Port of Tacoma
People. Partnership. Performance.
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www.portoftacoma.com

May 5, 2016

TO: PLANHOLDERS

SUBJECT: NORTH LEAD RAIL IMPROVEMENTS
PROJECT NO. 092938
CONTRACT NO. 070164

ADDENDUM NUMBER TWO

This addendum is issued to amend the following:

SPECIFICATIONS

A. SECTION 00 73 16 – INSURANCE REQUIREMENTS

1. **DELETE** and **REPLACE** the issued section with the attached Section 00 73 16 – Insurance Requirements. (Attachment A to this Addendum No. 2)

B. SECTION 01 14 00 – WORK RESTRICTIONS

1. **DELETE** and **REPLACE** the issued section with the attached Section 01 14 00 – Work Restrictions. (Attachment B to this Addendum No. 2)

C. SECTION 01 50 00 – TEMPORARY FACILITIES AND CONTROLS

1. **DELETE** and **REPLACE** the issued section with the attached Section 01 50 00 – Temporary Facilities and Controls. (Attachment C to this Addendum No. 2)

D. SECTION 02 41 13 – SELECTIVE SITE DEMOLITION

1. **DELETE** and **REPLACE** the issued section with the attached Section 02 41 13 – Selective Site Demolition. (Attachment D to this Addendum No. 2)

E. SECTION 34 05 17 – RAILROAD WORK

1. **DELETE** and **REPLACE** the issued section with the attached Section 34 05 17 – Railroad Work. (Attachment E to this Addendum No. 2)

DRAWINGS

A. DRAWING R1 – WEST END AREA 1 RAIL PLAN (SHEET 56)

1. **REPLACE** entire sheet with attached sheet. (Attachment F to this Addendum No. 2)

B. DRAWING R6 – EAST END AREA 6 RAIL PLAN (SHEET 61)

1. **REPLACE** entire sheet with attached sheet. (Attachment G to this Addendum No. 2)

C. DRAWING R12 – NO. 9 TRUNOUT PLAN (SHEET 67)

1. **REPLACE** entire sheet with attached sheet. (Attachment H to this Addendum No. 2)

D. DRAWING R13 – DOUBLE DIAMOND CROSSING (SHEET 68)

1. **REPLACE** entire sheet with attached sheet. (Attachment I to this Addendum No. 2)

E. DRAWING R14 – NO. 9 CROSSOVER PLAN (SHEET 69)

1. **REPLACE** entire sheet with attached sheet. (Attachment J to this Addendum No. 2)

F. DRAWING R15 – NO. 9 CROSSOVER PLAN RIGHT HAND-LEFT HAND (SHEET 70)

1. **REPLACE** entire sheet with attached sheet. (Attachment K to this Addendum No. 2)

G. DRAWING R16 – TURNOUT AND CROSSOVER DETAILS (SHEET 71)

1. **REPLACE** entire sheet with attached sheet. (Attachment L to this Addendum No. 2)

H. DRAWING E12 – ELECTRICAL DETAILS

1. **REPLACE** entire sheet with attached sheet. (Attachment M to this Addendum No. 2)

I. DRAWING E13 – ELECTRICAL DETAILS

1. **REPLACE** entire sheet with attached sheet. (Attachment N to this Addendum No. 2)

Receipt for this addendum shall be indicated in the space provided in Section 00 41 00, Bid Form.

END OF SECTION

ATTACHMENTS:

ATTACHMENT A – SECTION 00 73 16 INSURANCE REQUIREMENTS

ATTACHMENT B – SECTION 01 14 00 WORK RESTICTIONS

ATTACHMENT C – SECTION 01 50 00 TEMPORARY FACILITIES AND CONTROLS

ATTACHMENT D – SECTION 02 41 13 SELECTIVE SITE DEMOLITION

ATTACHMENT E – SECTION 34 05 17 RAILROAD WORK

ATTACHMENT F – DRAWING R1 WEST END AREA 1 RAIL PLAN (SHEET 56)

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ATTACHMENT H – DRAWING R12 NO. 9 TRUNOUT PLAN (SHEET 67)

ATTACHMENT I – DRAWING R13 DOUBLE DIAMOND CROSSING (SHEET 68)

ATTACHMENT J – DRAWING R14 NO. 9 CROSSOVER PLAN (SHEET 69)

ATTACHMENT K – DRAWING R15 NO. 9 CROSSOVER PLAN RIGHT HAND-LEFT HAND (SHEET 70)

ATTACHMENT L – DRAWING R16 TURNOUT AND CROSSOVER DETAILS (SHEET 71)

ATTACHMENT M – DRAWING E12 ELECTRICAL DETAILS

ATTACHMENT N – DRAWING E13 ELECTRICAL DETAILS

PART 1 - GENERAL

1.01 RELATED WORK DESCRIBED ELSEWHERE

A. The provisions and intent of the Contract, including the General and Supplemental Conditions apply to this work as if specified in this section. Work related to this section is described throughout these Specifications.

1.02 SUBMITTAL REQUIREMENTS

A. Evidence of the required insurance within 10 days of the issued Notice of Award to the Contractor.

B. Updated evidence of insurance as required until final completion.

1.03 CONTRACTOR LIABILITY INSURANCE

A. The Contractor shall secure and maintain until Final Completion, at its sole cost and expense, the following insurance in carriers reasonably acceptable to the Port, licensed in the State of Washington, registered with the Washington State Insurance Commissioner, and possessing an A.M. Best rating of "A-, FSC (6)" or better.

B. The Port of Tacoma and Tacoma Rail, City of Tacoma (Railway) will be included as an additional insured for both ongoing and completed operations by endorsement to the policy using ISO Form CG 20 10 11 85 or forms CG 20 10 03 97 and CG 20 37 10 01 (or equivalent coverage endorsements). Also, by endorsement to the policy, there shall be an express waiver of subrogation in favor of the Port; a cross liabilities clause, and an endorsement stating that the Contractor's policy is primary and not contributory with any insurance carried by the Port or the Railway. The inclusion of the Port and the Railway as ~~an~~ additional insureds shall not create premium liability for the Port.

C. If the Contractor, Supplier or Subcontractor's will perform any work requiring the use of a licensed professional per RCW 18 the Contractor shall provide evidence to the Port of professional liability insurance in amounts not less than $1,000,000.

D. This insurance shall cover all of the Contractors' operations of whatever nature connected in any way with the Contract, including any operations performed by the Contractor's Subcontractors of any tier. It is the obligation of the Contractor to ensure that all Subcontractors (at whatever level) carry a similar program that provides the identified types of coverage, limits of liability, inclusion of the Port and the Railway as an additional insured, waiver of subrogation and cross liabilities clause. The Port reserves the right to reject any insurance policy as to company, form, or substance. Contractor's failure to provide or the Port's acceptance of the Contractor's certificate of insurance does not waive the Contractor's obligation to comply with the insurance requirements of the Contract as specifically described below:

1. Commercial General or Liability Insurance on an Occurrence Form Basis including but not limited to:

   a. Bodily Injury Liability;

   b. Property Damage Liability;

   c. Contractual Liability;

   d. Products - Completed Operations Liability;

   e. Personal Injury Liability;

   f. Fire Legal Liability

~~f~~g. By endorsement to the policy, not exclude work within fifty feet of any railroad track.

h. By endorsement to the policy, removal of any exclusions related to the explosion, collapse and underground hazards.

~~Alternatively, a Commercial General Liability (CGL) policy is acceptable if all of the above coverages are incorporated in the policy and there are no marine exclusions that will remove coverage for either vessels or work done by or above or around the water.~~

2. Comprehensive Automobile Liability including but not limited to:
   a. Bodily Injury Liability;
   b. Property Damage Liability;
   c. Personal Injury Liability;
   d. Owned and Non-Owned Automobile Liability; and
   e. Hired and Borrowed Automobile Liability.
3. ~~Railroad protective liability issued in name of the railroad and in the limits required by the railroad.~~Railroad Protective Liability insurance naming the Port and Railway (Tacoma Rail) as Insureds with coverage of at least $2,000,000 per occurrence and $6,000,000 in the aggregate. The policy must be issued on a standard ISO form CG 00 35 10 93 and include the following:
   a. Endorsed to include the Pollution Exclusion Amendment (ISO form CG 28 31 10 93)
   b. Endorsed to include the Limited Seepage and Pollution Endorsement
   c. Endorsed to include Evacuation Expense Coverage Endorsement
   d. No other endorsements restricting coverage may be added
   e. The original policy must be provided to the Port of Tacoma prior to execution of the contract; within 10 days of Notice of Award.~~contract execution.~~
4. Contractor's Pollution Liability (CPL) covering claims for bodily injury, property damage and cleanup costs and environmental damages from pollution conditions arising from the performance of covered operations.
   a. If the Work involves remediation or abatement of regulated waste to include but not limited to: asbestos containing materials, lead containing products, mercury, PCB, underground storage tanks or other hazardous materials or substances, the CPL policy shall not exclude such coverage or a specific policy covering such exposure shall be required from the Contractor and all Subcontractors performing such Work.
   b. If the Work involves transporting regulated materials or substances or waste, a separate policy or endorsement to the CPL policy specifically providing coverage for liability and cleanup arising from an upset of collision during transportation of hazardous materials or substances shall be required from the Contractor and all Subcontractors performing such Work.
   c. It is preferred that CPL insurance shall be on a true occurrence form without a sunset clause. However, if CPL insurance is provided on a Claims Made basis, the policy shall have a retroactive date prior to the start of this project and this insurance shall be kept in force for at least three years after the final completion of this project. Alternatively, the contractor at its option may provide evidence of extended reporting

period of not less than three (3) years in its place. The Contractor shall be responsible for providing the Port with certificates of insurance each year evidencing this coverage.

d. The Port and the Railway shall be named as an Additional Insured on the CPL policy.

E. Except where indicated above, the limits of all insurance required to be provided by the Contractor shall be not less than $2,000,000 for each occurrence and $2,000,000 in the aggregate. However, coverage in the amounts of these minimum limits shall not be construed as to relieve the Contractor from liability in excess of such limits. The Additional Insured endorsement shall NOT be limited to the amounts specified by this contract unless expressly waived in writing by the Port of Tacoma.

F. Contractor shall certify that its operations are covered by the Washington State Worker's Compensation Fund. The Contractor shall provide its Account Number or, if self-insured, its Certificate of Qualification Number. The Contractor shall also provide evidence of Stop-Gap Employers' Liability Insurance (Part B) with limits of at least $500,000 each accident, $500,000 by disease policy limit, $500,000 by disease each employee..

G. Contractor is not allowed to self-insure without the prior written consent of the Port and Railway. If granted, any deductible, self-insured retention or other financial responsibility for claims must be covered directly by Contractor in lieu of insurance. Any and all Port and Railway liabilities that would otherwise, in accordance with the provisions of this Agreement, be covered by Contractor's insurance will be covered as if Contractor elected not to include a deductible, self-insured retention or other financial responsibility for claims. Such direct coverage by Contractor shall be in an amount equal to the amount of Contractor's actual deductible amount.

H. The Contractor shall furnish within ten (10) days following issuance of the notice of award a certificate of insurance satisfactory to the Port evidencing that insurance in the types and minimum amounts required by the Contract Documents has been secured. The Certificate of Insurance shall be signed by an authorized representative of the insurer together with a copy of the endorsement, which shows that the Port is named as additional insured.

~~H~~I. Contractor shall provide at least forty-five (45) days prior written notice to the Port of any termination or material change or ten (10) days notice in the case of non-payment of premium(s).

~~I~~J. If the Contractor is required to make corrections to the Work after Final Completion, the Contractor shall obtain at its own expense, prior to the commencement of any corrective work, insurance coverage as required by the Contract Documents, which coverage shall be maintained until the corrections to the Work have been completed and accepted by the Port.

1.04 BUILDER'S RISK INSURANCE

A. Until Final Completion of the Work, the construction Work is at the risk of the Contractor and no partial payment shall constitute acceptance of the Work or relieve the Contractor of responsibility of completing the Work under the Contract.

B. Whenever the estimated cost of the Work is less than $25,000,000, the Port will purchase and maintain, in a company or companies lawfully authorized and admitted to do business in Washington, property insurance written on a builder's risk "all-risk" including Earthquake and Flood with applicable sub-limits, or equivalent policy form to cover the course of construction in the amount of the full insurable value thereof. This property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made or until no person or entity other than the Port has an insurable interest in the property, whichever is later. This insurance shall include interests of the Port, the Contractor, and

Subcontractors of any tier on the Project. There may be some differences between this Section and the builder's risk insurance secured by the Port; therefore, the Contractor shall provide an "installation floater" or similar property coverage for materials not yet installed, whether stored on site or off site or in transit, and the Contractor shall obtain property coverage for all Contractor-owned equipment and tools-each loss may be subject to a deductible. Losses up to the deductible amount shall be the responsibility of the Contractor. All tools and equipment not intended as part of the construction or installation will be the sole responsibility of the Contractor.

~~C. Whenever the estimated cost of the Work is $25,000,000 or more, the Contractor shall purchase and maintain, in a company or companies lawfully authorized and admitted to do business in Washington, property insurance written on a builder's risk "all-risk" including Earthquake and Flood or equivalent policy form to cover the course of construction in the amount of the full insurable value thereof. This property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made or until no person or entity other than the Port has an insurable interest in the property, whichever is later. This insurance shall include as named insureds and as loss payees the Port, the Contractor, and Subcontractors of any tier, as their respective interests appear. This insurance shall insure against the perils of fire (with extended coverage) and physical loss or damage including without limitation, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal, and shall also provide "all risk" coverage for the interests of the Port, the Contractor and Subcontractors of any tier as named insureds, as their respective interests appear. Upon written request, the Contractor will provide a copy of its policy to the Port. Each loss may be subject to a deductible of not more than $10,000, except that the deductible for earthquake and flood losses shall be no greater than 5% of the loss or $100,000, whichever is more. Losses up to the deductible amount or otherwise not covered by insurance shall be the responsibility of the Contractor. This insurance shall include as named insureds and as loss payees the Port, the Contractor and Subcontractors of any tier, as their respective interests appear. The policy shall be endorsed to allow complete or partial occupancy by the Port before or after Substantial Completion without the insurer's approval. All tools and equipment of the Contractor and Subcontractors of any tier not intended as part of the construction or installation of the Work will be the sole responsibility of the Contractor.~~

PART 2 - PRODUCTS - NOT USED

PART 3 - PRODUCTS - NOT USED

END OF SECTION

PART 1- GENERAL

1.01 SECTION INCLUDES

A. This Section specifies work sequence and constraints.

B. The purpose of the milestones, sequence and limitations of construction are to ensure that the Contractor understands the requirements and limitations on its work by the specific characteristics of the Contract, schedules and conducts work in a manner consistent with achieving these purposes, and complies with the construction schedule, the specific sequence, constraints, milestones and limitations of work specified.

C. Sequence of construction: Plan the sequence of construction to accommodate all the requirements of the specifications. The Contract Price shall include all specified requirements as described in this Section.

1.02 CONTRACTOR ACCESS AND USE OF PREMISES

A. Activity Regulations

1. Ensure Contractor personnel deployed to the project become familiar with and follow all regulations or restrictions established by the Engineer.

2. There are no work hours restrictions associated with this location, although the Contractor shall comply with local ordinances with regard to noise and work hour restrictions. In the event the Contractor is planning to work outside typical work hours (Monday - Friday 0700 - 1700) the Contractor is to notify the Engineer at least 3 days in advance to arrange for necessary inspection and testing as may be necessary.

B. Work Site Regulations

1. Keep within the limits of work and assigned avenues of ingress and egress. Do not enter areas outside the designated work location unless previously approved by the Engineer. The Contractor shall comply with the following conditions:

a. Restore all common areas to a clean and useable condition that permits the resumption of Tenant operations after the Contractor ceases daily work.

b. Be responsible for control and security of Contractor-owned equipment and materials at the work site. Report to Port Security (phone (253) 383-9472 any missing/lost/stolen property.

c. Ensure all materials, tools and equipment will be removed from the site or secured within the designated laydown area at the end of each shift.

d. Provide portable lighting capable of sufficiently illuminating work areas in compliance with applicable safety regulations and as required for reliable and satisfactory performance of work during hours of darkness.

1.03 CONSTRAINTS - GENERAL

A. Constraints for Work at Site

1. The Work includes construction adjacent to an active rail lines controlled and operated by Tacoma Rail. For bidding purposes the Contractor may assume one twelve (12) hour work windows per week from 7:00 AM to 7:00 PM will be provided for Work that directly impacts and existing track unless otherwise specified in the Contract Documents. Tacoma Rail reserves the right to run trains if needed during the work windows.

2. Train operations shall have precedence over Contractor's work. Contractor's operations shall yield train operations on adjacent tracks when working with 25 feet of the operating track.
3. At the end of each track outage the track surface, alignment, runoff, gage and track structure shall meet 49 CFR Part 213 for Class 1 track and be accepted by Tacoma Rail and Port of Tacoma.
4. The Contractor shall have full responsibility for all rail safety requirements.
5. All work in proximity of active tracks shall be performed in accordance with 49 CFR Part 214.

B. Schedule constraints

1. There are scheduling constraints and specified track outages associated with the Work on the Contract Drawings. The Contractor shall consider these constraints when preparing its bid and schedule the work.

1.04 RAIL COORDINATION

A. Contractor shall coordinate all work in the vicinity of the existing track with the Engineer and Tacoma Rail.

B. This project requires work in the vicinity of active railroad tracks. The Contractor shall adhere to all Tacoma Rail, Port of Tacoma and Federal safety codes, regulations and specifications for the duration of the project.

C. Contractor shall protect active railroad tracks at all times, unless otherwise noted or allowed by the Engineer.

D. Tacoma Rail reserves the right to operate trains on all active tracks at all times, Contractor shall yield to operating trains at all times.

E. Rail Construction Sequencing Plans

1. Contractor shall submit and obtain approval of a detailed sequencing plan for rail construction in the project East End within ~~14~~ 21 days ~~prior to~~ of Contract Execution. No onsite track construction ~~work~~ shall begin until the sequencing plan has been reviewed and approved by the Port.
2. Contractor shall submit and obtain approval of a detailed sequencing plan for rail construction in the project West End within 30 days of Contract Execution. No work shall begin in the West End until the sequencing plan has been reviewed and approved by the Port.
3. Contractor may adopt and submit sequencing plans provided in the Drawings, or develop and submit alternative sequencing plans.
4. Rail Construction and Sequencing Plans shall include, at a minimum, the following:
    a. Work area and duration for each phase of construction.
    b. Crews and work hours that will be utilized during each phase of work, including identification of planned weekend work and 24 hour work days.
    c. Itemized list of railroad demolition and construction to be completed in each phase of work.
    d. Itemized list of site, utility, mechanical and electrical demolition and construction to be completed in each phase of work.

e. Schedule and duration of track outages in each phase of construction.

f. Description of temporary trackwork or special trackwork that will be constructed to minimize disruption of Tacoma Rail operations.

g. Procedures for Contractor safety when working adjacent to active railroad tracks in accordance with City, State, and Federal requirements, and compliance with 49 CFR Part 213.

h. Access routes in, out and through the work area for each phase.

F. Track Outages:

1. The Contractor shall schedule all work to minimize the time that any tracks and rail operations are out of service and minimize disruption to Tacoma Rail operations.

2. All track outages shall be requested by the Contractor a minimum of one week prior to beginning of outage. Tacoma Rail will make reasonable effort to adjust planned rail operations to accommodate Contractor outage requests, and will notify Contractor of outages that can be accommodated. Contractor shall accommodate and implement reasonable changes to requested or planned rail construction sequence as required to maintain Tacoma Rail operations at all times.

3. Where days of allowable track outage are noted, Contractor shall work 24 hour days, work weekends, and/or utilize multiple crews to meet the time restrictions and allow rail operations to be resumed within the time allowed.

G. Emergency access requirements of the 2012 International Fire Code, Washington State adopted fire code amendments, and Title 3, Chapter 3.02 of the Tacoma Municipal Code shall be followed throughout the duration of the project.

H. Contractor shall identify all Work within 25 feet of an active track in its three week look ahead schedule.

I. Seventy two (72) hours advance written request for track work window is required prior to beginning any work within 25 feet of the rail lines.

J. Contractor shall coordinate its construction activities with the following Port and Tacoma Rail contacts.

1. Email:

a. railoperations@cityoftacoma.org

b. Carol Rhodes, Senior Project Manager, crhodes@portoftacoma.com

c. Matt Lenn, Port Inspector, mlenn@portoftacoma.com

2. Tacoma Rail Tower number: (253) 502-8867

1.05 UTILITY COORDINATION

A. Contractor shall perform all utility pothole investigations indicated on the Drawings within 20 days of Notice to Proceed.

1.06 ELECTRICAL CONSTRUCTION SEQUENCE

A. Contractor shall submit a work plan for electrical construction within 20 days of notice to proceed. At a minimum, electrical work plan shall address:

1. Detailed electrical sequencing of light pole, vault and raceway construction.

2. Schedule for de-energizing existing light poles and energizing new and existing poles throughout the sequence of electrical construction.

3. Schedule for work to be performed by Tacoma Public Utilities.

B. Contractor shall maintain power to communications hut at all times. Provide generator power as required until permanent power is established.

C. Contractor shall maintain existing TPU service pole and panels in service until new TPU service pole, panels and associated raceways and vaults are complete and energized. Contractor shall provide temporary panel at existing TPU service pole as required to minimize outages of site lighting.

D. Contractor shall minimize outages of existing and new site lighting, the schematic sequence of electrical and lighting construction outlined below represents a possible construction sequence that would result in lighting outages generally acceptable to the Port of Tacoma and Tacoma Rail. The sequence shown is for general information only and is not intended to dictate to the Contractor the sequence of construction.

1. Construct and test new light poles LP1, LP2, LP4, LP5, and all associated vaults, raceways and conductors prior to de-energizing any existing light poles.

2. Energize new light poles LP1, LP2, LP4, LP5, and existing light poles LP3 and LP4A prior to de-energizing any existing light poles.

3. Construct, test and energize new light pole LP7 and all associated vaults, raceways and conductors. Energize new light pole LP7 and existing light poles LP8 and LP9 within 10 days of energizing light poles LP1, LP2, LP4 and LP5.

4. Construct, test and energize permanent power feed to AEI and Communication huts, and existing light pole LP5A and all associated vaults, raceways and conductors prior to the completion of Track Construction Phase 1.

5. Coordinate construction of new TPU service pole and vault and construct, test and energize new TPU service panels. Construct, test and energize new light pole LP6 and all associated vaults, raceways and conductors within 3 days of energizing the TPU service panels. Connect all previously constructed light poles and all associated vaults, raceways and conductors to new TPU service panels within 3 days of energizing the TPU service panels.

6. Construct, test and energize new light pole LP10 and all associated vaults, raceways and conductors prior to the completion of Track Construction Phase 2B.

7. Energize existing light poles LP11, LP12, LP13, LP14, LP15, LP16 and LP17 prior to completion of Track Construction Phase 2B.

8. Construct all remaining electrical work prior to completion of Track Construction Phase 3A.

1.07 CIVIL/SITE CONSTRUCTION SEQUENCE

A. Contractor shall provide 30 day advance written notice prior to demolishing the existing Tacoma Rail maintenance yard fencing, or beginning construction of the new maintenance yard fencing. Contractor shall coordinate with Tacoma Rail for the relocation or consolidation of the materials within the maintenance yard as required for fencing demolition and construction.

B. Contractor shall provide 7 day advance written notice prior to beginning dewatering of Erdahl Ditch or excavations.

C. Coordinate all utility and storm drainage work with track demolition and construction sequence.

D. Coordinate all demolition and sitework with track demolition and construction sequence.

E. Contractor shall dewater active surfacewater drainage systems, including pipes, ditches and culverts, as required to complete construction. Drainage dewatering systems shall be of sufficient capacity to prevent flooding of project site or upstream areas.

F. Contractor shall maintain a minimum of one access route through the project site, from Alexander Avenue to Milwaukee Avenue, at all times. Contractor may use existing access roads, new access roads and temporary access roads and track crossings as required to establish the access route.

1.08 COMPRESSED AIR CONSTRUCTION SEQUENCE

A. Maintain existing compressed air pits in service until new compressed air connection pits are constructed, tested and fully functional.

B. Coordinate piping demolition and installation with track demolition and construction sequence.

PART 2 – PRODUCTS

2.01 NOT USED

PART 3 – EXECUTION

3.01 NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Temporary utilities.

B. Temporary telecommunications services.

C. Temporary sanitary facilities.

D. Temporary Controls: Barriers, enclosures, and fencing.

E. Field offices and Laydown Facilities

1.02 TEMPORARY UTILITIES

A. Provide and pay for all electrical power, temporary lighting, water, heating and cooling, and ventilation required for construction purposes.

B. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.03 TELECOMMUNICATIONS SERVICES

A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.

B. Telecommunications services shall include:

1. Windows-based personal computer dedicated to project telecommunications, with necessary software and laser printer.

A. one (1) for the Contractor and one (1) for the Contractor provided Port/Engineer work station.

2. Telephone Land Lines: ~~One~~ Two line, minimum; one handset per line. One (1) line for the contractor and one (1) line for the contractor provided Port/Engineer work station.

3. Internet Connections: Minimum of ~~one~~ two; DSL modem or faster. One (1) for the contractor and one (1) for the contractor supplied Port/Engineer work station

4. Email: Account/address reserved for project use.

1.04 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

B. Maintain daily in clean and sanitary condition.

C. At end of construction, return facilities to same or better condition as originally found.

1.05 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public to allow for Port's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

B. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.06 FENCING

A. Construction: Contractor's option.

1.07 FIELD OFFICES AND TEMPORARY LAYDOWN AREA

A. The Port will provide an approximate 2 acre laydown area for owner supplied material laydown and contractor staging at 2114 N. Marshall Ave, immediately adjacent to the project site. There is no direct access from the Project Site to the staging area.

B. Contractor shall maintain an onsite office. Contractor may use (2) office buildings and shop area at 2114 N. Marshall Ave for Port/Engineer office and Contractor offices. Port/Engineer field office building includes 1 conference room, 1 office, and 1 bathroom. Provide sturdy furniture, desk, chair, drawing rack, and display table. Conference room shall include table and chairs suitable for meeting up to 10-12 people. Contractor office building includes three (3) offices, open area and two restrooms.

~~B. Provide field office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack and drawing display table. Field office shall include a room, table and chairs suitable for meetings of up to 6 people.~~

C. The property at 2114 N. Marshall Ave is fully fenced. ~~on three sides~~. There is no direct access from the staging area to the work area. Contractor shall provide locks. ~~be responsible for securing the property and providing 6 ft (1.8M) high fence and gates with locks.~~

1.08 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Final Inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing facilities used during construction to original condition.

D. Restore new permanent facilities used during construction to specified condition.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 02 41 13
SELECTIVE SITE DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The extent and location of the demolition work is indicated on the Drawings and in the specifications. The work includes, but is not limited to:

1. The requirements for the removal, wholly or in part, and satisfactory disposal of ballast, subgrade materials, special trackwork, trackwork other track materials, pavements, retaining walls, fencing, storm drainage and utility pipelines and structures, miscellaneous site debris, and other obstructions which are designated to be demolished on the Drawings or within these Specifications.

2. Payment of all costs required for disposal of items at legal disposal sites, including all permit fees and related costs.

3. Salvaging items as indicated on the Drawings and in the specifications.

4. Backfilling and compaction of holes, voids, trenches or pits that result from such removal.

B. All demolition items not identified for salvage by the Engineer shall become the property of the Contractor. Disposal of all demolition items shall be in accordance with the specifications, local, state and federal requirements.

1.02 SUBMITTALS

A. Demolition Management Plan (DMP)

1. The DMP shall provide the procedures proposed for the complete accomplishment of the demolition work and management of the demolition wastes and documentation. The procedures shall provide for safe conduct of the work, careful removal and disposition of materials specified to be salvaged or disposed, protection of property to remain undisturbed, and coordination with other work in progress. The procedures shall include a detailed description of the methods, staff, and equipment to be used for each operation, the sequence of operations, and quality control measures to ensure compliance with the Contract and regulatory requirements.

2. Submittal requirements in Section 01 35 43.19, Export Soil Management plan and 01 74 19 Waste Management Plan may be included as part of DMP plan or submitted separately.

PART 2 - PRODUCTS

2.01 SALVAGE ITEMS FOR PORT OF TACOMA

A. All material designated to be salvaged for the Port of Tacoma shall be placed and stored by the Contractor within Contractor Laydown area(s) as indicated on the Drawings or as otherwise directed by the Engineer in a location within 2,500 feet of the project limits. All salvaged material delivered to the Port shall be stacked on Contractor supplied pallets where practical, or stored by blocking larger items on Contractor supplied dunnage in a neat and orderly manner.

B. The following materials shall be salvaged for the Port by the Contractor:

1. The following materials from turnouts identified for removal:

   a. All frogs, including frog tie plates.

   b. All hook tie plates.

2. 2,600 linear feet of salvage rail in 80 foot segments, conforming to AREMA specifications for Class I relay rail.

3. All joint bars and compromise joint bars, excluding joint bars used for salvage rail for relay within the limits shown on the Drawings.

4. Power switch machines.

5. Manual switch stands.

6. Wheel sensor connection wiring to be pulled back to nearest junction box and neatly stored. Junction box locations to be identified in record drawings.

2.02 SALVAGE MATERIALS FOR RELAY OR REINSTALLATION WITHIN THE PROJECT

A. All material designated for removal, salvage and relay or reinstallation within the limits shown on the Drawings shall be placed within Contractor Laydown area(s) as indicated on the Drawings or adjacent the location of reinstallation. All salvaged material shall be stacked on Contractor supplied pallets where practical, or stored by blocking larger items on Contractor supplied dunnage in a neat and orderly manner.

B. The following materials shall be salvaged for relay or reinstallation within the project:

1. All turnouts marked for salvage and reinstallation. Refer to Drawings for materials to be replaced on turnouts salvaged for reinstallation.

2. Salvage rail and joint bars for relay within the limits of new track construction as shown on the Drawings and conforming to AREMA specifications for Class I relay rail. All other track material for track constructed with salvage rail for relay shall, except as noted below, be new, including but not limited to spikes, plates, clips, bolts, nuts and washers.

~~2.~~3. Salvage rail and joint bars for relay within the limits of Track 13 Rail Relay as shown on the Drawings and conforming to AREMA specifications for Class I relay rail. All other track material for Track 13 Rail Relay shall be salvaged, including but not limited to spikes, plates, clips, bolts, nuts and washers.

2.03 RAIL MATERIALS FOR OFFSITE RELAY OR RECYCLE

A. All rail material designated for removal and salvage which are not used for relay or reinstallation within the limits shown on the Drawings and not salvaged for the Port shall be shall be salvaged for offsite relay or recycle by the Contractor. All salvaged material shall be stacked on Contractor supplied pallets where practical, or stored by blocking larger items on Contractor supplied dunnage in a neat and orderly manner.

B. The following materials shall be salvaged for offsite relay or recycle:

1. All turnouts marked for removal, excluding turnout components salvaged for the Port.

2. Salvaged rail not incorporated in the constructed track as relay rail and not salvaged for the Port, and conforming to AREMA specifications for Class I and Class II for relay rail.

3. Scrap rail, including all rail removed which does not conform to AREMA specifications for Class I and Class II for relay rail.

PART 3 - EXECUTION

3.01 PREPARATION

A. Utility locates shall be performed prior to start of demolition. Coordinate and resolve with the Engineer to turn off or de-energize affected services before starting demolition.

B. Verify all items for demolition, disposal, and salvage as early as practicable prior to start of the work. Notify the Engineer immediately if observed conditions differ from anticipated conditions.

C. Pothole investigations:

1. Perform pothole investigations to determine the alignment and horizontal and vertical position of utilities at the locations indicated on the Drawings.

2. Potholes shall be 12-inch diameter air vacuum excavations.

3. Survey utilities located by potholing and provide survey data to the Engineer within 5 days of completing pothole investigations.

4. Backfill pothole excavations with Gravel Backfill for Pipe Zone Bedding.

3.02 REMOVAL OF RAIL

A. Rail identified on the Drawings for salvage or removal shall be removed to the nearest joint at or beyond the length shown on the Drawings.

3.03 DISPOSAL AND DISPOSITION OF MATERIALS

A. Disposition of Materials

1. All materials and equipment removed, and not used for relay or reinstallation within the project, shall become the property of the Contractor and shall be removed from Port property.

2. The Contractor assumes full responsibility for the proper disposal of all demolition materials under this Contract in a manner that meets the requirements of federal, state and local regulations for protecting the health and safety of employees, the public, and for protecting the environment.

3. Existing ballast, excavated base course and excavated soil to be disposed of off site in accordance with Section 01 35 43.19 Export Soil Management.

B. Cleanup:

1. Haul route and paved site areas will be swept to remove any construction debris or soil tracked out by construction equipment and vehicles.

2. There shall be no debris, rubble or litter left at the site from any of the demolition operations and the site shall be clean.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. This Section specifies the material requirements and performance criteria for complete trackwork and special trackwork to be furnished and installed by the Contractor in accordance with the Contract Drawings.

B. Except as modified herein, special trackwork shall be designed, manufactured, tested, assembled, inspected, handled and shipped in accordance with the current edition of the American Railway Engineering and Maintenance-of-Way Association (AREMA) Portfolio of Trackwork Plans, and the AREMA Manual of Railway Engineering.

C. The extent and location of railroad work is indicated on the drawings. The work includes the requirements for providing railroad track and special trackwork complete with rail, ties and all appurtenances necessary for a complete, operable railway system.

1.02 REFERENCED STANDARDS:

A. American Railway Engineering and Maintenance-of-Way Association - Manual for Railway Engineering (AREMA) 2014.

B. American Railway Enginering and Maintenance-of-Way Association – Portfolio of Trackwork Plans (AREMA PORTFOLIO) 2014.

C. Code of Federal Regulations Title 49 – Transportation, Chapter II – Federal Railroad Administration, Department of Transportation, Part 213 – Track Safety Standards.

D. Code of Federal Regulations Title 49 – Transportation, Chapter II – Federal Railroad Administration, Department of Transportation, Part 214 – Railroad Workplace Safety.

E. American Wood Preservers Association (AWPA) – M4-98 Standard for the Care of Preservative Treated Wood Products.

1.03 CONTRACTOR FURNISHED MATERIAL:

A. Contractor shall provide all materials required for completion of the Work, except those materials identified on the Drawings as Port Furnished Material.

1.04 PORT FURNISHED MATERIAL:

A. The Port will provide the materials identified on the Drawings as Port Furnished Material. Quantity of Port Furnished Material items shall be as indicated on the Drawings.

B. Port furnished materials shall comply with product specifications of this Section and Section 34 11 23 – Special Trackwork.

C. Port Furnished Materials shall be delivered by material suppliers to Contractor Laydown Area identified on the Drawings. Contractor shall be responsible for unloading materials from trucks.

D. The Contractor shall receive products at the site and give written receipt for materials at the time of delivery, noting visible defects and omissions. If such declaration is not given, the Contractor shall assume responsibility for such defects and omissions.

E. The Contractor shall store materials until ready for installation and protect from loss and damage.

1.05 SUBMITTALS:

A. Rail Construction Sequencing Plans as described in Section 01 14 100, Work Restrictions

B. Certification of Rail

1. Contractor to provide Certifications of compliance from suppliers or manufacturers that Rail delivered to the site is in conformance with AREMA Specifications Chapter 4, Part 1 Design of Rail and Part 2 Manufacture of Rail.

2. The chemical analysis of the rails listed by heat number, and the specified chemical analysis elements.

3. The Brinell hardness of the rails shipped by heat numbers.

C. Certification of Other Track Material

1. Contractor to provide Certifications of compliance from suppliers or manufacturers that Joint Bars, Compromise Joints, Track Bolts, Nuts and Washers delivered to the site are in conformance with AREMA Specifications Chapter 4, Part 3 Joining of Rail.

D. Certification of Tie Plates

1. Contractor to provide Certifications of compliance from suppliers or manufacturers that Tie Plates delivered to the site are in conformance with AREMA Specifications Chapter 5, Part 1 Tie Plates and these specifications.

2. Contractor to provide shop drawing detailing all tie plates using elastic fasteners.

E. Certification of Elastic Fasteners on Timber Ties

1. Contractor to provide Certifications of compliance from suppliers or manufacturers that Elastic Fasteners delivered to the site are in conformance with AREMA Specifications Chapter 5, Part 9, Design Qualification Specifications for Elastic Fasteners of Timber Cross Ties.

2. Contractor to provide shop drawing detailing elastic fasteners and clamping force.

F. Certification of Screw Spikes

1. Contractor to provide Certifications of compliance from suppliers or manufacturers that Screw Spikes delivered to the site are in conformance with AREMA Specifications Chapter 5, Part 10, Section 10.1 Steel Screw Spikes.

G. Gage Rods: Provide catalog cut.

H. Ballast

1. The Contractor shall provide laboratory certification that the railroad ballast meets the Specifications of this Section.

2. Offsite borrow source characterization in accordance with Section 31 00 00, Earthwork.

I. Top of rail profile. Vertical control survey of finished top of rail. Submittal to consist of a table comparing proposed top of rail elevations to as constructed top of rail elevations at 50 foot intervals along the centerline of alignment. Submittal to be reviewed and approved by Engineer.

J. Flangeway detail. Shop drawing detailing method of providing flange way block out in asphalt placed around the rail. Plan to be approved by the Engineer before paving around rail begins.

K. Manufacturers literature on air pits and track lubricators.

1.06 QUALITY ASSURANCE:

A. The Contractor performing railroad work shall be regularly engaged in the furnishing and installation of railroad trackwork, and shall employ at least one (1) supervisory person who is thoroughly trained and experienced in trackwork construction. The supervisor shall be completely familiar with the design and application of the work described in this Section and shall direct all work performed under this Section.

B. The Contractor shall own a copy of the American Railway Engineering and Maintenance-of- Way Association - Manual for Railway Engineering (AREMA) 2014, Chapters 1, 4, 5, and 30.

~~B.~~C. Welded Bonds and track connections shall be in accordance with the requirements of AREMA Signal Manual, Parts 8.1.20, 8.1.25, and 8.1.30, where the requirements of the AREMA Specifications do not conflict with those of these Specifications.

PART 2 - PRODUCTS

2.01 GENERAL:

A. Furnish and install all track materials and products to complete the railroad track and special trackwork, as shown on the Drawings. Completed railroad track shall conform in all regards to the AREMA Manual of Railway Engineering.

B. All materials shall be new, except those materials salvaged from demolition for relay or reinstallation as specified in Section 02 41 13, Selective Site Demolition. Use of relay materials shall only be permitted within the limits shown on the Drawings.

C. Trackwork will use a resilient fastening system, Pandrol type E, or approved equal.

2.02 RAIL:

A. All rail shall be 115 RE meeting the requirements of AREMA Manual, Chapter 4, Part 2, Specification Section “Specifications for Steel Rails”. The Contractor shall provide high strength head hardened rail. High strength head hardened rail shall have a minimum surface Brinell Hardness number of 370.

B. Rail shall be supplied in 80-foot lengths with not more than 10% short rail segments between 33 feet and 39 feet.

C. Bolt holes within the rail are not acceptable, except at the ends of the rail at locations where joint bars are used.

D. The rail section shall conform to the dimensions shown in AREMA Manual, Chapter 4, Part 1 for 115 RE.

2.03 RAILWAY SUBBALLAST:

A. Subballast shall be clean, open graded material removed from the excavation of existing ballast as approved by the Engineer.

2.04 RAILWAY BALLAST AND WALKWAY ROCK:

A. Railway ballast shall conform to the material requirements and be manufactured in accordance with AREMA Chapter 1, Part 2 Ballast. Ballast shall be manufactured by mechanical crushing from ledge rock, talus, or quarry rock and 100% of the material shall have at least one fractured face and 95% of the material retained on a 3/4-inch screen shall have three (3) fractured faces.

B. Railway Ballast material shall not contain more than a total of 1% by weight of wood wastes, clay lumps, dust, or other extraneous material. Carbonate rock and slag is prohibited for use as ballast.

C. The material from which railway ballast is manufactured shall meet the following test requirements:

1. Los Angeles, Wear, 500 Rev. 35% max.

2. Railway Ballast shall conform to AREMA No. 4 gradation requirements when sampled from stock pile to be loaded for shipment:

Table 34 05 17–A, AREMA No. 4 Gradation	
Sieve Size	Passing % by Weight
2 inch	100
1 1/2 inch	90-100
1 inch	20-55
¾ inch	0-15
½ inch	-
3/8 inch	0-5

3. Walkway rock shall be railway ballast conforming to AREMA No. 5 gradation requirements when sampled from stock pile to be loaded for shipment:

Table 34 05 17–B, AREMA No. 5 Gradation	
Sieve Size	Passing % by Weight
1 1/2 inch	100
1 inch	90-100
¾ inch	40-75
½ inch	15-35
3/8 inch	0-15
No. 4	0-5

4. Gradation test shall be determined in accordance to ASTM C-136, utilizing square opening sieves conforming to ASTM Specifications E-11.

5. Material qualities shall be as follows:

Table 34 05 17–C, Ballast Material Qualities			
Property	Minimum	Maximum	Test Method
Percent Passing No. 200 Sieve	-	1%	ASTM C117
Bulk Specific Gravity - Rock	2.6	-	ASTM C127
Absorption – Rock	-	1.3 %	ASTM C127
Clay Lumps and Friable Particles	-	0.5 %	ASTM C142
Degradation	-	35%	ASTM C535 ASTM C131
Flat and Elongated Particles	-	5%	ASTM D 4791 Test C, Length > 3 times avg thickness

2.05 JOINT BARS AND COMPROMISE JOINTS:

A. Joint bars shall conform with the AREMA Manual, Chapter 4, Part 3 "Joining of Rail", Section 3.1 and 3.2. Joint Bars shall be 6-hole, 36 inches long, conforming to the AREMA Manual for Railway Engineering, Section 3.2 “Joint Bars and Assemblies.”

B. The bars shall be smoothly rolled, or forged, true to template and shall accurately fit the rails for which they are intended and shall provide a true alignment of the gage and running surfaces of the two rails being connected. A variation of ±1/32 inch from the specified size of holes, or ±1/16 inch from the specified location of holes, and of ±1/8 inch from the specified length of joint bar will be permitted.

C. Where compromise joints are shown, Contractor shall field verify the type of existing rail to select proper compromise joint bars.

D. Each compromise joint bar shall also have the rail sections shown at each end along with the word “Gage” or “Out” to indicate on which side of the rail the bar is to be used. (If the compromise joint bars are interchangeable, the words gage and out will be omitted.)

2.06 TIE PLATES:

A. Tie plates shall conform to AREMA Manual Chapter 5, Part 1, "Specifications for Steel Tie Plates".

B. Either low carbon or high carbon steel tie plates may be furnished.

C. Tie plates shall accommodate two elastic spring clips and at least four screw spikes to secure the plates to the timber ties. Tie plates to have a minimum length of 16” for 136 RE and minimum length of 15" for 115 RE. Tie plates shall have minimum width of 7-3/4" and minimum thickness of 5/8" under the rail in base section.

D. Tie plates to have 1" diameter holes to accommodate 15/16" diameter screw spikes.

E. Tie plate section to be canted 1:40,+/-5, toward the center line of track.

F. Tie plates shall have smooth flat bases with no ridges or indentations.

2.07 TRACK BOLTS, NUTS, AND SPRING WASHERS:

A. Track bolts and square nuts shall be new, conforming to the current AREMA Manual, Chapter 4, Part 3, "Specifications for Heated Treated Carbon Steel Track Bolts and Carbon Steel Nuts". Spring washers shall be new conforming to the current AREMA manual Chapter 4, Part 2, "Specification for Spring Washers". For each track bolt, provide a square nut and spring washer of proper size for each bolt.

2.08 ELASTIC RAIL CLIPS:

A. The elastic rail clips to be used shall be one piece, threadless fasteners of spring steel Pandrol e-2055 Rail or approved equal, which must meet all the following requirements:

B. An easy to install one piece elastic spring steel rail clip without threaded elements which can be easily removed from its housing without any possible damage to or the loss of the lateral support provided by the shoulder. The design and configuration of the clips, their housing and their area in contact with the rail should be such that a nominal rail seat clamping force of 2500 pounds per clip is provided and frequent rail slippage can be allowed without stressing, bending, twisting or damaging the clips or their housing.

2.09 SCREW SPIKES:

A. Screw spikes shall be new, conforming to the current AREMA Manual, Chapter 5, Part 10, Section 10.1.

B. Screw spikes used to fasten the plates to the timber ties shall be one piece with reinforced throat, 3/4" by 1-1/8” rectangular head, 15/16-inch diameter, 6-1/2-inches long per AREMA Plan 1S-12 AREMA Rectangle Head Screw Spike.

C. The head shall be concentric with and firmly joined to the body of the screw. The material shall be free from injurious defects and shall have a workmanlike finish. Screws shall be provided with plain finish.

D. Finished screws shall conform to the following minimum requirements for tensile properties:

1. High Strength

a. Tensile Strength, psi 120,000 Min

b. Yield Strength, psi 80,000 Min

c. Elongation, % 18 Min

E. Except for heat-treated screws, steel mill cert data may be used for tensile strength with approval of the Port.

F. A letter or brand indicating the manufacturer shall be located on the top of the washer of each screw.

G. High strength screws shall be marked with an “H” of the top of the washer.

2.10 GAGE RODS:

A. Gage rods shall be manufactured to fit the specified rail, shall be manufactured from 1-1/4-inch diameter steel bar with double adjustable clamps at both ends to grip both sides of the rail, and shall be set for standard gage track. Gage rods to be installed on 13’ centers within the curves.

B. All gage rods within the limits of grade crossing signal circuit limits shall be insulated.

2.11 AIR CONNECTION PITS

A. Air connection pits shall be cast-in-place concrete with fiberglass pit liner and cast aluminum double hinge cover assembly. Fiberglass pit liner shall have integral concrete anchors and top flange. Cover shall have an overall diameter of 23.5-inches and hinged concentric access lid of 18-inch diameter. Cover shall have “AIR” cast in two directions. Pits shall be DABICO Model DAB-24DHS-VA or approved equal.

2.12 TRACK LUBRICATORS

A. Track lubricators shall an assembly of lubricant tank, pumping components, hoses, applicators, controls, sensors, protective mats, foundation and all associated hardware designed for the delivery of friction management lubricants to the top of rail and gauge face of rail and designed for freight rail applications. Track lubricators shall be a proven effective design with a minimum of 2,500 units currently in service.

B. Track lubricators shall deliver lubricants at a controllable rate, delivering grease at a rate of 0.75 pounds per 1000 axle passages, and deliver other lubricants at a rate of 0.5 liters per 1000 axle passages. Wheel sensors shall be non-contact and shall activate lubricant delivery upon bi-directional passage of train rolling stock.

C. Lubricator pumps, hoses and applicators shall deliver consistent and balanced amounts of lubricant to each rail. Lubricator pump shall be gear type and shall be suitable for delivering greases and oils. Lubricant applicators shall apply lubricant to

the gauge face of each rail and shall be of aluminum construction. Each applicator shall be a minimum of 55 inches in length with a minimum of 48 ports for the distribution of lubricant across the gauge face of the rail. Applicators shall be designed for installation without grinding or cutting of rail. Each track lubricator shall be furnished with six applicators, two applicators for each rail and two spares, and lubricant hoses and fittings conforming to the manufacturers recommendations.

D. Lubricator shall be designed for use DC Solar power at 120 or 240 volts and 60Hz. So DC solar power components for a fully functional power system shall be furnished with each track lubricator. Solar panels shall include vandal resistant shielding and aluminum frame and support. Battery shall be non-spillable, deep cycle battery.

E. Control systems shall be enclosed in a watertight enclosure on the exterior of the lubricant tank and shall provide fuse and surge protection, and manual test function. Controls shall be solid state and shall allow for adjustment of lubricant pump activation interval and duration.

F. Lubricant tank shall provide capacity for 800 pounds of grease and a minimum volume of 100 gallons. Lubricant tank shall be sloped to drain to pump intake and shall have a watertight locking lid.

G. Protective mats shall be puncture and solvent resistant fabric manufactured from recycled materials and resistant to UV deterioration. Mats shall contain dripping lubricants while allowing water to pass through. Protective mats shall cover the full width of the track ties at the lubricator installation site and shall extend a minimum of 30 feet along the track beyond each end of the applicators, a total minimum length of 70 feet.

H. Lubricator tank, pump and controls shall be mounted on timber ties in accordance with manufacturers recommendations.

2.13 LUBRICANT

A. Lubricant shall be high performance grease conforming to the following characteristics:

Operating Temperature Range (°C)	-40 to 120
NLGI Grade	0
Drop Point (°C)	165
Base Oil Viscosity, cSt (°C)	68

2.14 Rail Bonds

A. Rail Head Bonds: Railhead bonds shall be 3/16 inch in diameter with steel terminals welded to the conductors. They shall have a nominal length of 6-1/2 inches.

B. Web Bonds: Web bonds shall be 3/16 inch, bare, performed conductors with 3/8-inch tapered plug on each end.

C. Track Circuit Rail Connectors: Track circuit connectors shall be 3/8-inch stranded bronze conductor, with 1-inch tap on each end and compression sleeve on the other

end for a direct crimp type connection to the track wire, and shall have a nominal length of 4-inches.

D. Bond Strand: Bond strand for fouling wires shall be 3/16-inch single strand with 4/64-inch black PVC insulation.

E. Acceptable Manufacturers:

1. Erico Products or accepted equal

PART 3 - EXECUTION

3.01 GENERAL:

A. The track will be constructed using timber ties and bolted rail. In general, the track is to be constructed using 80-foot rail lengths. Burned or sheared rail will not be accepted. Tie spacing will be 21 inches on center for tangent track and 19-1/2 inches on center for curved track.

B. Track construction shall be in conformance with the standards of the American Railway Engineering and Maintenance-of-Way Association and the requirements set forth below.

C. Track construction shall be performed in conformance with CFR 49 Chapter II, Part 214.

D. When power is

3.02 RAILWAY BALLAST:

A. Subballast and ballast sections shall conform to typical cross sections shown in the Drawings.

B. Subballast and ballast shall be unloaded at required locations in a manner to minimize redistribution and handling.

C. Ballast shall be placed before the ties are laid. Raise both rails uniformly to the designed grade.

D. Care shall be taken when distributing materials from trucks and off-track equipment to prevent forming of ruts that would impair proper drainage of subgrade surface.

E. Ballast shall only be installed over subgrade which has been prepared in accordance with this Specification and has been approved by the Engineer.

F. Place ballast in lifts not more than 6 inches in thickness before compaction. Layers shall extend beyond the edge of the ties as shown on the Contract Drawings before compaction . Compact ballast thoroughly to form a stable section able to support the subsequent layers and loads.

G. Compaction of ballast shall be by means of vibratory compaction equipment or specifically manufactured for compaction purposes. Self-propelled, pneumatic-tired roller shall have a gross weight of 10 to 15 tons, and the vibratory compactor shall have a weight of not less than 10 tons and shall be capable of applying a dynamic load of not less than 18,000 pounds at 1300 to 1500 cycles per minute. Proposed compaction equipment shall be approved by Engineer.

H. Engineer will approve the compacted ballast prior to installation of track and appurtenant work over ballast. Each lift of ballast within initial layer shall be uniformly spread and compacted with not less than four passes of either a self propelled, pneumatic-tired roller or vibratory compactor.

I. Track shall be assembled on compacted ballast to permit placement of additional ballast for subsequent raising and tamping and to provide full depth under ties.

J. Final track raise shall not exceed 2 inches, and ballast shall be compacted with a 16 tool vibrating squeeze-type mechanical tamper making one full tamping insertion per tie for each inch of raise. Ballast in crib areas shall be compacted by a means approved by Engineer. Track shall be raised, aligned and tamped to within the specified tolerances.

K. Ballast shall be thoroughly tamped within a space from 15 inches inside each rail to ends of ties. In tamping ties within above described limits, simultaneous tamping shall be performed under each rail. Tamping is not permitted at center of tie except within limits of turnouts and crossings.

L. Pneumatic or electric tamping tools, either hand held or machine mounted, shall be used. Hand tamping with shovels or picks is not permitted.

M. Two tamping tools shall always be used opposite each other on same tie. Tamping tools shall be started from a nearly vertical position and worked downward past bottom of tie, after which tool should be slanted downward to force ballast under tie. Double tamp every joint tie;

N. Ballast shall be mechanically dressed to provide proper section as shown on Drawings.

O. Excess ballast shall be removed, or may, at Contractor 's option, be placed as directed by Engineer. Payment will not be made for ballast in excess of dimensions shown on Drawings.

P. Overworked and excessively tamped ballast shall be removed and replaced at Contractor's expense.

3.03 TRACK CONSTRUCTION:

A. Trackwork: Lay rails on timber tie track with staggered joints such that joints in opposite rails shall be staggered not less than 12 feet apart. Use temporary shims to secure proper spacing between the ends of rails. The rail temperature, at the time of laying, shall determine the number and thickness of shims required. Shim thickness shall be in accordance with table 5.2 in AREMA Section 5.1.4.

B. Space timber ties 21 inches on center for tangent track and 19-1/2 inches on center for curved track, unless otherwise noted. Any deviation from the specified spacing shall be approved by the Engineer prior to installation of spikes or hold down devices.

C. Care shall be taken in handling or spacing ties to not damage them with picks or spiking hammers. Ties shall be lifted and supported during storage, transportation, and placed in such a manner as to prevent damage. Ties shall not be dropped to the roadbed. Tie tongs, lining bars, other suitable tools or tie spacing equipment shall be used.

D. Place wood ties with heartwood face down and square to the rail, except as otherwise shown in the Drawings.

E. Ties shall be placed within 0.5 inches of perpendicular to the opposite rail.

F. Cribs shall be filled to full height unless otherwise directed by the Engineer.

G. Tie Plates: Set tie plates in correct position on the ties, true to gage, and with shoulders in full contact with the rail. Place one tie plate under each rail at each tie.

H. Joint Bars: Secure joint bars in place with the full number of bolts, nuts and lockwashers. Stagger bolts, with heads placed inside and outside alternately, and draw tight before fastening rail to tie.

1. A lubricant shall be applied on the rail within the area of the joint bar at time of installation.

2. Rail joints shall be applied so that bars are not cocked between base and head of rail. Bars are to be properly seated in rail.

3. Rail joints are not to be placed in limits of paving on asphalt crossing.

I. Screw Spikes: Two screw spikes to be provided each side of rail for a total of four screw spikes per plate.

J. Gage Rods: Gage rods shall be provided in all curves and spaced at 13-foot centers along the centerline of track.

3.04 TRACK LAYING:

A. The Contractor shall construct the track in conformance with the alignment and profile data shown on the Drawings. Alignment is based on the center line of track, equidistant between gage sides of the rails.

B. The Contractor shall perform final surfacing and tamping following all other track construction items affecting the track structure. The ballast to conform to the ballast section shown on the Drawings.

C. The Contractor shall place the track in good alignment before the final ballast lift is made. The maximum throw for final lining shall not exceed 1 inch. Contractor shall set

hubs for the alignment before the final lift is made and final alignment shall conform to the hubs.

D. Gage of Track:

1. Gage of track is the inside dimension between running rails, measured at right angles to the alignment of the track 5/8" below top of rail. The standard gage of track is 4'-8 1/2".

E. Track Tolerances:

1. The final gage, cross level, and horizontal and vertical alignment of all track shall be within the tolerance shown below:

2. Gage variation:

a. Gage variation shall not exceed 1/8"(+/-) in new track construction.

b. New track will be laid to 4'-8 1/2" gage.

3. Cross Level:

a. Deviation from cross level: No reverse cross level on curves will be allowed. A maximum deviation of minus 1/2 inch cross level on inside rail of curve will be allowed. A maximum of 1/4" cross level deviation will be allowed on tangent track.

4. Horizontal Track Alignment:

a. Maximum allowable deviation of the middle ordinate from a 62-foot chord,

b. On curves: 3/8 inch

c. On tangents: 1/4 inch

F. Vertical Track Profile:

1. The maximum permissible variation from profile elevation detailed on profile drawings shall be + 1/2 inch, -0 inch

G. Maximum permissible runoff per 40 feet in any interim raise shall not exceed: 1 inch

H. The maximum permissible variation from a uniform profile on either rail at the mid-ordinate of a 62-foot chord shall not exceed: 1/4 inch

3.05 ASSEMBLE AND INSTALL SPECIAL TRACKWORK:

A. Install turnouts and crossovers as shown on Drawings.

B. Installation of frog plates, switch plates, and plates under closure rails shall conform with AREMA trackwork standards, and Shop Drawings.

C. Following installation of special trackwork on initial layer of ballast, special trackwork shall be lifted, aligned and supported prior to placement of final ballast.

D. Ballast shall be uniformly placed and spread. Turnout shall then be raised and ballast tamped under both sides of each tie for the full length of tie. Tamp ballast thoroughly throughout length of all ties in turnout. Hand-held power tamping tools shall be used where workheads of tampers cannot reach tie cribs in Special Trackwork. Final top of ballast shall conform to the ballast section as indicated except in cribs between point of switch and heel of switch where it shall be three inches below base of rail to allow clearance for switch rods.

E. When installing various components of Special Trackwork, particular attention shall be given to the following:

1. Check alignment, gage, and surface through turnout .
2. See that bolts, nuts, cotter pins, and other fastenings are m place, in good condition, and properly tightened.
3. See that switch points fit snugly against rail when switch is thrown in either position.
4. See that connecting rod and switch rod bolts are equipped with coner pins properly spread.

F. Test operate switches for lost motion and loose connections and adjust as necessary.

G. Examine rod and fastenings which connect switch point to switch stand to see that they are in place and in good condition.

H. Switch stands shall be so installed as to hold switch point tightly against the stock rail when stand is in normal position. Switch rods shall be adjusted to hold opposite point tightly against rail when stand is in reverse position.

I. Switch stands shall be kept securely spiked to switch ties. Switch ties shall be set square with track and kept firmly tamped.

J. At time of installation, all sliding surfaces of special trackwork assemblies shall be lubricated with a dry film graphite lubricant in accordance with manufacturer's recommendations .

K. Tamping shall be as per Article 3.08.B of this Section.

L. No closed point switch point shall be installed in the main track unless it has the proper point protection in place and tested.

3.06 DRILLING:

A. Rail ends for bolted joints shall be drilled in accordance with AREMA standards. Any additional holes in rail will be sufficient cause for rejection.

B. Hole in rail shall be drilled to proper size and not punched, slotted, or cut with a torch, and holes shall be chamfered to remove sharp edges.

C. A variation of 1/32 inch in size and location of bolt holes shall be allowed.

D. Holes shall be located with proper size rail drilling template and marked with a center punch prior to drilling. Drilling through joint bars is prohibited.

3.07 RAIL ENDS:

A. Rail shall be cut with rail saw to a tolerance of 1/32 inch from square. All burrs shall be removed and ends made smooth. Torch cut rails will be rejected.

B. Battered or mismatched ends shall be built up or ground off

3.08 SURFACE, LINE AND GRADE

A. Contractor shall perform all surfacing as specified to bring line and surface into compliance within track geometry tolerances specified in this section.

B. Contractor shall surface track to zero crosslevel.

C. Ballast shall be spread and track raised in a series of lifts as indicated in Contract Drawings. No single lift shall be higher than 2 inches except in crossings and turnouts. In raising track, jacks or equipment shall be regulated to avoid bending of angle bars or straining of joints. When jacks are used they shall be simultaneously used and properly spaced at not more than quarter points of rail to avoid breaks or bends in rail when track is raised. Both rails shall be raised simultaneously and to proper crosslevel by raising jacks.

D. Each tie shall be tamped from 15 inches inside rail to end of tie. Tamping shall not be permitted at middle of tie. Both ends of a tie shall be tamped simultaneously and tamping inside and outside rail shall be done at same time. Equipment used for surfacing truck shall be subject to approval by Engineer.

E. Ties that become loose during track raising shall be unfastened realigned, and re-fastened before tamping. During each track raise, track is to be uniformly tamped.

F. After ballasting is completed and track is surfaced and lined, according to tolerances, ballast shall be trimmed neatly and surplus material shall be spread evenly along ballast shoulder.

G. Contractor shall perform necessary operations to assure that all ties are at right angles to track.

H. Contractor shall perform two tamping squeezes per tie up to 1-1/2 inches of raise with one additional insertion and squeeze for each additional 1 inch of raise. Joint ties shall be given one additional squeeze than other ties. The maximum allowable raise per surfacing pass shall be 2 inches.

I. In locations where squeeze tampers cannot fill and compact ballast, such as at frogs, guard rails, switch points of turnouts and headblocks, etc., mechanically tamp with air tools or other hand-held power tamping tools.

J. On curves, high rail shall be used as line rail and low rail shall be used as grade rail.

K. When surfacing turnouts, the straight side of turnout shall be used as the line rail.

L. After ballast regulating in turnouts, Contractor shall immediately clean excess ballast from switch point area, including switch points, switch rods, connecting rods, and guardrail and frog area.

M. After ballast is regulated and dressed, Contractor shall ensure that resilient fasteners, track bolts and rail anchors are tight and in proper alignment.

N. Contractor caused damage to signal equipment, shall be repaired at Contractor's sole expense.

3.09 TRACK 13 RAIL RELAY

A. Salvaged 115RE rail shall be used to replace existing 90RE rail along Track 13 as shown in the drawings. All other track materials shall be salvaged from the project site, including but not limited to spikes, plates, clips, bolts, nuts and washers.

B. Approximately 200 ties within the limits of the Track 13 Rail Relay will be replaced with new. New 8'-6" hardwood ties will be furnished by the Port. Locations of tie replacement will be marked in the field by the Tacoma Rail prior to installation.

C. Contractor shall ensure salvaged tie plates for the larger 115RE rail sit evenly on the existing ties. Adzing of the ties may be necessary to properly install the plates and lay the track. Minimum tie depth at rail seat of adzed ties shall not be less than 6 inches. The contractor shall adze the ties if necessary. When adzing the ties the contractor shall use a mechanical adzing device. Hand adzing of the ties is not allowed. All newly adzed ties shall be coated with an approved preservative.

3.10 INSTALLATION OF WELDED BONDS

A. Welded bonds shall be installed at all locations indicated on the plans to maintain existing functionality of all at grade crossing signal systems adjacent to the project site.

B. The surfaces of the rails where the bond is to be applied shall be ground clean with a vitrified grinding wheel. After grinding, the surface shall be cleaned with an approved nontoxic solvent to remove all traces of grease and dirt. After the surface has been ground and cleaned, the bond wire shall then be welded to the rail in a manner that will ensure a thorough mechanical and electrical connection.

C. Ensure that each bond connection is thoroughly welded to the rail. The Engineer reserves the right to require a test of each weld by hammer and striker, or in any manner which in the opinion of the Engineer is reasonable.

D. Any welded bond installed by the Contractor that is found to be defective prior to acceptance, shall be removed and a new bond shall be installed at no additional cost of the Port.

3.11 INSTALLATION OF TRACK CIRCUIT CONNECTIONS

A. The web end of the track circuit connector shall be welded at a maximum of 3 inches from the end of the insulated joint.

B. The underground cable shall be stripped back a sufficient distance for the exposed conductor to be fully inserted into the compression sleeve. The sleeve shall then be compressed with the type of compression tool designed for that purpose.

C. All track circuit connections shall be installed by the Contractor, and any found to be defective prior to acceptance shall be removed, and a new track circuit connection installed at no additional cost of the Port.

~~N.~~D. Bond testing: Test all track circuits for continuity of circuit and ensure main line track circuit is de-energized with 0.06 ohm shunt at any point on the track block.

~~3.09~~3.12 TESTING:

A. Before final acceptance of trackwork, the Port will provide for a suitable test locomotive to be run over the entire length of new trackage in the presence of the Engineer. There shall be no noticeable settlement or deflection of ties and rail during the test. The Contractor shall re-line, surface, tamp, or otherwise correct any and all deficiencies as directed by the Engineer.

~~3.10~~3.13 TRACK LUBRICATORS

A. Install track lubricators in accordance with manufacturers recommendations.

END OF SECTION