto the track and secured by an effective locking device. A blue signal must be placed at or near each such switch.



2. A derail capable of restricting access to the track where work will occur must be locked in derailing position with an effective locking device and:
 - o Positioned at least 150 feet from the rolling equipment to be protected.

OR

 - o Positioned at least 50 feet from the end of rolling equipment on a designated engine servicing track or car shop repair track where speed is limited to not more than 5 mph. A blue signal must be displayed at each derail.

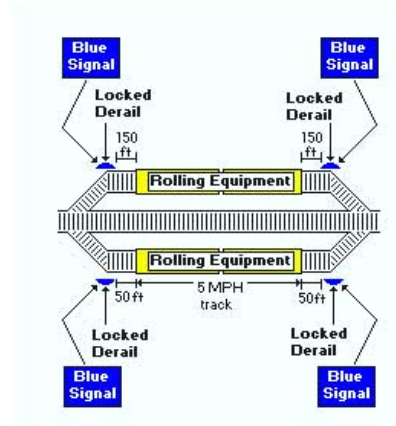
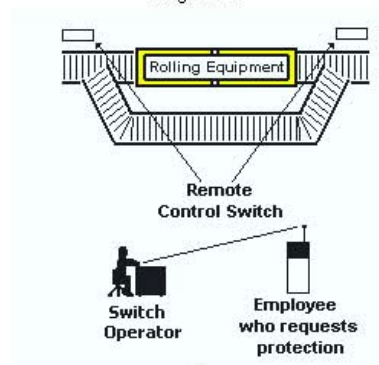


Diagram B.

3. Where remote control switches provide direct access, the employee in charge of the workmen must tell the switch operator what work will be done. The switch operator must then:
- o Inform the employee in charge of the workmen that the switches have been lined against movement onto the track and devices controlling the switches have been secured.
 - o Not remove the locking devices unless the employee in charge of the workmen says it is safe to do so.
 - o Maintain for 15 days a written record of each notification that includes:
 - Name and craft of the employee in charge of the workmen requesting protection
 - Identification of track involved
 - Date and time the employee in charge of workmen is notified that protection was provided
 - Date, time, name, and craft of the employee in charge of workmen who authorized removal of the protection

Diagram C



C. Blue Signal Readily Visible to Engineer

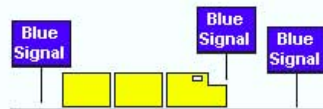
In addition to providing protection as required in On a Main Track and On Other than a Main Track, when workmen are on, under, or between an engine or rolling equipment coupled to an engine:

1. A blue signal must be attached to the controlling engine.
2. A Blue Signal must be visible to the engineer or employee controlling the engine. On engines equipped for remote control operations, the control must not be in remote and must be in manual. A blue tag must be placed on the switch governing remote/manual operation.
3. The engine must not be moved.

When a blue signal is attached to an engine, unless directed by the craft who placed the blue signal, changing controls, brake settings, turning on or off switches (except overhead cab lights) or circuit breakers or starting or shutting down the engine is prohibited.

Diagram D

D. Protection for Workmen Inspecting Markers



Blue signal protection must be provided for workmen when they are:

1. Replacing, repositioning, or repairing a marker, and the rear of the train is on any track.
OR
2. Inspecting a marker by repositioning the activation switch or covering the photoelectric cell, and the rear of the train is on other than a main track.

E. Protection for Emergency Repair Work on a Main Track

If a blue signal is not available for employees performing emergency repairs on, under, or between an engine or rolling equipment coupled to an engine, the employee controlling the engine must be notified and appropriate measures taken to provide protection for the employees.

F. Movement in Engine Servicing Area

An engine must not enter a designated engine servicing area until the blue signal protection is removed from the entrance. The engine must stop short of coupling to another engine.

An engine must not leave a designated engine servicing area unless the blue signal is removed from the engine and the track in the direction of movement.

Blue signal protection removed to let engines enter or leave the engine servicing area must be restored immediately after the engine enters or clears the area.

An engine protected by blue signals may be moved on a designated engine servicing area track only when all of the following have been done:

1. An authorized employee operates the engine under the direction of the employee in charge of workmen.
2. The blue signal has been removed from the controlling engine to be repositioned.
3. Workmen have been warned of the movement.

G. Movement in Car Shop Repair Area

When rolling equipment on car shop repair tracks is protected by blue signals, a car mover may reposition the equipment if:

1. Workmen have been warned of the movement.
2. An authorized employee operates the car mover under the direction of the employee in charge of workmen.

8.2 Remotely Controlled Switches

TITLE 49--TRANSPORTATION CHAPTER II--FEDERAL RAILROAD ADMINISTRATION, DEPARTMENT OF TRANSPORTATION PART 218--RAILROAD OPERATING PRACTICES--Table of Contents Subpart B--Blue Signal Protection of Workers Sec. 218.30 Remotely controlled switches. (a) After the operator of the remotely controlled switches has received the notification required by Sec. 218.27(c), he must line each remotely controlled switch against movement to that track and apply an effective locking device to the lever, button, or other device controlling the switch before he may inform the employee in charge of the workers that protection has been provided. (b) The operator may not remove the locking device unless he has been informed by the person in charge of the workers that it is safe to do so. [Page 192] (c) The operator must maintain for 15 days a written record of each notification which contains the following information: (1) The name and craft of the employee in charge who provided the notification; (2) The number or other designation of the track involved; (3) The date and time the operator notified the employee in charge that protection had been provided in accordance with paragraph (a) of this section; and (4) The date and time the operator was informed that the work had been completed, and the name and craft of the employee in charge who provided this information. [44 FR 2175, Jan. 10, 1979, as amended at 48 FR 6123, Feb. 10, 1983]

9.0 Contractor Emergency Work on Rolling Equipment.

Protection of Contractor Employees, when required to do emergency work and Blue Signal protection is not available is explained in the referenced regulation. The Contractor-In-Charge must notify the Railroad Representative that blue signals are not available. The rolling equipment operator at the controls must be notified and effective measures taken to protect the Contractor Employees.

9.1 Rerailing Locomotives and Cars

Before commencing rerailing or clearing operations contractor must communicate with the employee in charge at the scene to ensure that permission has been secured to occupy the right of way or job site.

Contractor must communicate with the employee in charge to obtain any information pertaining to the job site as to hazardous conditions, i.e. hazardous materials, power lines, buried pipelines, fiber optics, etc.

Contractor must communicate with the employee in charge to ensure any public or private property that might be involved is protected or secured and permission is obtained if we need to gain access to facilitate operations.

Contractor must ensure that equipment rerailed is secured from uncontrolled movement by all necessary means.

10.0 Hazardous Energy Control - Lockout / Tagout

When the Contractor or contractor employees are required to service or maintain machinery or equipment it must be in accordance with OSHA 29CFR 1910.147.

SECTION 01730 – ATTACHMENT C

REQUIREMENTS FOR CONTRACTORS WORKING

ON BNSF RIGHT-OF-WAY

In order to protect BNSF's investment in its right-of-way and for the safety of persons coming onto BNSF property, BNSF has established certain requirements. The following constitute minimum requirements for all persons coming on or near BNSF right-of-way. Contractors are encouraged to develop their own safety rules that meet or exceed the following requirements. A web site has been set up to assist in preparation of a safety plan—www.contractororientation.com. Contractors will not be allowed to occupy or work on BNSF right-of-way prior to registering on the web site and completing the course.

1. All permits and agreements must be in effect, required payments made, and insurance certificates received and approved prior to Contractor entering BNSF right-of-way. All of these documents are included in the packet containing the cost proposal. Prior to performing the preliminary survey, the consultant will obtain a "Temporary Occupancy Permit". To obtain a permit, contact Jones, Lang, LaSalle, phone number 1-866-498-6647. The permit requires a preparation fee and some lead time. Copies of all documents should be kept on the job site.
2. Any de-watering utilizing drains or ditches on BNSF property must be approved by BNSF Engineering.
3. Contractor must have BNSF approved "Final Construction Plans" prior to commencing work on a project. No change will be made to "Final Construction Plans" without approval by all parties involved. Approved revised plan will be furnished to all parties prior to implementation of changes.
4. Road Authority or Contractor will incur all costs for track work, including flagging, etc., made necessary due to their construction operation.
5. Pursuant to BNSF safety rules, flagging protection is always required when equipment crosses or is working within 25 feet of center of any track. When deemed necessary by BNSF, a flagman may be required at all times while working on BNSF right-of-way.
6. Crossing of any railroad tracks must be done at approved locations and must be over full depth timbers, rubber, etc. Any equipment with steel wheels, lugs, or tracks must not cross steel rails without aid of rubber tires or other approved protection and proper flagging will be required.
7. All temporary construction crossings must be covered by a "Private Roadway & Crossing Agreement," and must be barricaded when not in use.
8. Contractor must furnish details on how work will be performed that may affect existing drainage and/or possible fouling of track ballast as well as removal of overhead bridges/structures. (Structures and bridge spans over tracks must be removed intact.)
9. Absolutely no piling of construction materials or any other material, including dirt, sand, etc., within 25 feet of any track or on property of BNSF not covered by construction easement, permit, lease or agreement, or within 250 feet of a public grade crossing. A 10-foot clear area on both sides of a main track must remain unobstructed at all times to allow for stopped train inspection.
10. No construction will be allowed within 25 feet of center of any track unless authorized by BNSF's Division Engineer and as shown on Final Plan approved by the Railroad. This includes any excavation, slope encroachment and driving of sheet piles.

11. No vehicles or machines shall remain unattended within 25 feet of any track. All machines will be disabled when not in use to prevent unauthorized operation.
12. **IMPORTANT:** Disregard of any of these items will result in Contractor being shut down and prohibited from working on BNSF right-of-way while infraction is investigated. Based on findings of the investigation, it will be determined if the Contractor will be allowed to work on BNSF right-of-way in the future.
13. Contractor safety rules, including rules regarding Personal Safety Equipment, must not conflict with BNSF safety policies. Contractor's personnel will obtain BNSF's safety orientation prior to entering BNSF property. A job safety briefing will be held prior to beginning work each day and any time work conditions change. All personnel will wear proper personal protective equipment (PPE) while on BNSF property. Any person working on BNSF property may be subjected to a safety audit by BNSF personnel, and is required to comply with the audit. The results of the audit will be presented to the contractor's supervisor immediately upon completion. Any questions regarding safety should be directed to the BNSF project representative.
14. Articles included in Agreement should compliment this document or exceed its contents.

- END OF ATTACHMENT C -

SECTION 344001 – SIGNAL POLES AND MAST ARMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. This section includes the requirements for furnishing and installing signal poles and mast arms.

1.2 RELATED SECTIONS

- A. Section 033000 "Cast-in-Place Concrete."
- B. Section 033100 "Structural Concrete."
- C. Section 312333 "Trenching and Backfilling."
- D. Section 321600 "Curbs, Gutters, Sidewalks, and Driveways."

1.3 REFERENCES

- A. The following references are incorporated into the requirements of the Work as described herein. The limits and scope of these references will be as per Section 01420 "References and Definitions."

| Publisher | Identifier | Title |
|---------------------------|------------|--|
| ASTM International (ASTM) | A90 | Standard Test Method for Weight of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings |
| ASTM | A123 | Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products |
| ASTM | A153 | Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware |
| ASTM | A307 | Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength |
| ASTM | A780 | Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings |
| ASTM | B6 | Standard Specification for Zinc |
| ASTM | B633 | Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel |

| Publisher | Identifier | Title |
|--|-------------------|---|
| ASTM | B695 | Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel |
| ASTM | B766 | Standard Specification for Electrodeposited Coatings of Cadmium |
| ASTM | E376 | Standard Practice for Measuring Coating Thickness by Magnetic-Field or Eddy Current (Electromagnetic) Testing Methods |
| California Code of Regulations | Title 8 | Industrial Regulations |
| California Department of Transportation (Caltrans) | ---- | Standard Specifications |
| California Public Utilities Commission | General Order 95 | Overhead electric line construction |

All references shall be to the latest version unless noted otherwise.

1.4 SUBMITTALS

- A. Shop drawings and product information for signal poles and mast arms.
- B. Manufacturer's maintenance instructions and product warranty for signal poles and mast arms.
- C. List of equipment and materials to be installed, as specified in Article 3.1D.
- D. As-built plans showing all construction changes in detail.

1.5 QUALIFICATIONS

- A. All installers shall be qualified and competent at performing their assigned work.

1.6 WARRANTY

- A. In addition to the requirements of Document 00700 "General Conditions", Section 9, "Warranty, Guaranty, and Inspection of Work", and Section 01770 "Contract Closeout", provide a 3-year warranty against defects in material, installation, workmanship, and operation.

PART 2 - PRODUCTS

2.1 COMMON COMPONENTS

- A. General: All materials furnished and installed shall be new, except materials shown on the Plans or specified in the Specifications to be re-used.
- B. Anchor Bolts, Nuts, and Washers:
 - 1. Anchor bolts shall conform to ASTM A307.
 - 2. Each anchor bolt shall be round, have a minimum of 8 inches (200 mm) of thread, and be provided with 2 nuts and 2 flat 1/4 inch (6 mm) thick washers.
 - 3. Nuts shall be symmetrically formed with the hole centered and at right angles to the face.
 - 4. Nuts shall be tapped to fit a corresponding thread on the anchor bolt such that the nut can be run the entire length of the thread by the fingers without undue forcing, and without play or rocking.
 - 5. Anchor bolts, nuts, and washers shall be galvanized by the hot-dip process in accordance with Article 2.1D.6 of this Section, or be cadmium plated with Type NS coating conforming to ASTM B766.
 - 6. Anchor bolts for poles and mast arms shall conform to Caltrans Standard Plans and Specifications.
- C. Signal Poles:
 - 1. General:
 - a. Signal poles shall have a rectangular, corrosion-resistant, aluminum identification plate attached with stainless steel rivets or screws as shown on the Plans.
 - b. Each signal pole shall have a hand hole in the base and a hand hole cover.
 - 1) The hand hole shall conform to the details shown on the Plans.
 - 2) The hand hole cover shall be securely attached to the pole with tamper-resistant hardware unless otherwise specified.
 - c. Signal poles shall be equipped with anchor bolt covers made of metal of the same type as that used for the shafts unless otherwise specified. Anchor bolt covers shall be equipped with all necessary fittings and hardware for securing to the signal pole.
 - d. Exposed edges of plates that comprise the base assembly shall be finished smooth. Exposed corners shall be rounded unless otherwise shown on the Plans. Slots or drilled holes shall have a tolerance of 0 to + 1/8 inch (3 mm).
 - e. All signal poles shall be galvanized unless otherwise specified.
 - f. The top of each signal pole shall be equipped with an ornamental cap securely held in place by a 3/4 inch (19 mm) diameter hex head machine bolt. Provisions shall be made for substituting a 3/4 inch (19 mm) diameter steel insulator pin. The cap and cap support surface shall have sufficient strength to transfer to the signal pole, from a point 5 inches (125 mm) above the top of the cap, a horizontal load of 950 pounds (4,250 N).
 - g. Signal poles shall withstand, without permanent deformation, a maximum horizontal load of 950 pounds (4,250 N) applied to the center of the cap.

- h. Signal poles shall withstand, without exceeding a deflection of 2-5/16 inches (58 mm), a normal horizontal load of 370 pounds (1,650 N) applied to the cap.
 - i. Signal poles shall conform to Section 56-3 of the Caltrans Standard Plans and Specifications.
2. Straightness: For signal poles the maximum deviation shall not exceed the tolerance shown in Table 1 when measured with the signal pole in the horizontal position.

Table 1

| Length of Pole – Excluding Base | | Maximum Allowable Deviation from String Line ¹ |
|---------------------------------|------------------|---|
| Over | Equal to or Less | |
| --- | 21 feet (6.4 m) | 1/2 inch (12.5 mm) |
| 21 feet (6.4 m) | 25 feet (7.9 m) | 3/4 inch (19 mm) |
| 25 feet (7.9 m) | 35 feet (10.7 m) | 1 inch (25 mm) |
| 35 feet (10.7 m) | 40 feet (12.2 m) | 1-1/4 inches (32 mm) |

- a. Short deviations shall not exceed 1/4 inch (6 mm) from the centerline of the Standard for each 5 feet (1.5 m) of length.
- b. Offsets or jogs due to mold extensions or joints shall not exceed 1/16 inch (1.5 mm) in thickness along the surface of the signal pole.

D. Mast Arms:

- 1. Mast arms shall be fabricated from the same material specified for the adjoining signal pole. All mast arms shall be galvanized unless otherwise specified.
- 2. Mast arms shall be smoothly curved to the approximate configuration shown on the Plans.
- 3. Mast arms shall have an aluminum identification plate attached with stainless steel rivets or screws, as shown on the Plans.
- 4. Exposed welds, except fillet and fatigue resistant welds on top of the mast arms, shall be ground flush with the base metal.
- 5. Mast arms shall be furnished complete with all necessary fittings and hardware for attachment to the adjoining signal pole.
- 6. Mast arm fabrication and materials shall conform to Caltrans Standard Specifications Section 56-3.

E. Galvanizing:

- 1. General:
 - a. Zinc used for galvanizing shall be grade Prime Western conforming to ASTM B6.
 - b. Except as otherwise specified, materials shall be galvanized by the hot-dip, mechanical, or electrode positing process.

¹ The maximum deviation shall be measured from a string line on the face of the signal pole, in a plane passing through the longitudinal axis.

2. Requirements of Coating:
 - a. The minimum weight of coating and other requirements shall be as shown in Table 2.

Table 2

| Material | ASTM | Minimum Weight of Coating (oz/ft²) |
|---|-------------|--|
| Steel products including structural shapes, tie rods, handrails, manhole steps, and miscellaneous items | A123 | 2.00 |
| | A153 | 2.00 |
| | B633 | 2.00 |
| | B695 | 2.00 |
| Hardware including cast, rolled, pressed, and forged articles | A153 | 2.00 |
| | B633 | 2.00 |
| | B695 | 2.00 |
| Bolts, screws, nuts, and washers | A153 | 1.25 |
| | B633 | 1.25 |
| | B695 | 1.25 |

- b. If there is a conflict between the ASTM and minimum weight columns, the minimum weight column shall apply.
 - c. The weight shown is ounces per square foot of surface area.
 - d. The weight of coating shall be determined in accordance with ASTM A90, modified to determine the coating of each surface separately.
 - e. All surfaces, when tested separately, shall meet the minimum requirements.
3. Workmanship:
 - a. The zinc coating shall adhere tenaciously to the surface of the base material.
 - b. The finished product shall be free from blisters and excess zinc, and the coating shall be even, smooth, and uniform throughout.
 - c. Machine work, die work, cutting, punching, bending, welding, drilling, thread cutting, straightening, and other fabricating shall be done as far as is practicable before the galvanizing.
 - d. All members, nuts, bolts, washers, etc., shall be galvanized before a structural unit is assembled.
 - e. All uncoated spots or damaged coatings shall be cause for rejection.
 - f. Products that are warped or distorted to the extent of impairment for the use intended shall be rejected.
4. Test Coupons:
 - a. Test coupons for determining the quantity and quality of the galvanizing shall be of such size and shall be wired to the materials to be galvanized before immersion so as to represent the amount of coating deposited on the finished product.
 - b. Nondestructive tests for uniformity of coating may be made by the Engineer with a magnetic instrument in accordance with ASTM E376.

5. Repair of Damaged Zinc Coatings: Zinc coating which has been field or shop cut, burned by welding, abraded, or otherwise damaged to such extent as to expose the base metal, shall be repaired and recoated by one of the following methods approved by the Engineer.
- a. Hot-Dip Process: The damaged areas shall be thoroughly stripped and cleaned and a coating of zinc shall be applied by the hot-dip process per Articles 2.1E.1 and 2.1E.2 of this Section.
 - b. Metalizing Process: The damaged area shall be repaired per ASTM A780, Annex A3, and the following requirements:
 - 1) The damaged areas shall be thoroughly cleaned by blasting with sharp sand or steel grit to white metal surface finish, as follows:
 - a) A white metal blast-cleaned surface finish is defined as a surface with a gray-white, uniform metallic color, slightly roughened to form a suitable anchor pattern for coatings.
 - b) The surface, when viewed without magnification, shall be free of all oil, grease, dirt, visible mill scale, rust, corrosion products, oxides, paint, or any other foreign matter.
 - c) The color of the clean surface may be affected by the particular abrasive medium used.
 - 2) The blasted area shall lap the undamaged zinc coating at least 1/2 inch.
 - 3) Zinc wire containing not less than 99.98 percent zinc shall be used in the metalizing operation.
 - 4) A zinc coating shall be applied to the damaged area with a metalizing gun to a thickness of not less than 5 mils on the damaged area, and shall taper to zero thickness at the edge of the blasted undamaged section.
 - c. Zinc Dust Paint:
 - 1) When zinc surfaces have small areas of abrasion which occur after shop application of zinc coating, zinc dust paint may be used to repair these areas when approved by the Engineer.
 - 2) The damaged area shall be thoroughly cleaned by wire brushing and traces of welding flux and loose or cracked zinc coating removed prior to painting.
 - 3) The cleaned area shall be painted with a minimum of two coats of an unthinned zinc paint to provide a total minimum film thickness of 8 mils.
 - 4) The zinc dust paint shall conform to the requirements of ASTM A780, Annex A3, except that it shall have a 90 percent minimum dry film content of zinc dust by weight.
 - 5) The method of application shall be approved by the Engineer.
 - d. Zinc Based Solders:
 - 1) The damaged areas shall be repaired using zinc alloy solders per ASTM A780, Annex A3.
 - 2) Zinc solder shall be deposited until a minimum thickness of 5 mils is applied to the damaged area.

PART 3 - EXECUTION

3.1 GENERAL

- A. The work shall include installing signal poles, mast arms, foundations, and anchor bolts, and the restoration of street surfaces: sidewalk, roadway, curb and gutter, ADA ramps, tree wells, etc.
- B. The Contractor shall safe-guard all its installations until the Port accepts and utilizes the work.
- C. Incidental parts that are not shown on the Plans or specified in the Specifications and are necessary to complete the Work, shall be furnished and installed as though such parts were shown on the Plans or specified in the Specifications.
- D. Unless otherwise directed or specified, the Contractor shall submit a list of equipment and materials to be installed.
 - 1. The list shall include the name of the manufacturer, size, and identifying number of each item.
- E. If requested by the Engineer, the Contractor shall submit for review samples of the material proposed for use.
- F. All materials furnished and used shall be new and conform to the requirements shown in the Plans. The materials shall be manufactured, handled, and used in a workman like manner to insure complete work in accordance with the plans and specifications.
- G. The location of signal poles, mast arms, and appurtenances are shown on the plans. Any relocation required due to obstructions shall be done under the Engineer's direction.

3.2 PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS

- A. The Contractor shall be responsible for the protection of public and private property adjacent to the Work and shall exercise due caution to avoid damage to such property.
- B. The Contractor shall repair or replace all existing improvements within the right-of-way which are not designated for removal (e.g., curbs, sidewalks, driveways, fences, walls, signs, utility installations, pavement, structures, etc.) which are damaged or removed as a result of its operations. When a portion of a sprinkler system within the right-of-way must be removed, the remaining lines shall be capped. Repairs and replacements shall be at least equal to existing improvements and shall match them in finish and dimension.
- C. Trees, lawns, and shrubbery that are not to be removed shall be protected from damage or injury. If damaged or removed due to Contractor's operations, they shall be restored or replaced in as nearly the original condition and location as is reasonably possible. Lawns shall be reseeded and covered with suitable mulch.

- D. The Contractor shall give reasonable notice to occupants or owners of adjacent property to permit them to salvage or relocate plants, trees, fences, sprinklers, and other improvements, within the right-of-way which are designated for removal and would be destroyed because of the Work.
- E. All costs to the Contractor for protecting, removing, and restoring existing improvements shall be included in the Bid.

3.3 COORDINATION WITH THE SERVING ELECTRIC UTILITY

- A. Safety clearances between new signal poles (including mast arms) and overhead power and communication lines shall conform to the California Public Utilities Commission, General Order 95.
- B. Construction in proximity to high-voltage overhead lines shall be performed in accordance with the California Code of Regulations, Title 8.
- C. The Contractor shall inspect the location of each signal pole for safety clearance requirements and notify the Engineer and the serving electric utility, in writing, of the locations where safety clearances are required. The Contractor shall be responsible for the necessary coordination with the serving electric utility.
- D. Requests for safety clearances shall be made at least 21 Days in advance of the date the Contractor will be working at each location requiring a safety clearance by the serving electric utility. If required, the Contractor shall make the necessary arrangements with the serving electric utility to raise their overhead facilities in order to provide for required clearances.
- E. Coordination with the serving electrical utility, and the provision of safety clearances, shall be shown as individual activities on the construction schedule specified in Article 1.4 of this Section.

3.4 EXCAVATION AND BACKFILL

- A. Excavation and backfilling shall conform to the requirements in Section 312333 "Trenching and Backfilling."

3.5 FOUNDATIONS, FOUNDATION CAPS, AND SLABS

- A. General:
 - 1. Work shall conform to the lines, elevations and grades shown on the Plans or established by the Engineer.
 - 2. Construction of concrete foundations, caps and slabs construction shall conform to Section 033000 "Cast-in-Place Concrete", Section 033100 "Structural Concrete", and Section 321600 "Curbs, Gutters, Sidewalks, and Driveways."

B. Foundations:

1. Foundations shall be constructed in a single placement of concrete of Class 560-C-3250 or class 532-CFW-3250 with a maximum slump of 4 inches. The bottom of the foundations shall rest securely on firm, unyielding soil.
2. Foundations shall cure for 24 hours before erecting signal poles and 72 hours before erecting mast arms. Pile foundations shall cure for 48 hours before erecting signal poles and 7 Days before erecting mast arms.
3. Foundations constructed within the sidewalk or parkway shall pose no hazard to pedestrian traffic.
 - a. The above-ground portion of a foundation, if any, and/or anchor bolts, conduits etc. shall be protected with protection devices approved by the Engineer.
 - b. The Contractor shall connect the protection devices to the foundation.
 - c. Protection devices shall protect pedestrians from the above ground portion of the foundation, and/or exposed anchor bolts, conduit, etc.
 - d. Protection devices shall remain and be maintained in place until the related equipment is installed on the foundation.
4. Foundation construction shall conform to the Standard Details, Caltrans Standard Specifications Section 56-3, or as otherwise detailed on the construction plans and specifications.
 - a. Position of poles shall be marked and verified by the Contractor for approval by the Engineer prior to excavation for foundations.
 - b. The Contractor shall verify the position by potholing to check for conflicts with underground utilities prior to marking the locations.
 - c. The Engineer shall approve the foundation location before any concrete is poured.
5. Cast-In-Drilled-Hole Concrete Pile Foundations: Materials used in reinforced Cast-In-Drilled-Hole (CIDH) concrete pile foundation shall comply with Caltrans Standard Specifications Section 56-3.01C(2)(b).

C. Foundation Caps:

1. Foundation caps shall be the same color, finish, and material as the adjacent sidewalk, and be a minimum of 3 inches (75 mm) thick unless otherwise specified.
 - a. Foundation caps shall be placed after the signal pole is set in its final position.
 - b. The longitudinal grade shall be the same as the grade for the top of the existing curb.
 - c. If there is no curb, the longitudinal grade will be established by the Engineer.
2. The transverse grade shall be established as follows:
 - a. Existing curb and no sidewalk - by sloping upward from the top of the back face of curb at the rate of 1/4 inch/foot (20 mm/m).
 - b. Existing curb and sidewalk - by straight grade from the top of the back face of curb to the top of the near edge of sidewalk, and shall join all around in full-width sidewalk or sidewalk constructed adjacent to the curb.
 - c. Service road parkways - by a straight line between the top of the back face of one curb to the top of the back face of the other curb.

- d. If the lateral grade of the existing parkway exceeds a slope of ± 1 inch/foot (80 mm/m), the Contractor shall construct retaining curbs and sidewalk as directed by Engineer.

D. Concrete Slabs:

1. Wherever the edge of a concrete foundation extends within 18 inches (450 mm) of any existing concrete improvement, a concrete slab with a minimum thickness of 3 inches (75 mm) unless otherwise specified shall be extended to meet the existing improvement.

3.6 ANCHOR BOLTS, NUTS, AND WASHERS

- A. Anchor bolts, nuts, and washers shall be furnished by the Contractor.
- B. Anchor bolts, nuts and washers shall be of the type and size shown on the Plans.

3.7 SIGNAL POLES AND MAST ARMS

A. General:

1. Signal poles and mast arms shall be as shown on the Plans.
2. Vertical alignment shall be performed by adjusting the nuts on the anchor bolts before the foundation cap is placed. Shims or other similar devices shall not be used.
3. If base covers or foundation caps are not used, anchor bolts shall be cut 1/4 inch (6 mm) above the nuts. If anchor bolts are cut, the cut surfaces shall be repaired in accordance with Article 2.1E.5 of this Section.

B. Mast Arms:

1. Mast arms for signal poles shall conform to the dimensions shown on the Plans.
2. The joint between a signal pole and a mast arm shall be rain-tight.

3.8 REMOVAL AND DISPOSAL OF MATERIALS

A. Bituminous Pavement:

1. Bituminous pavement shall be removed to clean, straight lines. Saw cutting of edges to be joined is optional.
2. Where bituminous pavement adjoins a trench, the edges adjacent to the trench shall be trimmed to neat straight lines before resurfacing to ensure that all areas to be resurfaced are accessible to the rollers used to compact the subgrade or paving materials.

B. Concrete Pavement:

1. Concrete pavement shall be removed to neatly sawed edges.

2. Saw cuts shall be made to a minimum depth of 1-1/2 inches (38 mm). If a saw cut in concrete pavement falls within 3 feet (1 m) of a construction joint, cold joint, expansion joint, or edge, the concrete shall be removed to the joint or edge.
3. The edges of existing concrete pavement adjacent to trenches, where damaged subsequent to saw cutting of the pavement, shall again be saw cut to neat, straight lines for the purpose of removing the damaged pavement areas.
4. Such saw cuts shall be either parallel to the original saw cuts or shall be cut on an angle which departs from the original saw cut not more than 1 inch (25 mm) in each 6 inches (150 mm).

C. Concrete Curb, Walk, Gutters, Cross Gutters, Driveway, and Alley Intersections:

1. Concrete shall be removed to neatly sawed edges with saw cuts made to a minimum depth of 1-1/2 inches (38 mm).
2. Concrete sidewalk or driveway to be removed shall be neatly sawed in straight lines either parallel to the curb or at right angles to the alignment of the sidewalk.
3. No section to be replaced shall be smaller than 30 inches (750 mm) in either length or width.
4. If the saw cut in sidewalk or driveway would fall within 30 inches (750 mm) of a construction joint, expansion joint, or edge, the concrete shall be removed to the joint or edge, except that where the saw cut would fall within 12 inches (300 mm) of a score mark, the saw cut shall be made in and along the score mark.
5. Curb and gutter shall be sawed to a depth of 1-1/2 inches (38 mm) on a neat line at right angles to the curb face.

END OF SECTION 344001