

SPECIAL PROVISIONS

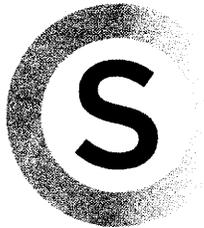
**CSXT Railroad Over US 221
Milepost ZD-0.71**

**STATE PROJECT 34400.1.1 (R-2233AA)
F.A. PROJECT NHF-221(9)
RUTHERFORD COUNTY**

Prepared For:

**NORTH CAROLINA DEPARTMENT OF
TRANSPORTATION**

Prepared By:



STEWART

401 Fayetteville Street
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Raleigh, NC 27601
(919) 380-8750

January 4, 2010



01-04-10

R-2233AA - Rutherford County

Railroad Site Data:

The following information was received from the Railroad on December 10, 2009, and is provided as a convenience to the Contractor in bidding this project. This information is subject to change and the Contractor may, at his discretion, contact the Railroad directly to verify its current accuracy. Since this information is shown as a convenience to the Contractor, but is subject to change, the Contractor shall have no claims whatsoever against either the Railroad or the Department of Transportation for any delays or additional costs incurred based on changes in this information which occur after the above date of receipt.

Type and number of tracks within 50 ft. of project (mainline, branchline, siding, yard, etc.).

1 – Mainline

Number of trains on affected track per day.

2

Type of trains (passenger or freight).

Freight

Maximum authorized operating speed of trains.

25 mph

Type and number of RR employees assigned to job.

1 - Flagman

**SPECIAL PROVISIONS
 CSXT RAILROAD OVER US 221
 MILEPOST ZD-0.71
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 RUTHERFORD COUNTY**

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State Project No. 34400.1.1 (R-2233AA)
F.A. No. NHF-221(9)

TIP: R2233AA

Rutherford County

CSX TRANSPORTATION, INC. – MISC SPECIAL PROVISIONS (SPECIAL)

Railroad Bridge

Project R-2233AA – Rutherford County
CSX Railway Bridge over US 221
Between US 74 and Chesnee, SC
at Sta. 45+00.89-L-
CSX MP ZD-0.71

“Standard Specification,” where referred to in these Special Provisions, shall mean the North Carolina Standard Specifications for Roads and Structures, 2006 published by the North Carolina Department of Transportation.

RELOCATION OF WIRE LINES

Any temporary or permanent changes in wire lines necessitated by the construction of the project will be made by others without cost to the Contractor. However, the Contractor will be required to bear the cost of any changes that are made at his request solely for his convenience in the conduct of his operations.

DELAYS CAUSED BY OPERATIONS OF OTHERS

The Contractor’s attention is called to the fact that neither the North Carolina Department of Transportation, herein called the Department of Transportation, nor the Railroad Company assumes any responsibility for any work performed by others in connection with the construction of the project, and the Contractor shall have no claim whatsoever against the Department of Transportation or the Railroad Company for any inconvenience, delay, or additional cost incurred by him on account of such operations by others.

COOPERATION WITH OTHERS

The Contractor shall cooperate with others participating in the construction of the project to the end that all work may be carried on to the best advantage.

AUTHORITY OF RAILROAD ENGINEER

The authorized representative of the Railroad Company hereinafter referred to as Railroad Engineer, shall have the final authority in all matters affecting the safe maintenance of railroad traffic of his company.

CONSTRUCTION CORRESPONDENCE AND SUBMITTALS

Refer to specification entitled “CONSTRUCTION REQUIREMENTS”, Item 1. The local CSXT construction contact is listed below and should be copied on all correspondence.

Mr Clyde Gray
CSX Transportation
1610 Forest Avenue
Suite 120
Richmond, VA 23229

State Project No. 34400.1.1 (R-2233AA)
F.A. No. NHF-221(9)

TIP: R2233AA

Rutherford County

All required construction submittals shall be forwarded to and approved in writing by the Railroad Company prior to proceeding with construction of each applicable phase. Thirty (30) days will be required to review any subsequent submissions returned not approved.

FLAGGING PROTECTION OR WATCHMENT SERVICE

The watchmen and flagging service required by the Railroad Company for the safety of railroad operations because of work performed by the Contractor or subcontractors in connection with R-2233AA, Rutherford County, the construction of the proposed undergrade bridge at CSXT MPZD-0.71 will be provided by CSX Transportation, Inc. and the Contractor's special attention is called to the fact that he will not be required to bear the cost of any watchmen or flagging service required by CSX Transportation, Inc., other than that required at any temporary grade crossing, as the Railroad Company will be reimbursed by the Department of Transportation on bills rendered monthly. All bills to be prepared in accordance with the Federal-Aid Policy Guide 23 CFR 646B.

See Section X of CSXT Special Provisions for additional CSXT requirements for flagging/inspection service.

The estimated cost of Flagging Protection or Watchmen Service is shown in the Force Account Estimates prepared by CSX Transportation, Inc., and made a part of the Plans, Specifications and Estimate.

The Contractor's attention is also called to the fact that he will be required to carry on his operations which require flagging protection or watchman service in such a manner and sequence that the cost of such will be as economical as possible.

COMPLETION AND ACCEPTANCE OF WORK

For Clean-Up requirements, refer to Section XII of CSXT Special Provisions. After the final inspection has been made and work found to be completed in a satisfactory manner acceptable to the Department of Transportation and the Railroad Company, the Department of Transportation will be notified of the Railroad Company's acceptance in writing by the Railroad Engineer within ten (10) days or as soon thereafter as practicable.

- END OF SECTION -

State Project No. 34400.1.1 (R-2233AA)
F.A. No. NHF-221(9)

TIP: R-2233AA

Rutherford County

**NCDOT INSURANCE REQUIREMENTS
FOR CSX TRANSPORTATION, INC.**

(SPECIAL)

STRUCTURE

Refer to "INSURANCE REQUIREMENTS" on pp. 8-9 of specifications. In addition to the referenced requirements on pp. 8-9 and any other forms of insurance or bonds required elsewhere in the contract documents, the Contractor will be required to provide coverage conforming to the requirements of the Federal-Aid Policy Guide outlined under 23 CFR 646A for all work to be performed on Railroad right(s)-of-way under the terms of the contract by carrying insurance of the following kinds:

1. **CONTRACTOR'S COMMERCIAL GENERAL LIABILITY INSURANCE:**

- a. The Contractor shall furnish an original and one copy of the certificates of insurance and one certified copy of the policy to the Department of Transportation as evidence that, with respect to the operations he performs on railroad right-of-way, he carries Commercial General Liability Insurance including "XCU" coverage providing for limits of liability as follows:

COVERAGE	MINIMUM COMBINED LIMITS OF LIABILITY
Bodily Injury Liability	\$5,000,000 Per Occurrence
Property Damage Liability	\$5,000,000 Aggregate

- b. If any part of the work is sublet, similar insurance and evidence thereof in the same amounts as required of the Prime Contractor shall be provided by the subcontractor to cover his operations on railroad right-of-way. As an alternative, the Prime Contractor may provide insurance for the subcontractor by means of separate and individual policies.

- c. Certificates of Insurance holders are to be sent to the addressees given below. Certificates shall make reference to the project, milepost and county.

NCDOT Rail Division Engineering and Safety Branch c/o State Railroad Agent 1556 Mail Service Center Raleigh, NC 27699-1556	CSX Transportation, Inc. Risk Manager 500 Water Street Jacksonville, Florida 32202
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2. **RAILROAD PROTECTIVE LIABILITY INSURANCE:**

- a. The Contractor shall furnish to the Department of Transportation an original and one duplicate of the Railroad Protective Liability Insurance Policy with limits of liability as follows:

TIP: R-2233AA

Rutherford County

COVERAGE	MINIMUM COMBINED LIMITS OF LIABILITY
Bodily Injury Liability	\$5,000,000 Per Occurrence
Property Damage Liability	\$10,000,000 Aggregate Per Annual Policy Period
Physical Damage to Property	

- b. The Railroad Protective Liability Policy is to be written on the ISO/RIMA Form No. CG 0035 1093 (or updates thereof) including Endorsements CG 28 31 11 85 and IL 00 21 or their equivalents.
- c. The insurer must be financially stable and rated B+ or better in A.M. Best & Company's Insurance Reports.
- d. The name and address of Contractor and Agency must be shown on the Declarations page.
- e. The name insured, description of the work and designation of the job site to be shown on the Policy are as follows:

Named Insured: CSX Transportation, Inc.
Casualty Insurance Department (J-907)
500 Water Street
Jacksonville, Florida 32202

Description and Designation: Construction of a new undergrade CSXT bridge and afterwards removal of existing CSXT Bridge in Rutherford County, North Carolina near Railroad Milepost ZD-0.71 identified as State Project R-2233AA (34400.1.1) and Federal Project NHF-221(9).

The Railroad Protective Liability Policy shall contain a clause requiring that sixty (60) days written notice be given the Department of Transportation and the Railroad Company prior to cancellation or change.

All other policies and certificates shall contain a clause requiring that thirty (30) days written notice be given to the Department of Transportation and the Railroad Company prior to cancellation or change. The notices shall make reference to the project, milepost and county.

NOTICE TO:

CSX Transportation, Inc.
Risk Manager
500 Water Street
Jacksonville, Florida 32202

COPY OF NOTICE TO:

NCDOT Rail Division
Engineering & Safety Branch
c/o State Railroad Agent
1556 Mail Service Center
Raleigh, NC 27699-1556

All insurance herein before specified shall be carried until the final inspection and acceptance of the project, or that portion of the project within railroad right-of-way,

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Rutherford County

by the Department of Transportation or, in the case of the subcontractors, until the Contractor furnishes a letter to the Engineer station that the subcontractor has completed his subcontracted work within railroad right-of-way to the satisfaction of the Contractor and that the Contractor will accomplish any additional work necessary on railroad right-of-way with his own forces. It is understood that the amounts specified are minimum amounts and that the Contractor may carry insurance in larger amounts if he so desires. As to "aggregate limits", if the insurer establishes loss reserves equal to or in excess of the aggregate limit specified in any of the required insurance policies, Contractor shall immediately notify the Department of Transportation and shall cease all operations until the aggregate limit is reinstated. If the insurer establishes loss reserves equal to or in excess of one/half of the aggregate limit, Contractor shall arrange to restore the aggregate limit to at least the minimum amount stated in these requirements. Any insurance policies and certificates taken out and furnished due to these requirements shall be approved by the Department of Transportation and the Railroad Company as to form and amount prior to beginning work on railroad right-of-way.

No extra allowance will be made for the insurance required hereunder; the entire cost of same is to be included in the unit contract price bids for the several pay items.

Evidence of insurance as required above shall be furnished for review to the Department of Transportation at the address shown below after which it will be forwarded by the Department of Transportation to the Railroad.

Send to Department:

NCDOT Rail Division
Engineering and Safety Branch
c/o State Railroad Agent
1556 Mail Service Center
Raleigh, NC 27699-1556

- END OF SECTION -

CONSTRUCTION REQUIREMENTS

When performing work on, over or adjacent to CSX Transportation (CSXT) right-of-way or operations, the Contractor must abide by the current CSXT Special Provisions, CSXT Construction Submission Criteria and the following additional requirements.

1. All construction related correspondence will be directed to AECOM, acting as the Construction Monitoring Representative (CMR) on behalf of CSXT, with the following contact and address:

Brian V. Harrison
 Manager – Construction Services
 AECOM
 260 S. Broad Street, Suite 1500
 Philadelphia, PA 19102
 (215) 966-4846

Upon receipt of notification, the CMR will direct the Contractor to the local CSXT construction contact for the project.

2. The Contractor shall submit the following construction procedures and documents. The Contractor shall obtain written acceptance from CSXT or their representative before proceeding with construction.
 - a. Means and Methods – The Contractor shall develop a detailed submission indicating the progression of work with specific times when tasks will be performed during the project. This submission will include a walkthrough at which time CSXT personnel will be present. Work will not be permitted to commence until the Contractor has provided CSXT with a satisfactory plan that the project will be undertaken without scheduling, performance or safety related issues. Provide a listing of the anticipated equipment to be used, the location of all equipment to be used and insure a contingency plan of action is in place should a primary piece of equipment malfunction. All work in the vicinity of CSXT property that has the potential of affecting CSXT train operations must be submitted and approved by CSXT prior to work being performed. This submission will also include a detailed narrative discussing the coordination of project safety issues between the sponsor, Contractor, CSXT and the CMR. The narrative shall address project level coordination and day to day, specific work operations including, but not limited to, crane and equipment operations, demolition plans, erection plans, sheeting and pile installation, and temporary works.
 - b. Demolition Procedures, Erection Procedures, Excavation and Shoring, and Track Monitoring Procedures are required to be submitted to CSXT or the CMR in accordance with the CSXT Construction Submission Criteria. The CSXT Construction Submission Criteria should be referred to and complied with prior to the preparation of submissions, as it contains specific requirements that could impact the Contractor's material selection and methods or operations for work near the railroad. **Revisions to the demolition and erection procedures may not be field approved. Any deviation(s) from a previously accepted plan including crane substitutions will require a formal resubmission of the procedure for review and acceptance prior to performing any work.** A Professional Engineer in the State of North Carolina must sign and seal the plans.
 - c. Construction Schedule – Submit a detailed construction schedule for the duration of the project clearly indicating the time periods while working on and around CSXT right-of-way. As the work progresses, this schedule shall be updated and resubmitted as necessary to reflect changes in work sequence, duration and method, etc.
 - d. Insurance – Submit all necessary insurance information in accordance with the current CSXT Insurance Requirements for approval. The complete original policies should be submitted to:

Donna W. Melton
Manager – Insurance
CSX Transportation, Inc.
500 Water Street - C907
Jacksonville, FL 32202
Phone: 904-359-1247
Fax: 904-245-2833

with a copy to the CMR. The insurance policies will be required to be in place and approved prior to any work commencing on or that could potentially impact CSXT right-of-way.

- e. Emergency Action Plan – Submit an emergency action plan indicating the location of the site, contact numbers, access to the site, instructions for emergency response and location of the nearest hospitals. This plan should cover all items required in the event of an emergency at the site including fire suppression. Coordinate the Emergency Action Plan with the safety related discussion of the Means and Methods submission discussed above. The plan should also include a method to provide this information to each project worker for each day on site.
3. Up to thirty (30) days will be required to review all construction submissions. Up to an additional thirty (30) days will be required to review any subsequent submissions returned not approved.
4. The Contractor must ensure that proper erosion control is implemented on and adjacent to CSXT right-of-way during construction. The Contractor must prevent silt and debris accumulation in the railroad roadbed, ditches and other railroad facilities. The Contractor may be required to submit a detailed erosion control plan for review and acceptance by CSXT or the CMR prior to performing any work.
5. The Contractor must not use CSXT right-of-way for storage of materials or equipment during construction. The CSXT right-of-way must remain clear at all times.
6. The Contractor will be required to abide by the provisions of the NCDOT/CSXT Construction Agreement. Periodically, throughout the project duration, the Contractor will be required to meet, discuss and, if necessary, take immediate action at the discretion of CSXT personnel and/or the CMR to comply with provisions of that agreement and these specifications.
7. This project will require extensive use of CSXT Flagmen to protect train operations from project activity in the area of the tracks. While CSXT cannot guarantee the availability of flagmen at all requested times, every accommodation will be extended to the Contractor when forces are available. Flagging requests should be made to the CSXT Roadmaster Chuck Grindstaff III at 828-659-3706 at least thirty (30) days in advance. Termination or cancellation of a flagman requires ten (10) days notice to avoid incurring costs.
8. All crane and equipment operations that could potentially impact CSXT right-of-way must be coordinated with the CSXT Flagman.
9. At project completion, submit a set of "As-Built" plans for the proposed bridge construction and any work performed on the CSXT right-of-way. Please forward the plans to:

Mr. R. P. Garro, Jr.
Assistant Chief Engineer Structures
CSX Transportation
500 Water Street, J350
Jacksonville, FL 32202
10. Contractor access will be limited to the immediate project area only. The CSXT right-of-way may not be used for contractor access to the project site and no temporary at-grade crossings will be allowed.

INSURANCE REQUIREMENTS

I. Insurance Policies:

Company and Contractor, if and to the extent that either is performing work on or about CSXT's property, shall procure and maintain the following insurance policies:

1. Commercial General Liability coverage at their sole cost and expense with limits of not less than \$5,000,000 in combined single limits for bodily injury and/or property damage per occurrence, and such policies shall name CSXT as an additional named insured.
2. Statutory Worker's Compensation and Employers Liability Insurance with limits of not less than \$1,000,000, which insurance must contain a waiver of subrogation against CSXT and its affiliates.
3. Commercial automobile liability insurance with limits of not less than \$500,000 combined single limit for bodily injury and/or property damage per occurrence, and such policies shall name CSXT as an additional named insured.
4. Railroad protective liability insurance with limits of not less than \$5,000,000 combined single limit for bodily injury and/or property damage per occurrence and an aggregate annual limit of \$10,000,000, which insurance shall satisfy the following additional requirements:
 - a. The insurer must be financially stable and rated B+ or better in Best's Insurance Reports.
 - b. The Railroad Protective Insurance Policy must be on the ISO/RIMA Form of Railroad Protective Insurance - Insurance Services Office (ISO) Form CG 00 35.
 - c. CSX Transportation must be named as the named insured on the Railroad Protective Insurance Policy.
 - d. Name and Address of Contractor and Company must be shown on the Declarations page.
 - e. Description of operations must appear on the Declarations page and must match the Project description, including project or contract identification numbers.
 - f. Authorized endorsements must include the Pollution Exclusion Amendment - CG 28 31, unless using form CG 00 35 version 96 and later.
 - g. Authorized endorsements may include:
 - (i). Broad Form Nuclear Exclusion - IL 00 21
 - (ii) 30-day Advance Notice of Non-renewal or cancellation
 - (iii) Required State Cancellation Endorsement
 - (iv) Quick Reference or Index - CL/IL 240

h. Authorized endorsements may not include:

- (i) A Pollution Exclusion Endorsement except CG 28 31
- (ii) A Punitive or Exemplary Damages Exclusion
- (iii) A "Common Policy Conditions" Endorsement
- (iv) Any endorsement that is not named in Section 4 (f) or (g) above.
- (v) Policies that contain any type of deductible

5. Such additional or different insurance as CSXT may require.

II. Additional Terms

1. Contractor must submit its original insurance policies and two copies and all notices and correspondence regarding the insurance policies to:

Donna W. Melton
Manager - Insurance
CSX Transportation, Inc.
500 Water Street - C907
Jacksonville, FL 32202
Phone: 904-359-1247
Fax: 904-245-2833

2. Neither Company nor Contractor may begin work on the Project until it has received CSXT's written approval of the required insurance policies.

CSXT SPECIAL PROVISIONS

I. AUTHORITY OF CSXT ENGINEER

The CSXT Representative shall have final authority in all matters affecting the safe maintenance of CSXT operations and CSXT property, and his or her approval shall be obtained by the Agency or its Contractor for methods of construction to avoid interference with CSXT operations and CSXT property and all other matters contemplated by the Agreement and these Special Provisions.

II. INTERFERENCE WITH CSXT OPERATIONS

- A. Agency or its Contractor shall arrange and conduct its work so that there will be no interference with CSXT operations, including train, signal, telephone and telegraphic services, or damage to CSXT's property, or to poles, wires, and other facilities of tenants on CSXT's Property or right-of-way. Agency or its Contractor shall store materials so as to prevent trespassers from causing damage to trains, or CSXT Property. Whenever Work is likely to affect the operations or safety of trains, the method of doing such Work shall first be submitted to the CSXT Representative for approval, but such approval shall not relieve Agency or its Contractor from liability in connection with such Work.
- B. If conditions arising from or in connection with the Project require that immediate and unusual provisions be made to protect train operation or CSXT's property, Agency or its Contractor shall make such provision. If the CSXT Representative determines that such provision is insufficient, CSXT may, at the expense of Agency or its Contractor, require or provide such provision as may be deemed necessary, or cause the Work to cease immediately.

III. NOTICE OF STARTING WORK

Agency or its Contractor shall not commence any work on CSXT Property or rights-of-way until it has complied with the following conditions:

- A. Notify CSXT in writing of the date that it intends to commence Work on the Project. Such notice must be received by CSXT at least ten business days in advance of the date Agency or its Contractor proposes to begin Work on CSXT property. The notice must refer to this Agreement by date. If flagging service is required, such notice shall be submitted at least thirty (30) business days in advance of the date scheduled to commence the Work.
- B. Obtain authorization from the CSXT Representative to begin Work on CSXT property, such authorization to include an outline of specific conditions with which it must comply.
- C. Obtain from CSXT the names, addresses and telephone numbers of CSXT's personnel who must receive notice under provisions in the Agreement. Where more than one individual is designated, the area of responsibility of each shall be specified.

IV. WORK FOR THE BENEFIT OF THE CONTRACTOR

- A. No temporary or permanent changes to wire lines or other facilities (other than third party fiber optic cable transmission systems) on CSXT property that are considered necessary to the Work are anticipated or shown on the Plans. If any such changes are, or become, necessary in the opinion of CSXT or Agency, such changes will be covered by appropriate revisions to the Plans and by preparation of a force account estimate. Such force account estimate may be initiated by either CSXT or Agency, but must be approved by both CSXT and Agency. Agency or Contractor shall be responsible for arranging for the relocation of the third party fiber optic cable transmission systems, at no cost or expense to CSXT.
- B. Should Agency or Contractor desire any changes in addition to the above, then it shall make separate arrangements with CSXT for such changes to be accomplished at the Agency or Contractor's expense.

V. HAUL ACROSS RAILROAD

- A. If Agency or Contractor desires access across CSXT property or tracks at other than an existing and open public road crossing in or incident to construction of the Project, the Agency or Contractor must first obtain the permission of CSXT and shall execute a license agreement or right of entry satisfactory to CSXT, wherein Agency or Contractor agrees to bear all costs and liabilities related to such access.
- B. Agency and Contractor shall not cross CSXT's property and tracks with vehicles or equipment of any kind or character, except at such crossing or crossings as may be permitted pursuant to this section.

VI. COOPERATION AND DELAYS

- A. Agency or Contractor shall arrange a schedule with CSXT for accomplishing stage construction involving work by CSXT. In arranging its schedule, Agency or Contractor shall ascertain, from CSXT, the lead time required for assembling crews and materials and shall make due allowance therefore.

- B. Agency or Contractor may not charge any costs or submit any claims against CSXT for hindrance or delay caused by railroad traffic; work done by CSXT or other delay incident to or necessary for safe maintenance of railroad traffic; or for any delays due to compliance with these Special Provisions.
- C. Agency and Contractor shall cooperate with others participating in the construction of the Project to the end that all work may be carried on to the best advantage.
- D. Agency and Contractor understand and agree that CSXT does not assume any responsibility for work performed by others in connection the Project. Agency and Contractor further understand and agree that they shall have no claim whatsoever against CSXT for any inconvenience, delay or additional cost incurred by Agency or Contractor on account of operations by others.

VII. STORAGE OF MATERIALS AND EQUIPMENT

Agency and Contractor shall not store their materials or equipment on CSXT's property or where they may potentially interfere with CSXT's operations, unless Agency or Contractor has received CSXT Representative's prior written permission. Agency and Contractor understand and agree that CSXT will not be liable for any damage to such materials and equipment from any cause and that CSXT may move, or require Agency or Contractor to move, such material and equipment at Agency's or Contractor's sole expense. To minimize the possibility of damage to the railroad tracks resulting from the unauthorized use of equipment, all grading or other construction equipment that is left parked near the tracks unattended by watchmen shall be immobilized to the extent feasible so that it cannot be moved by unauthorized persons.

VIII. CONSTRUCTION PROCEDURES

A. General

- 1. Construction work on CSXT property shall be subject to CSXT's inspection and approval.
- 2. Construction work on CSXT property shall be in accord with CSXT's written outline of specific conditions and with these Special Provisions.
- 3. Contractor shall observe the terms and rules of the CSXT Safe Way manual, which Agency and Contractor shall be required to obtain from CSXT, and in accord with any other instructions furnished by CSXT or CSXT's Representative.

B. Blasting

- 1. Agency or Contractor shall obtain CSXT Representative's and Agency Representative's prior written approval for use of explosives on or adjacent to CSXT property. If permission for use of explosives is granted, Agency or Contractor must comply with the following:
 - a. Blasting shall be done with light charges under the direct supervision of a responsible officer or employee of Agency or Contractor.
 - b. Electric detonating fuses shall not be used because of the possibility of premature explosions resulting from operation of two-way train radios.
 - c. No blasting shall be done without the presence of an authorized representative of CSXT. At least 30 days' advance notice to CSXT Representative is required to arrange for the presence of an authorized CSXT representative and any flagging that CSXT may require.
 - d. Agency or Contractor must have at the Project site adequate equipment, labor and materials, and allow sufficient time, to (i) clean up (at Agency's expense) debris resulting from the blasting without any delay to trains; and (ii) correct (at Agency's expense) any track misalignment or other damage to CSXT's property resulting from the blasting, as directed by CSXT Representative, without delay to trains. If Agency's or Contractor's actions result in delay of any trains, including Amtrak passenger trains, Agency shall bear the entire cost thereof.
 - e. Agency and Contractor shall not store explosives on CSXT property.
- 2. CSXT Representative will:
 - a. Determine the approximate location of trains and advise Agency or Contractor of the approximate amount of time available for the blasting operation and clean-up.
 - b. Have the authority to order discontinuance of blasting if, in his or her opinion, blasting is too hazardous or is not in accord with these Special Provisions.

IX. MAINTENANCE OF DITCHES ADJACENT TO CSXT TRACKS

Agency or Contractor shall maintain all ditches and drainage structures free of silt or other obstructions that may result from their operations. Agency or Contractor shall provide erosion control measures during construction and use methods that accord with applicable state standard specifications for road and bridge construction, including either (1) silt fence; (2) hay or straw barrier; (3) berm or temporary ditches; (4) sediment basin; (5) aggregate checks; and (6) channel lining. All such maintenance and repair of damages due to Agency's or Contractor's operations shall be performed at Agency's expense.

X. FLAGGING / INSPECTION SERVICE

- A. CSXT has sole authority to determine the need for flagging required to protect its operations and property. In general, flagging protection will be required whenever Agency or Contractor or their equipment are, or are likely to be, working within fifty (50) feet of live track or other track clearances specified by CSXT, or over tracks.
- B. Agency shall reimburse CSXT directly for all costs of flagging that is required on account of construction within CSXT property shown in the Plans, or that is covered by an approved plan revision, supplemental agreement or change order.
- C. Agency or Contractor shall give a minimum of 30 days' advance notice to CSXT Representative for anticipated need for flagging service. No work shall be undertaken until the flag person(s) is/are at the job site. If it is necessary for CSXT to advertise a flagging job for bid, it may take up to 90-days to obtain this service, and CSXT shall not be liable for the cost of delays attributable to obtaining such service.
- D. CSXT shall have the right to assign an individual to the site of the Project to perform inspection service whenever, in the opinion of CSXT Representative, such inspection may be necessary. Agency shall reimburse CSXT for the costs incurred by CSXT for such inspection service. Inspection service shall not relieve Agency or Contractor from liability for its Work.
- E. CSXT shall render invoices for, and Agency shall pay for, the actual pay rate of the flagpersons and inspectors used, plus standard additives, whether that amount is above or below the rate provided in the Estimate. If the rate of pay that is to be used for inspector or flagging service is changed before the work is started or during the progress of the work, whether by law or agreement between CSXT and its employees, or if the tax rates on labor are changed, bills will be rendered by CSXT and paid by Agency using the new rates. Agency and Contractor shall perform their operations that require flagging protection or inspection service in such a manner and sequence that the cost of such will be as economical as possible.

XI. UTILITY FACILITIES ON CSXT PROPERTY

Agency shall arrange, upon approval from CSXT, to have any utility facilities on or over CSXT Property changed as may be necessary to provide clearances for the proposed trackage.

XII. CLEAN-UP

Agency or Contractor, upon completion of the Project, shall remove from CSXT's Property any temporary grade crossings, any temporary erosion control measures used to control drainage, all machinery, equipment, surplus materials, falsework, rubbish, or temporary buildings belonging to Agency or Contractor. Agency or Contractor, upon completion of the Project, shall leave CSXT Property in neat condition, satisfactory to CSXT Representative.

XIII. FAILURE TO COMPLY

If Agency or Contractor violate or fail to comply with any of the requirements of these Special Provisions, (a) CSXT may require Agency and/or Contractor to vacate CSXT Property; and (b) CSXT may withhold monies due Agency and/or Contractor; (c) CSXT may require Agency to withhold monies due Contractor; and (d) CSXT may cure such failure and the Agency shall reimburse CSXT for the cost of curing such failure.

CSX TRANSPORTATION
CONSTRUCTION SUBMISSION CRITERIA

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CONSTRUCTION SUBMISSION CRITERIA

INTRODUCTION

The information in this document is intended to improve communication and clarify the CSXT criteria related to construction submissions that may involve CSXT property. All work must be performed in a manner as to not adversely impact existing CSXT operations. Please note that there are other standards associated with construction that must be adhered to including but not limited to the CSXT Special Provisions, CSXT Insurance Requirements as well as governing local, county, state and federal requirements. This document and other CSXT standards are subject to change without notice, and future revisions will be available at the CSXT website www.csx.com.

I. DEFINITIONS

- Agency* – The project sponsor.
- AREMA* – American Railway Engineering and Maintenance Association – the North American railroad industry standards group.
- Construction Submission* – The Agency or its representative shall submit six (6) sets of plans, supporting calculations, and detailed means and methods procedures for the specific proposed activity. All plans and supporting calculations shall be signed/sealed by a Professional Engineer as defined below.
- Controlled Demolition* – Removal of the existing structure or subcomponents in a manner that prevents any portions from falling onto CSXT employees, equipment or property. The proposed procedures shall be detailed in the means and methods submission for CSXT review and acceptance.
- Contractor* – The Agency's or CSXT's representative retained to perform the project work.
- Engineer* – CSXT Engineering Representative or a GEC authorized to act on the behalf of CSXT.
- GEC* – General Engineering Consultant who has been authorized to act on the behalf of CSXT.
- Professional Engineer* – An engineer who is licensed in State or Commonwealth (if required by the Agency) in which the project is to occur. The drawings and calculations shall be prepared by the Professional Engineer and shall bear his seal and signature.
- Submission Review Period* - a minimum of 30 days in advance of start of work. Up to 30 days will be required for the initial review response. Up to an additional 30 days may be required to review any/all subsequent submissions or resubmission.

CONSTRUCTION SUBMISSION CRITERIA

Theoretical Railroad Live Load Influence Zone – A 1½ Horizontal to 1 Vertical theoretical slope line starting 1'-6" below top of rail elevation and 12'-0" from the centerline of the nearest track.

II. DEMOLITION PROCEDURE:

The Agency or its contractor shall submit as defined above, a detailed procedure for demolition of the Railroad Underpass Structure.

- A. The Agency or its Contractor shall submit the detailed procedure for demolition of existing structures over or adjacent to CSXT's tracks or right-of-way. This procedure shall include a plan showing the locations of cranes, horizontally and vertically, operating radii, with loading or disposal locations shown, with all dimensions referenced from the center line of the near track, including beam placement on ground or truck loading staging plan. The plan shall also include the location, with relevant dimensions, of all tracks, other railroad facilities; wires, poles, adjacent structures, or buried utilities that could be affected, showing that the proposed lifts are clear of these obstructions should be shown. No crane or equipment may be set on the CSXT rails or track structure and no material may be dropped on CSXT property.
- B: Blasting will not be permitted to demolish a structure over or within CSXT's right-of-way.

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CONSTRUCTION SUBMISSION CRITERIA

III. ERECTION PROCEDURE:

The Agency or its Contractor shall submit a detailed procedure for performing erection on/about CSXT property, as defined above.

- A. The Agency or its Contractor shall submit six (6) copies of the detailed procedure for erection of the proposed structures over or adjacent to CSXT's tracks or right-of-way. This procedure shall include a plan showing the locations of cranes, horizontally and vertically, operating radii, with staging locations shown, including beam placement on ground or truck unloading staging plan. Plan should also include the location of all tracks, other railroad facilities; wires, poles, adjacent structures, or

CONSTRUCTION SUBMISSION CRITERIA

buried utilities that could be affected, showing that the proposed lifts are clear of these obstructions should be shown. No crane or equipment may be set on the CSXT rails or track structure.

- B. Also included with this submittal the following information:
1. As-Built Bridge Seat Elevations - All as-built bridge seats and top of rail elevations shall be furnished to the Engineer for review and verification at least 30 days in advance of construction or erection, to ensure that minimum vertical clearances as approved in the plans will be achieved.
 2. Computations showing weight of picks must be submitted. Computations shall be made from plans of the structure beams being erected and those plans or sections thereof shall also be included in the submittal; the weight shall include the weight of concrete or other materials including lifting rigging.
 3. Crane rating sheets showing cranes to be adequate for 150% of the actual weight of the pick. A complete set of crane charts, including crane, counterweight, maximum boom angle, and boom nomenclature is to be submitted. Safety factors that may have been "built in" to the crane charts are not to be considered when determining the 150% Factor of Safety.
 4. A data sheet shall be prepared listing the type, size and arrangements of slings, shackles, or other connecting equipment. Include copies of a catalog or information sheets for specialized equipment. All specific components proposed for use shall be clearly identified and highlighted in the submitted documents. The safe working load capacity of the connecting equipment shall be 150% above the calculated weight of the pick.
 5. A complete written procedure is to be included that describes the sequence of events, indicating the order of lifts and any repositioning or rehitching of the crane or cranes.
 6. A time schedule for each of the various stages must be shown as well as a schedule for the entire lifting procedure. The proposed time frames for all critical sub tasks (i.e., performing aerial splices, installing temporary bracing, etc.) shall be furnished so that the potential impact(s) to CSXT operations may be assessed and eliminated or minimized.

CONSTRUCTION SUBMISSION CRITERIA

7. The names and experience of the key Contractor personnel involved in the operation shall be included in the Contractor's means and methods submission.
 8. Design and supporting calculations prepared by the Professional Engineer for items including the temporary support of components or intermediate stages shall be submitted for review. A guardrail will be required to be installed in a track where a temporary bent is located within twelve (12) feet from the centerline of that track.
- C. The proposed Erection procedure must be approved by the Engineer prior to undertaking work on the project.
 - D. The Contractor shall provide timely communication to the Engineer when scheduling the erection related work so that the Engineer may be present during the entire erection procedure.
 - E. At any time during construction activities, the Engineer may require revisions to the previously approved procedures to address weather, site conditions or other circumstances which may create a potential hazard to rail operations or CSXT facilities. Such revisions may require immediate interruption or termination of ongoing activities until such time the issue is resolved to the Engineer's satisfaction. CSXT and its GEC shall not be responsible for any additional costs or time claims associated with such revisions.

IV. EXCAVATION AND SHORING:

The Agency or its contractor shall submit as defined above, a detailed procedure for the installing sheeting/shoring adjacent to Railroad Tracks.

- A. Shoring protection shall be provided when excavating adjacent to an active track or railroad facility or as determined by CSXT. Shoring will be provided in accordance with *AREMA Manual for Railway Engineering* Chapter 8, part 28; except as noted below.
- B. Shoring may not be required if all of the following conditions are satisfied:
 1. Excavation does not encroach upon a 1½ horizontal: 1 vertical theoretical slope line starting 1'-6" below top of rail and at 12'-0" minimum from centerline of the track (live load influence zone).
 2. Track is on level ground or in a cut section and on stable soil.

CONSTRUCTION SUBMISSION CRITERIA

3. Excavation does not adversely impact the stability of a CSXT facility (i.e. signal bungalow, drainage facility, undergrade bridge, building, etc.).
 4. Shoring is not required by any governing construction code.
- C. When the track is on an embankment, excavating the toe of the embankment without shoring may affect the stability of the embankment. Therefore, excavation of the embankment toe without shoring will not be permitted.
- D. Trench Boxes are prohibited for use on CSXT within the Theoretical Railroad Live Load Influence Zone.
- E. The required protection is the cofferdam type that completely encloses the excavation. Where dictated by conditions, partial cofferdams with open sides away from the track may be used. Cofferdams shall be constructed using steel sheet piling, or when approved by the Engineer, steel soldier piles with timber lagging. Wales and struts shall be provided and designed as needed. The following shall be considered when designing cofferdams:
1. Shoring shall be designed to resist a vertical live load surcharge of 1,880 lbs. per square foot, in addition to active earth pressure. The surcharge shall be assumed to act on a continuous strip, 8'-6" wide. Lateral pressures due to surcharge shall be computed using the strip load formula shown in *AREMA Manual for Railway Engineering*, Chapter 8, Part 20.
 2. Allowable stresses in materials shall be in accordance with *AREMA Manual for Railway Engineering*, Chapter 7, 8, and 15.
 3. A construction procedure for temporary shoring shall be shown on the drawing.
 4. All shoring systems on or adjacent to CSXT right-of-way shall be equipped with railings or other approved fall protection.
 5. A minimum horizontal clearance of 10'-0" from centerline of the track to face of nearest point of shoring shall be maintained provided a 12'-0" roadbed is maintained with a temporary walkway and handrail system.

CONSTRUCTION SUBMISSION CRITERIA

- F. The contractor shall submit the following drawings and calculations (all shall be signed/sealed by a Professional Engineer) for CSXT's review and approval.
1. Six (6) sets of detailed drawings of the shoring systems showing sizes of all structural members, details of connections, and distances from centerline of track to face of shoring. Drawing shall show a section showing height of shoring and track elevation in relation to bottom of excavation.
 2. Six (6) sets of calculations of the shoring design.

The drawings and calculations shall be prepared by a Licensed Professional Engineer in the State (if required by the Agency) where the shoring is to be constructed and shall bear his seal and signature. Shoring plans shall be approved by CSXT's construction engineering and inspection representative.
 3. For sheeting and shoring within 18'-0" of the centerline of the track, the live load influence zone, and in slopes, the contractor shall use interlocked steel sheeting (sheet pile).
 4. Sheet pile installed in slopes or within 18'-0" of the centerline of track shall not be removed.
 5. Sheet piles shall be cut off a minimum of 3'-0" below the finished grade, ditch line invert, or as directed by the **Engineer**. The ground shall be backfilled and compacted immediately after sheet pile is cut off.
 6. A procedure for cutting off the sheet pile and restoring the embankment shall be submitted to the Engineer for review and acceptance.
- G. Blasting is not permitted on or adjacent to CSXT right-of-way without prior written approval from the **Engineer**. Mechanical and Chemical means of rock removal must be explored before blasting is considered. If written permission for the use of explosives is granted, the Agency or Contractor must comply with all of the following:
1. Blasting shall be done with light charges under the direct supervision of a responsible officer or employee of the Agency or Contractor.

CONSTRUCTION SUBMISSION CRITERIA

2. Electronic detonating fuses shall not be used because of the possibility of premature explosions resulting from operation of two-way train radios.
3. No blasting shall be done without the presence of an authorized representative of CSXT. Advance notice to the Engineer as required by the CSXT Special Provisions is required to arrange for the presence of an authorized CSXT representative and any flagging that CSXT may require.
4. Agency or Contractor must have at the project site adequate equipment, labor and materials, and allow sufficient time, to clean up debris resulting from the blasting and correct any misalignment of tracks or other damage to CSXT property resulting from the blasting. Any corrective measures required must be performed as directed by the Engineer at the Agency's or Contractor's expense without any delay to trains. If Agency's or Contractor's actions result in the delay of any trains including passenger trains, the Agency or Contractor shall bear the entire cost thereof.
5. The Agency or Contractor may not store explosives on CSXT property.
6. At any time during blasting activities, the Engineer may require revisions to the previously approved procedures to address weather, site conditions or other circumstances which may create a potential hazard to rail operations or CSXT facilities. Such revisions may require immediate interruption or termination of ongoing activities until such time the issue is resolved to the Engineer's satisfaction. CSXT and its GEC shall not be responsible for any additional costs or time claims associated with such revisions.

V. TRACK MONITORING

The Agency or its Contractor shall submit for CSXT review and approval, a detailed track monitoring program to detect both horizontal and vertical movement of the CSXT track and roadbed, a minimum of 30 days in advance of start of work.

- A. For the installation of temporary or permanent shoring systems, including but not limited to soldier piles and lagging, and interlocked steel sheeting on or adjacent to CSXT's right-of-way, the contractor may be required to

CONSTRUCTION SUBMISSION CRITERIA

submit a detailed track monitoring program for CSXT's approval prior to performing any work near CSXT's right-of-way.

- B. The program shall specify the survey locations, the distance between the location points, and frequency of monitoring before, during, and after construction. CSXT reserves to the right to modify the survey locations and monitoring frequency as necessary during the project.
- C. The survey data shall be collected in accordance with the approved frequency and immediately furnished to the Engineer for analysis.
- D. If any movement has occurred as determined by the Engineer, CSXT will be immediately notified. CSXT, at its sole discretion, shall have the right to immediately require all contractor operations to be ceased, have the excavated area immediately backfilled and/or determine what corrective action is required. Any corrective action required by CSXT or performed by CSXT including the monitoring of corrective action of the contractor will be at project expense.

SECTION 024522
RAILROAD SUBBALLAST

PART 1 - GENERAL

1.1 DESCRIPTION

- A. CONTRACTOR shall furnish and place crushed stone or crushed gravel as shown on CSXT Standard Drawing 2601 unless otherwise indicated on Project Drawings.

1.2 MEASUREMENT AND PAYMENT

- A. Measurement for the item AGGREGATE BASE COURSE (SUBBALLAST) will be the number of tons measured along the surface of the subballast and authorized by the ENGINEER. Subballast installed in excess of the design area shall not be included in the measurement unless authorized by the ENGINEER in writing. Permanent access roads on the plans or as directed by the ENGINEER will be included in this measure. Temporary access roads for the benefit of the CONTRACTOR and construction will not be measured. Note that the CONTRACTOR is to coordinate tolerances of earthwork activities and subballast to obtain a six inch thick layer of subballast. Thicknesses in excess of six inches will not result in increasing the tonnage this item is based on. Obtaining the proper thickness of subballast is a part of this item and critical.
- B. Payment at the unit price bid shall be full compensation for all labor, material, equipment, tools, supplies, and all else necessary to supply, transport, unload, haul, properly place and compact the subballast.
- C. The cost of supplying and applying water to obtain the specified density shall be included in the Bid Price.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Subballast shall be composed of crusher run granite or limestone in conformance with the following gradation requirements:

Screen Size	Percent Passing Graded Aggregate	Weight passing Crusher Run
1 1/2"	100%	100%
3/4"	60%-100%	
No. 10	30%-55%	15%-45%
No. 60	8%-35%	
No. 200	5%-20%	5%-12%

- B. CONTRACTOR may substitute the governing DOT material for subbase with similar gradation qualities. Material shall be in conformance with DOT specifications in effect at the time of the project bid.
- C. Subballast materials shall be submitted to ENGINEER for approval prior to placing and transporting.

PART 3 - EXECUTION**3.1 EXECUTION**

- A. All rutting or displacement of the subgrade shall be smoothed and re-compacted by CONTRACTOR before the placement of any subballast. If the subballast is subject to construction equipment traffic causing displacement or excess compaction, CONTRACTOR shall, at no extra cost to OWNER, bring the subballast back to the designated density and grade.
- B. CONTRACTOR shall not place subballast on a wet, snow covered or icy roadbed.
- C. Subballast shall be placed in loose lifts of 3 inches and compacted to not less than 95% of its dry weight density as determined by the Modified Proctor Density Test ASTM D 1557. If additional moisture is required to obtain adequate density, then CONTRACTOR shall use water along with approved mixing, shaping and compaction equipment.
- D. The thickness of the finished subballast shall have a tolerance of plus or minus 0.05 ft to the design thickness. Thickness of subballast shall be monitored throughout construction. Thickness found to be less than tolerance must be corrected by adding additional subballast material. Thicknesses found to be greater than the tolerance can be removed by the CONTRACTOR or left in place.
- E. The subballast shall be placed with a decending grade of 2% away from the adjacent track in double track territory or away from the centerline in single track territory per standard drawing CSXT 2601.

SECTION 024523
RAILROAD BALLASTING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. RAILROAD shall purchase all ballast for this project, unless otherwise noted.
- B. CONTRACTOR shall transport, unload, compact and place pre-ballast pads at locations as directed by the ENGINEER.
- C. CONTRACTOR shall also transport, unload, and rehandle ballast for turnouts, track sifts, track panels, road crossings, etc. This ballast along with pre-ballast shall be known as STOCK PILE BALLAST.
- D. RAILROAD shall furnish and transport by rail car stone for final ballasting to be unloaded and placed by the CONTRACTOR.

1.2 MEASUREMENT AND PAYMENT

- A. Ballast will be provided by CSXT Transportation.
- B. No separate payment is made for ballast. Cost of ballast installation to be included with the pay items "RAILROAD TRACK TO BE LINED", "RAILROAD TRACK TO BE REMOVED AND RELAID", AND "RAILROAD TRACK TO BE CONSTRUCTED".

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Ballast shall conform to CSXT's Ballast Specification, MWI-301, latest revision.
- B. Slag material will not be accepted as ballast.

PART 3 - EXECUTION

3.1 EXECUTION - PRE-BALLASTING

- A. The preballast pad will be installed using a spreader box. The width will be as shown on the plans. Any excess ballast that fouls the walkway shall be removed at the contractor's expense.

- B. Ballast shall not be spread over snow or ice.
- C. All rutting and pocketing of the ballast (subgrade and subballast) shall be corrected by restoring the ballast to a smooth surface.
- D. The ballast shall be placed in loose lifts which are no thicker than 4 inches, and then compacted.
- E. Minimum requirements for ballast compaction are as follows:
 1. Compaction equipment shall be a minimum 10 ton vibratory roller capable of generating 1100 to 1500 cycles per minute.
 2. Compaction equipment shall be operated as directed by ENGINEER, but in no case shall the speed exceed four (4) feet per second, and the normal operating speed shall be two-and-one-half (2-1/2) feet per second.
 3. A minimum of six (6) complete passes with the compaction equipment shall be made over each lift, and each lift shall be compacted until no deformation under load is observed.

3.2 EXECUTION - FINAL BALLASTING

- A. CONTRACTOR shall place final ballast on the track and uniformly distribute it in sufficient quantities to properly raise the track to the proposed top of rail profile shown on the plans. The ballast shall be placed and the track raised and tamped after the rails are installed, spiked, or clipped in concrete tie sections.
- B. To the extent possible, ballast shall be unloaded in position for use with a minimum of redistribution and dressing. Special ballast cars shall be used when available.
- C. Ballast must be distributed or immediately dressed so that ample clearance is provided for rolling equipment, and so that switches, guard rails, and road crossing flangeways are unobstructed.
- D. When a pre-ballast pad is not installed, the ballasting of track shall be accomplished in not less than four lifts. Each lift shall not exceed four inches in height, except the final lift shall be approximately two inches in height. When a pre-ballast pad is installed, a minimum of two surfacing passes are required.
- E. Track cross level shall be maintained, and both rails shall be raised simultaneously when track is being raised.
- F. Track surfacing shall be done by methods which will prevent undue bending of the rail or straining of the joints. The amount of track lift shall not endanger the horizontal or vertical stability of the track. The track shall be initially raised so that a final raise of not less than one inch nor more than three inches will be required to bring it to finish surface. All ties that pull loose shall be restored to proper position and shall have full bearing against the rail and be properly secured to the rail.
- G. The track shall be placed in proper alignment when initially raised and tamped. The final alignment of track shall be done with a production type tamper capable of meeting the design specifications. The grades and alignments of each complete track shall conform to the design shown on the plans. The grade rail on all curves shall be the inside rail of the curve. After the track has been tamped, CONTRACTOR shall neatly dress the ballast and add or remove quantities of ballast as required to conform to CSXT Standard Drawing 2602 unless otherwise indicated on the Project Drawings. Surplus ballast shall be stockpiled at the direction of ENGINEER.
- H. Tamping of ballast shall be done with power tamping equipment. Control or cycling of the power tamper shall provide the maximum proper compaction of the ballast uniformly along the track. The ballast shall be thoroughly tamped on both sides of the tie from a point 15 inches inside the rails to the ends of the ties.

- I. When the track has been raised to within two inches of the final grade and properly compacted, a finishing lift shall be made by jacking the track to the finish top-of-rail elevations. The ballast shall then be applied under the ties for their entire length and thoroughly driven in place for a space extending from fifteen inches inside either rail to the ends of the ties, by tamping machines, tamping picks, or tamping bars. The ballast under the remainder of the tie bearing shall not be tamped. In making the finishing lift, the spot board and track level board shall be used with care and the track brought to a true surface with the required superelevation of the outer rail on spirals and curves.
- J. After the track has been brought to true surface, elevation, and grade, it shall be given a final lining conforming to the established track center. Every effort shall be made to maintain approximate line during preliminary ballast applications.
- K. After the track has been finally surfaced and lined, the ballast shall be dressed to conform to the standard sections shown on CSXT Standard Drawings. CONTRACTOR shall provide the necessary templates for shaping the ballast sections. The edge of ballast shall be brought to true line by means of shovels, forks or ballast regulating machine, and the ballast shoulders shall be uniformly formed and compacted. All excess ballast shall be removed and deficiencies of ballast shall be supplied.
- L. CONTRACTOR shall neatly dress the ballast and add or remove quantities of ballast as required to provide a uniform appearance that conforms to the typical section or to CSXT standard plan, after the track has been tamped. Surplus ballast shall be stockpiled at the direction of ENGINEER.
- M. If CONTRACTOR contaminates the ballast with foreign material, then CONTRACTOR shall replace and re-compact the contaminated ballast. CONTRACTOR shall re-compact all previously compacted ballast which is disturbed.

**SECTION 024526
TRACK LAYOUT****PART 1 - GENERAL****1.1 DESCRIPTION**

- A. CONTRACTOR shall field survey and stake the proposed horizontal and vertical track alignments. The alignments shall be the same as those shown on the plans.
- B. Staking shall be done a minimum of two times: Once after the subballast has been placed to ensure that the subballast has been placed in compliance with the plans; and again after final ballasting to ensure that the track has been placed in compliance with the plans.

1.2 MEASUREMENT AND PAYMENT

- A. No measurement or payment item will be provided for work under this section. Work is considered incidental to the construction of the track and roadbed.

PART 3 - EXECUTION**3.1 EXECUTION**

- A. Trackwork control points shall be offset and protected by CONTRACTOR. Lost or destroyed survey reference points, bench marks, and control points shall be restored by CONTRACTOR.
- B. Field staked points shall be a hard wood hub with a tack, or a center punched iron pin. Stakes shall be driven into the ground or ballast a minimum of 12 inches and shall not be easily disturbed.
- C. Tangent track and curves flatter than 5 degrees shall be staked along the centerline of track at intervals of 50 feet or less.
- D. Track with curves of 5 degrees or sharper shall be staked along the centerline of track at intervals of 25 feet or less.
- E. Tracks with super elevation shall have their profile or vertical alignment follow the low rail. The low rail shall be the inside rail of the curve
- F. Superelevation and Spirals shall be governed by CSXT standard procedure MWI-1104, latest edition.
- G. All turnouts must be staked on the centerline of track at the point of switch (P.S.), turnout point of intersection (T.O.P.I.), and half inch point of frog (P.F.).
- H. Crotched turnouts shall be staked as described for all turnouts, and also as described for track on curves.
- I. The top of rail elevation shall be set to within 0.01 feet of the designed profile elevation shown on the plans.
- J. Horizontal control points shall be set to within 0.01 feet of the coordinates shown on the plans.

SECTION 024530
CONSTRUCT CONTINUOUS WELDED RAIL TRACK
ON TIMBER TIES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. CONTRACTOR shall construct track with continuous welded rail at the locations shown on the plans. All track material will be provided by the RAILROAD unless otherwise specified.
- B. Track bolts, nuts, spring washers and spikes shall be new. Nuts, bolts, and washers shall be as specified in CSXT's "Maintenance of Way Regulations and Instructions" Manual.
- C. The construction of turnouts and grade crossings is not included under this item.
- D. Connections of new track to existing turnouts will be covered under this section.
- E. Compromise bars or transition rails, if required to secure new rail to existing, shall be manufactured to conform to the rail sections used.
- F. Connections of new track to new turnouts will be covered under Section 024531, **Construct Turnouts**, of these specifications.
- G. This item includes but is not limited to installing rail, rail connections, cross ties, and other track material.
- H. Final ballasting, lining, distressing, surfacing, and final dressing of the track to achieve the track alignment and profile in accordance with the plans and specifications is included in this item.
- I. The pre-ballast thickness for the assembly of the track shall be 10" (ten inches). The full 12" depth of the ballast section will be achieved by the final surfacing of the track.
- J. All welds are included as a part of track construction. All welds are required to be tested and certified in accordance with CSX MWI 801, latest revision. Welds required due to the CONTRACTORS means and methods are at the CONTRACTOR's expense.

1.2 MEASUREMENT AND PAYMENT

- A. Measurement and Payment for Continuous Welded Track on Timber Ties will be in accordance with the pay items "RAILROAD TRACK TO BE LINED", "RAILROAD TRACK TO BE REMOVED AND RELAID", AND "RAILROAD TRACK TO BE CONSTRUCTED". See separate special provisions for these items.

PART 2 - PRODUCTS

2.1 MATERIAL

- A. RAILROAD shall supply, deliver and unload the welded rail in lengths of 1200-1600 lineal feet on special trains. Electric flash-butt welding shall be in accordance with A.R.E.M.A. Chapter 4, part 2, Specification for Fabrication of Continuous Welded Rail.
- B. Ties used shall be placed on 20 inch centers. Line side of the ties shall be 4'-3" from track centerline.

- C. Track spikes, tie plates, and rail anchors shall conform to Section 024534, **Other Track Material**, of these specifications.
- D. Rail joints and welds shall conform to Section 024533, **Rail Connections**, of these specifications.
- E. Ballast and tamping shall conform to Section 024523, **Railroad Ballasting**, of these specifications.

PART 3 - EXECUTION

3.1 EXECUTION

- A. CONTRACTOR shall notify ENGINEER a sufficient time before starting the work so that adequate arrangements can be made to progress the work.
- B. CONTRACTOR shall perform the track layout in accordance with Section 024526, **Track Layout**, of these specifications.
- C. CONTRACTOR shall place track after the underground utilities are protected and approved by the owning utility company; after the railroad compressed air, oil, water, sewer, signal, and underground electric lines have been placed, protected, and approved; and after ENGINEER has approved the roadbed for placing the track.
- D. **RAILROAD** shall unload the welded rail as promptly as possible to release the rail train.
- E. CWR shall be unloaded and placed in such a manner as to avoid damage and excessive bending. Rollers shall be used as necessary. Cut out kinks and bends at no cost to CSXT.
- F. CONTRACTOR shall inspect and inventory the rail at the delivery site and shall then assume complete responsibility for the security and condition of the rail.
- G. CONTRACTOR shall assemble track on the pre-ballast layer, and shall take care not to disturb the roadbed.
- H. CONTRACTOR shall supply rollers, if required, for the unloading and distribution of the welded rail. The type of rollers used and their application must be approved by ENGINEER prior to their use.
- I. All rutting and pocketing of the roadbed during track laying operations shall be restored to a smooth surface.
- J. CONTRACTOR shall place the welded rail onto the tie plates by use of a machine with a threader or tongs. The rail shall be placed without expansion gaps. Installation of CWR shall be in accordance with CSXT standard procedure MWI-1125, latest revision.
- K. Strings of welded rail shall only be pulled into position and not pushed. Bumping welded rail into position shall not be permitted.
- L. CONTRACTOR shall perform field welding in accordance with Section 024533, **Rail Connections**, of these specifications. Each weld will be tested ultrasonically by an independent laboratory approved by the ENGINEER at the Contractor's expense.
- M. Immediately following final surfacing and lining, CONTRACTOR shall anchor and adjust the welded rail in accordance with CSXT MWI-1125, latest revision.
- N. When the ambient temperature is such that the welded rail cannot be placed in its final position, CONTRACTOR shall place it on the tie plates and spike and anchor it sufficiently to permit operation of work trains and on-track equipment.

- O. CONTRACTOR shall gauge track as specified under Section 024534, **Other Track Material**, of these specifications.
- P. CONTRACTOR shall place anchors as specified under Section 024534, **Other Track Material**, of these specifications. Anchors shall be placed on the rail immediately after the rail is placed and before ending work for the day. CWR will be box anchored throughout the entire section of CWR and for 234 feet (6 rail lengths) on jointed rail at each end of the CWR. Rail anchors shall be applied in accordance CSXT MWI-703, Rail Anchoring Policy, latest revision. Box anchoring is defined as an anchor on each side of a tie, on both rails, or four anchors applied to one tie. Anchors shall be securely fastened to rail and have a solid bearing against the ties.
- Q. Rail connections shall conform to Section 024533, **Rail Connections**, of these specifications.
- R. The bottom of the rail, the tie plate, and the bearing surface of the tie shall be clean and free of dirt and other foreign substances when the rail is laid. When laying the opposite rail, the rail shall be spiked to gauge at every fourth tie.
- S. The outer shoulder of each tie plate shall have full bearing against the base of the rail.
- T. Connection of the new track to existing operating tracks will be done by railroad forces.
- U. Bridge timbers shall be protected with planking if rubber tired equipment is not used during rail pulling operations.
- V. Ballasting and tamping shall be in accordance with Section 024523, **Railroad Ballasting**, of these specifications. Following assembly of track, sufficient ballast shall be unloaded in the tie cribs and shoulders of the track structure to restrain movement or buckling of track to temperature changes.
- W. The grade and alignment of each complete track shall conform to the design shown on the plans. The grade rail on all curves shall be the inside rail of the curve. The outside rail shall be superelevated in accordance with MWI-1103, Surfacing Policy, latest revision.
- X. Thermally adjust rail for permanent installation of rail anchors as follows:
1. At least two weeks prior to start of any thermal adjustment, submit to the ENGINEER the location and description of the proposed method relieving frictional drag between the rail and the tie plates with any fasteners. Do not proceed without written approval from the ENGINEER.
 2. Before adjustment of each string of welded rail, its beginning end shall be joined to the previously anchored or existing string. After the beginning end of the string has been joined to the previous string, it shall be adjusted and immediately thereafter anchored. When a string will close on a fully anchored string, the fully anchored string shall have its anchors removed for 300 feet and shall be readjusted to at the specified temperature at the time it is joined. Prior to beginning thermal adjustment, vibrate the rail to overcome any frictional resistance, binding in the rail seats and to relieve internal stresses and remove rail anchors previous installed when rail was not at specified fastening temperature. The vibration shall be accomplished with a mechanical device producing vibrations of 900 to 1000 Hertz with a force of 160ft-lbs per cycle acting on the head of the rail. By-pass the end of the string to which the end of the string being thermally adjusted will be connected. Work from the fixed end toward the by-pass end.
 3. If during the adjustment process the rail temperatures are within the required temperature rang, the adjustment may proceed without heating.
 4. If the rail temperature is below the required temperature, apply heat uniformly through the length of the string to bring the rail to at least the specified temperature as follows.

5. The number of inches each CWR string should be expanded may be determined by computing the difference between the measured rail temperature in degrees F and the specified temperature in degrees F, multiply that difference by the length of the CWR string in feet, and multiply the product by 0.000078.
 6. Begin heating the rail at the beginning of the string and apply heat uniformly while moving along the rail toward the next string. Control uniformity of expansion marking each quarter point of the string and introducing expansion as follows:
 - ¼ point: ¼ of the total required expansion
 - ½ point: ½ of the total required expansion
 - ¾ point: ¾ of the total required expansion
 7. Quarter points shall be marked on the rail and the tie, so that the amount of expansion can be accurately determined.
 8. Should the first half of the heated CWR string not have the required expansion at each quarter point, the heater shall return to the point of beginning without applying heat, and then reheat the rail until the necessary expansion is obtained.
 9. Do not thermally adjust any rail unless the ballast section is sufficient to support the track.
 10. Make field welds connecting CWR lengths immediately after completion of the thermal adjustment of one of the strings and prior to thermal adjustment of the next string. Welding shall be in accordance with CSXT's Welders Manual, and with the welding material Manufacturer's recommendations. After the rail puller/expander is removed in accordance with the provisions herein, thermal adjustment of the next string may proceed.
- Y. Apply rail anchors at the time of thermal adjustments.
- Z. The form from CSXT Standard Procedures – Continuous Welded Rail, MWI 1125 shall be completed on a daily basis to cover all strings laid that day.
- AA. Each weld will tested ultrasonically by an independent laboratory, approved by CSXT and at the CONTRACTOR's expense.
- AB. The CONTRACTOR shall perform field welding in accordance with Section 024533, **Rail Connections**, of these specifications.
- T. The CONTRACTOR shall gauge track as specified under Section 024534, Other Track Material, of these specifications.
- U. Rail connections shall conform to Section 024533, **Rail Connections**, of these specifications.
- V. Prior to installation of the fastening system the bottom of the rail, rail seat and tie pads shall be cleaned and tie tamped tight against rail.
- W. The outer shoulder of each tie pad shall have full bearing against the base of the rail.
- X. Connection of the new track to existing operating tracks will be done by railroad forces.
- Y. Bridge timbers shall be protected with planking if rubber tired equipment is not used during rail pulling operations.
- Z. The grade and alignment of each complete track shall conform to the design shown on the plans. The grade rail on all curves shall be the inside rail of the curve. The outside rail shall be superelevated in accordance with MWI-1103, Surfacing Policy, latest revision.

SECTION 024533
RAIL CONNECTIONS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. RAILROAD shall furnish and CONTRACTOR shall install rail connections.
- B. Joints required to connect tracks to turnouts will be covered under the item for turnouts and not as a part of any track item.
- C. Compromise joints will not be allowed unless approved by ENGINEER.

1.2 MEASUREMENT AND PAYMENT

- A. Payment shall be included with the track to be constructed. No separate payment shall be made for any connections made using joint bars or transition rails, but payment shall be included in the respective track items.
- B. Payment for field welds shall be included as a part and included in the respective track items.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. RAILROAD shall furnish joint bars designed for the specified rail section. Six hole joint bars shall be used with rail sections weighing 100 pounds per yards and greater.
- B. Bolted rail joints consist of either head free or head contact standard bars and head contact compromise joint bars held in position by track bolts.
- C. Compromise joint bars shall be new.
- D. Compromise joints shall adequately connect both sections of rail and provide a smooth rail surface over the top of the joint.
- E. Compromise joint bars shall be factory manufactured.
- F. Correct compromise bars shall be used as determined by the weight and section of the rail, wear on the rail, whether the joint is designated right hand, left hand, or no hand, and whether the joint bar is gage side or field side.
- G. Joint bars shall be free from all cracks or breaks after installation.
- H. Insulated Joints shall be prefabricated factory epoxy bonded joint assemblies, 19.5 feet long that are field welded in place as manufactured by Portec, Inc. Insulated joints are considered part of the track and no separate measurement and payment shall be made.
- I. Where field welding of rail is indicated, CONTRACTOR shall furnish all labor, supervision, and equipment to make field butt welds by thermit welding in accordance with CSXT's Welder's Manual MWI 801, latest revision. Defective welds and rails shall be removed and replaced. Each weld shall be tested ultrasonically by an independent laboratory approved by the ENGINEER at the CONTRACTOR's expense.
- J. CONTRACTOR shall furnish all material, equipment, labor, and supervision for field welding the rail

using field weld kits which comply with "CSXT Welder's Manual", MWI 801, latest revision.

- K. RAILROAD shall furnish new standard heat-treated carbon steel track bolts, nuts and washers in accordance with A.R.E.M.A. Recommendations, and conforming to the type and weight of track materials being used.
- L. After inspecting and inventorying received material, CONTRACTOR shall unload, store, provide security for, and move the material. All material must be removed from rail cars within seven (7) days of notification of delivery by CSXT.

PART 3 - EXECUTION

3.1 EXECUTION

- A. Where joints in conventional track are required, rails shall be placed so that the joints in each line of rail shall be within the middle half of the opposite rail length.
- B. The tops of the heads and the gauge faces of adjoining rails shall match within one eighth (1/8) inch of each other.
- C. Abutting rail ends shall be fastened together by bolted standard or compromise joints, transition rails, insulated joints or glued joints, except where butt welded.
- D. Holes for bolting of cut rails shall be drilled by an approved type of rail drill. The use of a torch for cutting bolt holes will not be permitted.
- E. Bolted joints are to be centered on a tie, and field welded joints are to be centered between ties; glued insulated joints are to be centered on a sound, smooth tie.
- F. All rail cut in the field shall be cut squarely with a rail saw. Cutting rail with a torch will not be allowed.
- G. Permanent joint bars shall be applied with their full number of bolts, nuts and washers.
- H. All defective joint bars shall be removed and replaced before work will be accepted.
- I. CONTRACTOR shall perform field welding in accordance with the "CSXT Welder's Manual", MWI 801, latest revision. Each weld will be tested ultrasonically by an independent laboratory approved by the ENGINEER at the CONTRACTOR's expense.
- J. Defective welds shall be cut out using a power rail saw. Replacement rail shall be welded into the string of rail. The entire rail shall be removed wherever longitudinal defects or transverse defects in non-control cooled rails are involved.

SECTION 024534
OTHER TRACK MATERIAL

PART 1 - GENERAL

1.1 DESCRIPTION

- A. RAILROAD shall supply other track material.
- B. CONTRACTOR shall install other track material. Other track material includes spikes, rail anchors, and tie plates both for turnouts and for conventional track.

1.2 MEASUREMENT AND PAYMENT

- A. No measurement or payment will be made for this item. Payment will be made under the applicable track or turnout item that requires this work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Tie plates with 8 hole punch and compatible with the approved rail section shall be used on all ties, except in turnouts and track crossings where special plates are required. Double shoulder tie plates with a 1 to 40 cant shall be used.
- B. Track spikes shall be high carbon and conform to A.R.E.M.A. Recommendations. Track spikes shall be 5/8" square by 6" long, unless otherwise approved by ENGINEER.
- C. Rail anchors shall be of approved design conforming to A.R.E.M.A. Chapter 5 Part 7. New rail anchors shall be used. Where used with relay rail the anchors must be sized to fit the rail base.

PART 3 - EXECUTION

3.1 EXECUTION

- A. Tie plates shall be used on all ties. Care must be taken that canted tie plates incline toward the center of track and that the plates having a different amount of cant or flat plates are not intermixed. Before placing tie plates on the tie, dirt and other substances shall be removed from the bottom of the tie plate and the top of the tie.
- B. Rails shall be laid one at a time and the rail ends brought squarely together against suitable rail expansion shims and bolted before spiking.
- C. When laying the second rail, the rail shall first be spiked to gauge at every fourth tie. Intervening spikes shall then be driven. The gage of track is the distance between the heads of rails, measured at right angles thereto, at a point five-eighths (5/8) inch below the top of rail. Standard gage is 4'-8 1/2". No change in gage on account of curvature will be permitted without the express permission of ENGINEER. When gaging track, CONTRACTOR must see that gages are square with the rail and know that length of gage is correct. Gaging must be done at the time the rail is laid.
- D. Track spikes shall fasten the rail to wood ties in accordance with CSXT's standard drawings 2512, 2513, and 2514. Additional spikes shall be used as required by the spiking patterns shown in MMWI 2512. The CONTRACTOR is responsible for determining the proper spiking pattern based on the design speed and track geometry of the new track.

- D. Rail anchors shall be applied as specified in CSX Standard Drawing MWI -703, latest revision.
- E. CONTRACTOR shall give particular attention to spiking track to standard gauge and to tamping each tie with a mechanical tamper after the tie is spiked.

SECTION 023050

FILTER FABRIC (ROADBED STABILIZATION)**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. The work shall consist of furnishing filter fabric, all plant, labor and equipment and performing all operations required for hauling and placing the filter fabric, complete, at locations shown on the plans or as directed by the ENGINEER and maintaining until placement of the subballast has been completed and accepted.
- B. The filter fabric shall be placed beneath the subballast on top of the prepared subgrade per the plans or specifications or as directed by the ENGINEER.

1.2 MEASUREMENT AND PAYMENT

- A. Measurement of the item FILTER FABRIC FOR ROADBED STABILIZATION shall be the number of square yards of material in place as approved by the ENGINEER. No allowance will be made for the minimum 24 inches of overlap required.
- B. Payment for item FILTER FABRIC FOR ROADBED STABILIZATION shall be full compensation for: furnishing, transporting, placing, and maintaining the filter fabric.

PART 2 - PRODUCTS**2.1 MATERIALS**

- A. The filter fabric shall be nonwoven needle punched, polyester or polypropylene material conforming to the following minimum average requirements:

Item	Minimum average requirement	Test
Weight	10.0 ounces / S.Y.	ASTM D 1910
Apparent opening size	70-120 Std. sieve	ASTM D 4751
Grab tensile strength	240 pounds	ASTM D 4632
Mullen Burst strength	400 p.s.i.	ASTM D 3786
Max Elong. @ failure	40 - 65 %	ASTM D 4632
Permittivity	1.11 / second	ASTM D 4491
Trapezoidal tear	100 pounds	ASTM D 4533
Puncture strength	130 pounds	ASTM D 4833-88

PART 3 - EXECUTION**3.1 EXECUTION**

- A. The filter fabric shall be placed at the locations shown on the plans or as directed by the ENGINEER. The surface to receive the fabric shall be prepared to a relatively smooth condition, free of obstructions, depressions, debris, and soft or low density pockets of material. All holes, rips, or flaws made in the fabric shall be repaired by placing a piece of fabric, which is 1.5 feet larger than the hole in the fabric in all directions, directly over the hole before stone is placed on the fabric. The fabric shall be laid smooth and free of tension, stress, folds, wrinkles or creases. The fabric rolls shall be placed to provide a minimum width of 24 inches of overlap for each fabric joint. The use of securing pins will not be permitted. Overlaps will be secured, if necessary, by placing subballast windrows on the overlap section. All damage to the fabric during its installation or during placement of the subballast shall be replaced or repaired by the CONTRACTOR at no cost to the railroad. The fabric shall be protected from sunlight, ultra-violet light, high temperatures, dirt and debris at all times prior to installation. Subballast shall be placed on the fabric, as specified herein or as shown on the plans, immediately after fabric placement.
- B. No construction traffic will be permitted directly on the fabric. At least six (6) inches of sub-ballast material must be placed before traffic will be allowed in areas where filter fabric has been placed.

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STRUCTURAL STEEL

(SPECIAL)

SCOPE

These specifications shall cover the furnishing, fabrication, preparation, assembly, welding, painting, and erection of all structural steel shown on the plans.

GENERAL SPECIFICATIONS

Except as otherwise specified hereinafter, the current AREMA specifications, Chapter 15, Steel Structures, applies to all work.

STRUCTURAL STEEL

1. All fracture critical members are identified on the plans.
2. All fracture critical members will be fabricated in accordance with the Fracture Control Plan stated in the AREMA specifications, Chapter 15, Section 1.14.
3. Fabricator shall be certified under the AISC Quality Certification Program as follows

Welded Plate Girders Category III.
Rolled Beam Bridge Category I.

4. Structural Steel shall be ASTM A709 Gr50. The toughness shall be T2 for non-fracture critical members or F2 for fracture critical members. Other types of steel may be used if approved by the CSX Director Structural Engineering. Thickness of flange plates shall not exceed 3 inches.

OTHER MATERIALS

1. High strength bolts shall be 7/8" diameter and meet current requirements of the A.S.T.M. Specifications for High Strength Bolts for Structural Steel Joints, Designation A 325, Type 1.
2. Anchor bolts shall be threaded rods with heavy hex nut meeting the current requirements of A.S.T.M. specification for fasteners, Designation A-307.
3. Welding electrodes for arc welding shall meet the current requirements of the Specifications for mild steel arc-welding electrodes Series E 70, AWS 5.1, Low Hydrogen Classification for SMAW and AWS 5.17 for SAW.

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WELDING PROCESSES

Only submerged arc welding (SAW) or shielded metal arc welding (SMAW) may be used. No other process will be allowed.

BOLTED CONNECTIONS

Permanent bolted connections using High Strength Bolts shall be installed and tightening using the Turn-of-the-Nut Method.

PAINT

All steel preparation and painting shall be in accordance with the Special Provision for Painting Steel Structures.

SHOP DRAWINGS

1. The Contractor's attention is called to the requirements for shop drawings, Chapter 15, Section 1.1.3 Shop Drawings, AREMA Specifications.
2. The Contractor shall furnish three (3) complete sets of detailed shop drawings to the Railroad Company for approval prior to starting fabrication. Unchecked drawings shall not be submitted for approval. After approval of shop drawings, the Contractor shall supply the Company with one set of reproducibles of the approved drawings.
3. The rejection of a procedure or the correction of shop drawings will not be considered as cause for delay.
4. Approval by the Engineer of the shop drawings shall not relieve the Contractor from furnishing material of proper dimensions, quantity, and quality, nor will such approval relieve the Contractor from the responsibility for errors of any sort in the shop drawings.
5. Original drawings or reproducibles on Mylar, or equivalent film, shall be furnished at the completion of the Contract in accordance with Chapter 15, Section 1.1.3, AREMA specifications. Reproducibles made by the diazo process are not acceptable.

SHOP INSPECTION & TESTING

1. The Railroad Company may arrange for inspection by an independent inspection firm under a separate contract. This inspection will be in addition to the Fabricator's Quality Control Program.
2. The Fabricator shall notify the Railroad Company and its inspector of the scheduled date for beginning fabrication, and shall not begin fabrication until the Railroad Company's Inspector is present.

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3. The Fabricator shall furnish copies of certified mill inspection reports to the Railroad Company for all structural steel requiring improved notch toughness.
4. The Fabricator shall meet the requirements of the AREMA Fracture Control Plan described in Chapter 15, Section 1.14 for all members and components designed as fracture critical.
5. Welding Inspection shall verify that all welds and welding procedures meet the requirements of the American Welding Society (A.W.S.) Bridge Welding Code, D1.5, current edition and all addenda to it.
6. All welds shall be inspected visually and by use of nondestructive testing. All nondestructive testing shall be performed by the Fabricator and witnessed by the Railroad Company's Inspector.
7. Witnessing of weld inspection shall be done in a timely manner without disruption of normal shop operations. Copies of all weld inspections and nondestructive testing reports shall be furnished to the Railroad Company.
8. The Fabricator shall perform the following weld inspection and testing:
 - a. All transverse tension groove welds in FCM members, when allowed by the Engineer, shall be RT and UT tested 100%. In non-FCM components of FCM's all transverse groove welds shall be RT or UT tested 100%.
 - b. All flange to web welds shall be tested on both sides as follows:
 1. Butt welds in both girder flanges and girder webs shall be 100% radiographed.
 2. 50% of flange to web welds shall be inspected by ultrasonic inspection method.
 3. 10% of all other welds shall be inspected by ultrasonic or magnetic particle procedures.
 4. Deck Plate to floorbeam or longitudinal girder welds may be visually inspected.

MEASUREMENT AND PAYMENT

Approximately _____ Pounds Structural Steel will be measured and paid for at the contract lump sum price. The approximate quantity shown in the contract pay item is an estimate based on the computed weight of the structural steel necessary to complete the work. No measurement for payment will be made for this pay item, and no adjustment in the contract lump sum price will be made for any variation from the approximate quantity shown except for revisions in the plans which affect the quantity of structural steel necessary to complete the work.

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When revisions in the plans have been made which affect the quantities of structural steel, adjustments in compensation will be made by supplemental agreement.

- END OF SECTION -

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PAINTING STEEL STRUCTURES (SPECIAL)
INORGANIC ZINC-ACRYLIC SYSTEM TOP COAT COLOR TO BE GRAY

GENERAL

1. PLANS AND SPECIFICATIONS

- a) This work consists of furnishing all labor, material, plan and equipment, and performing all operations in connection with shop Painting (prime coat, wash coat, and top coat applied in the fabricators plant or unless otherwise specified by the Railway). All painting shall be in accordance with AREMA Specifications, Chapter 15 - Section 3.4, and recommendations of the Steel Painting Council Specifications with the following requirements.
- b) The paint thickness will be measured according to "SSPC-PA2" Method for Measurement of Dry Paint Thickness with Magnetic Gages.

2. SURFACE PREPARATION

- a) The surface preparation shall be in accordance with Steel Structures Painting Council Specifications SP 10 (NEAR WHITE BLAST) latest revision and Visual Standard NACE No. 2. Average surface profile to be 2 miles.
- b) Application - The paint shall be applied in accordance with SSPC Specifications for Paint Application-PA1.
- c) The Prime Coat shall be applied in the shop promptly after blast cleaning, but in no case shall the prime coat be applied more than 8 hours after blast cleaning or after visible or detrimental rusting occurs.
- d) Steel shall be cleaned by washing, or other mechanical means to remove all residue (loose zinc dust and foreign matter) prior to applying Wash and Top Coat.
- e) Surface damaged during shipment and handling shall be repaired using the same paint system as applied in the shop except that the Prime coat shall be repaired using an **Organic Zinc Primer** when the Primer Coat is repaired in the field.

3. WELDED AREAS AND FAYING (CONTACT) SURFACES

No paint shall be applied to areas to be welded in the field. No Vinyl paint (wash or topcoat) shall be applied to any faying surfaces.

PAINTING REQUIREMENT

PAINT SYSTEM

- a) The fabrication will be given the option of using one of the following paint systems ***(Prime Coat, Intermediate and Top Coats shall be applied in the fabricator's plant unless otherwise specified by the Railway)***. If the Intermediate Coat and Top Coat are applied in the field, the steel shall be solvent wiped to removed all grease and oil and a "High Pressure Power Washing" with clean water ***(3500 p.s.i Minimum)*** shall be used to clean all mud and dirt off prior to applying the touch-up Primer or Intermediate and Top Coats. ***The Fabricator shall supply sufficient quantities of touch-up Organic Zinc-Rich Primer, Intermediate Coat, Topcoat and Thinner.***
- b) If approved or further specified by the Railway, the Wash Coat and topcoat shall be applied in the shop.

SYSTEM # 1 (DAVIS-FROST)

Prime Coat: P-139 LOW V.O.C. Inorganic Zinc Primer applied at 4.0-5.0 mils Dry Film Thickness.

Intermediate Coat- W-112 Water Guard Metal Primer (White applied at 3.0 - 4.0 mils Dry Film Thickness.

Finish (Top) Coat- W-195 Water-Tuff DTM Finish (Gray) applied at 3.0 - 4.0 mils Dry Film Thickness. Touch Up Primer - P -281 (3 component) Epoxy Zinc-Rich Primer applied at 4.0 - 5.0 mils Dry film Thickness.

Suggested Supplier: Davis - Frost, Inc.
P.O. Box 11405, Lynchburg, VA 24506
Telephone (804) 846-5277

SYSTEM # 2 (ELITE)

Prime Coat: Elite 1312 Inorganic Zinc Primer applied at 4.0 - 5.0 mils Dry Film Thickness.

Intermediate Coat- Elite 156 Exterior Acrylic Latex (White) applied at 3.0 - 4.0 mils Dry Film Thickness.

Finish (Top) Coat- Elite 156 Exterior Acrylic Latex (Gray) applied at 3.0 -4.0 mils Dry Film Thickness

Touch Up Primer- Elite 305 Organic Zinc-Rich Primer applied at 4.0 -5.0 mils Dry Film Thickness.

Suggested Supplier: Elite Coatings Company, Inc.
P.O. Box 130

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Gordon, GA 31031
Telephone: (912) 628-2111

SYSTEM # 3 (DEVOE)

Prime Coat: Cata-Coat 301 Inorganic Zinc-Rich Primer applied at 4.0 - 5.0 mils Dry Film Thickness.

Intermediate Coat: DEVRAN 646 Water Based Epoxy primer (White) applied at 3.0 - 4.0 mils Dry Film Thickness.

Prime Coat: DEVFLEX 604-S-9903 Water Based Gloss Enamel (Gray) applied at 3.0 -4.0 mils Dry Film Thickness.

Touch Up Primer- Cata- Coat 303H Organic Zinc-Rich Epoxy applied at 4.0 -5.0 mils Dry Film Thickness.

Suggested Supplier: Devoe Coating Company
1519 West Liberty Avenue, Pittsburgh, PA 15226
Telephone: (412) 561- 8930
Attn: Joe Basile

SYSTEM # 4 (SHERWIN-WILLIAMS)

Prime Coat: ZINC CLAD II HS - (B69VZ1 B69VZ3 B69D11) Inorganic Zinc- Rich Primer applied at 4.0 - 5.0 mils Dry Film Thickness.

Intermediate Coat- B66 Series DTM ACRYLIC GLOSS (White) to applied at 3.0 -4.0 mils Dry Film Thickness.

Finish (Top) Coat - B66 Series DTM ACRYLIC GLOSS (Gray) applied at 3.0 -4.0 mils Dry Film Thickness.

Touch Up Primer - ZINC- CLAD IV - (B69 A/8 B69 V8) applied at 4.0 - 5.0 mils Dry Film Thickness.

Suggested Supplier: The Sherwin-Williams Company
765 North Avenue, NE,
Atlanta, GA 30306
Telephone: (404) 873-6723

SYSTEM # 5 (VALSPAR)

Prime Coat: Valspar MZ-7 Inorganic Zinc-Rich Primer Applied at 4.0 - 5.0 mils Dry Film Thickness.

Intermediate Coat - # 61 Series Water-Acrylic Lo Sheen (White) applied at 3.0 - 4.0 mils Dry Film Thickness.

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Finish (Top) Coat - 61 Series Water-Acrylic Lo Sheen (Gray)
applied at 3.0 - 4.0 mils Dry Film Thickness.

Touch Up Primer - MZ-4 Epoxy Zinc-Rich Primer (Green applied
at 4.0 - 5.0 mils Dry Film Thickness.

Suggested Supplier: Corrosion Specialties Inc.
3897 Stephens Court
P.O. Box 146
Tucker, GA 30085-0146
Telephone: (404) 938-7263
Attn: Andy Steinmann

SYSTEM # 6 (AMERON)

Prime Coat: Amercoat 21-5 Inorganic Zinc-Rich primer applied
at 4.0 - 5.0 mils Dry Film Thickness.

Intermediate Coat- Amercoat 148 Waterborne Acrylic (Gray)
applied at 3.0 -4.0 mils Dry Film Thickness.

Finish (Top) Coat- Amercoat 220 Waterborne Acrylic (Gray)
applied at 3.0- 4.0 mils Dry Film Thickness.

Touch Up Primer - Amercoat 68 HS Zinc-Rich Primer applied at
4.0-5.0 mils Dry Film Thickness.

Suggested Supplier: Ameron Protective Coating Division
11605 Vimy Ridge Road
Little Rock, AK 72209
Telephone: 1-800-283-6627

POST-PAINTING REQUIREMENTS

1. Steel shall be cleaned by washing, or other mechanical means to remove all residues (loose zinc dust and foreign matter) prior to applying Wash and Top Coat. An "***M.E.K. Rub Test***" shall be used to assure proper cure of the inorganic zinc primer prior to applying the next coat.
2. ***The Intermediate Coat may have to be thinned to prevent gassing.***

PAINTING MATERIALS REQUIREMENTS

1. PACKAGING AND SHIPPING

- a) All paint shall be received at the point of use in original containers and carefully stored. All paint to be used shall be freshly mixed and shall be ordered only a sufficient length of time in advance of its use

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to insure an adequate supply being on hand at all times so as to not delay work.

- b) Paint shipped to the job shall arrive in sealed containers clearly marked with the type of paint and specifications controlling its manufacture.
- c) There shall be no modification of the paint except upon, and in accordance with, express written stipulation by an authorized representative of the paint manufacturer and with specific approval of the Engineer.

2. STORAGE

Paint in storage at the shop or in the field shall have the position of the containers reversed at least once a week to prevent settlement and separation of the pigment from the vehicle. There shall be suitable devices maintained at the point of storage and used for agitation and thorough mixing of the paint prior to its use on this work.

3. SAMPLE PANEL

If directed by the Engineer, a sample shall be made up. The panel shall be used as a basis of comparison of the work on this contract. The panel shall be of size designated by the Engineer and shall be prepared and painted in all respects in the same manner, as the work will be done.

WORKMANSHIP

1. WEATHER CONDITIONS

Paint shall not be applied when the temperature of the air is less than 40 degrees F., when the surface of the metal is not dry, the relative humidity is above 85%, or when, in the opinion of the Engineer, conditions are otherwise unsatisfactory for such work. Paint shall not be applied upon damp, or frosted surfaces. Material painted under cover until dry or until weather conditions permit its exposure in the open. Painting shall not be done when the metal is hot enough to cause the paint to blister and produce a porous paint film.

2. APPLICATION

- a) Paint shall be applied in accordance with SSPC Specifications for Paint Application- PA1 and in accordance with manufacturer's recommendation.
- b) All blast cleaned steel surfaces shall be primed before completion of the workday.

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- c) Steel shall be cleaned by washing, brushing, or other mechanical means of all residues (loose foreign matter) prior to applying the finish coat (Top Coat).

3. REMOVAL OF UNSATISFACTORY PAINT

If the Prime Coat "mud - cracks", the Top Coat wrinkles or shows evidence of having been applied under unfavorable conditions or if the workmanship is poor, the engineer may order it removed and metal thoroughly cleaned and repainted. Any "Blushing" of the Vinyl Top Coat shall be corrected by solvent wiping and/or re-coating before final acceptance by the Company.

4. THINNING

No thinner shall be used if the paint can be applied in a neat workmanlike manner without thinning. If this paint is too thick to spray, only the manufacturer's specified thinner (in hot weather vinyl paint shall be thinned with M.I.B.K. to reduce the chances of "Blushing" occurring) may be added to the paint up to 25% by volume or as otherwise specified by the manufacturer. Thinning shall not relieve the contractor from applying the specified coating D.F.T.

5. PAINT TOUCH-UP

After erection, all damaged areas shall be cleaned of mud and dirt by **High Pressure Power Washing with clean water (3500 p.s.i. minimum)**; grease, and oil by **solvent wiping**; and rusted areas shall be cleaned by **sand blasting or power tool cleaning** with non-woven abrasives prior to touch-up or Top coating. The paint used for touch-up shall be the same system used in the shop. The contractor and/or Fabricator shall be responsible for cleaning all damaged surfaces and applying all field touch-up coatings in accordance with all manufacturers' recommendations. The Zinc Primer shall be touched up with only **Organic Zinc Primer** when applied in the field.

6. WARRANTY

The fabricator and or Contractor will be required to guarantee his work against defective workmanship or the use of defective materials for a period of one (1) year from the completion of the contract.

7. HANDLING SHOP PRIMED STEEL

Only Nylon web slings or padded lifting points shall be used to move shop primed steel to prevent damage to the coating.

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ENVIRONMENTAL PROTECTION STATEMENT

"All collection, containment, disposal and transportation for disposal must be compliant with all applicable State, Federal and Local air pollution, water pollution, solid waste and hazardous waste regulations, ordinances or statutes.

MEASUREMENT AND PAYMENT

1. **Measurement:** Painting Steel Structures shall be measured on a lump sum basis unless otherwise indicated on the Plans.
2. **Payment:** The payment for Painting Steel Structures shall be on a lump sum contract price bid for PAINTING STRUCTURAL STEEL. The lump sum contract price bid shall be full compensation for furnishing all materials, equipment, quality control testing, shop drawings and labor necessary for Painting Structural Steel as detailed in the plans.

- END OF SECTION -

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CAST-IN-PLACE CONCRETE

(SPECIAL)

SCOPE

These specifications cover all cast-in-place concrete required for completion of the project.

GENERAL

Except as otherwise specified hereunder, the current American Railway Engineering and Maintenance Association (AREMA) Manual for Railway Engineering (Specifications), Chapter 8- Concrete Structures and Foundations, shall apply to all work under this section.

STRENGTH, PROPORTIONS AND MIXES

1. Cement, unless otherwise specified, shall conform to the following:
 - a.) Standard Concrete

Cement shall be Portland Cement, Type I or Type IA, conforming to the requirements of ASTM Designation C150.
 - b.) High Early Strength Concrete

Cement shall be Type III, or Type IIIA, conforming to the requirements of ASTM Designation C150.
2. Minimum compressive strength at 28 days shall be 4000 PSI, unless indicated otherwise on the plans.

Minimum cement content shall be 6.0 Bags/CY (564 LBS/CY).

The superstructure concrete shall be a minimum compressive strength of 5,000 psi at 28 days.
3. Nominal size of coarse aggregate shall be 1"- No. 4 (Size 57). See AREMA Table 1.3.3.
4. Concrete shall be air-entrained by the use of an air entraining admixture conforming to requirements of ASTM Designation, C260, or by the use of air-entraining Portland cement meeting the requirements of ASTM Specification C150. The concrete shall have an air content between 4.0 % and 6.0%.
5. Admixtures, except air-entraining agents, used to alter the normal properties of concrete for densifying, dispersing, retarding, accelerating, plasticizing, coloring, or waterproofing, shall be used only upon written permission of the Engineer.

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6. Testing: Compression tests and field tests will be required as specified in the AREMA Manual, Chapter 8 Part 1. The Contractor shall furnish all test materials and test cylinder molds, shall perform all work to make and cure the test cylinders, and after proper curing, shall deliver the test cylinders to an independent testing laboratory where they shall be tested at the Contractor's expense. The test results shall be furnished directly to the Engineer in writing, by the testing laboratory, on a standard testing report form. Not less than four test cylinders shall be made for each twenty cubic yards or fraction thereof, of cast-in-place concrete. One pair of cylinders shall be tested at 7 days and the second pair at 28 days.
7. Slump range shall be two to four inches. At least one slump test shall be made for each truckload of concrete delivered to the project for inclusion in the work. A record of the amount of slump shall be made and furnishing to the Engineer.

REINFORCING STEEL

1. Reinforcing steel bars shall be intermediate grade, new billet steel, conforming to ASTM Designation A615, Grade 60. Reinforcing bars shall be bent cold in the shop or in the field around a pin not less than 6 times the diameter of the bar. Reinforcing partially embedded in concrete or in mortar in dowel holes shall not be field bent, except as permitted by the Engineer.
2. Welded wire mesh shall conform to ASTM Designations A82 and A185.
3. Epoxy coated reinforcing bars, where specified or shown on the Plans, shall conform to ASTM A775, "Standard Specification for Epoxy-Coated Reinforcing Bars". Epoxy coated reinforcing bars shall be tied with plastic or epoxy coated wires or approved plastic clips, and shall be set on plastic or epoxy coated wire chairs.

INTERFACING WITH EXISTING CONCRETE

1. Surface preparation and anchorage shall be specified in AREMA Specifications, Chapter 8, Part 14, unless otherwise indicated on the Plans. Dowels shall be made of deformed bars, ASTM A615, Grade 60, and shall be spaced as shown on the Plans. Dowels shall be grouted in place with an Epoxy Grout intended for dowel bars and shall be applied in accordance with the manufacturer's recommendations. Horizontal dowel holes shall be drilled downward on a slope of approximately one-inch per foot or as otherwise indicated on the Plans.
2. The surface of the existing material to which the new concrete will be bonded shall be cleaned by either sandblasting, waterblasting, hammers or wire brushes, so that all foreign material and loose or unsound concrete is removed and that a clean sound surface remains. The exposed surface shall be washed with clean water or air cleaned with oil free air to remove all loose dust. Grease and oil shall be

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scrubbed and removed with a detergent and the surface washed with clean potable water.

3. New concrete shall be bonded to clean sound material with an Epoxy Bonding compound. Bonding System shall meet the requirements of ASTM C881, Type II Grade 1 or 2, and shall be subject to approval by an Engineer. Bonding System shall be applied in accordance with manufacturer's recommendations. It is further recommended that Bonding compound be applied as a spray application by use of a Binks bottom discharge pressure vessel operating at approximately 100-psi. Bonding Compound shall not be applied to surfaces that have visible or standing water.

DAMPPROOFING

All surfaces of concrete, which will be in contact with backfill or embankment, shall be dampproofed, with Asphalt Primer and Asphalt, in accordance with AREMA Specifications, Chapter 8, Sections 29.3, 29.15, 29.16, and 29.17.

CONSTRUCTION JOINTS

Construction joints shall be made only where shown on the Plans, unless otherwise approved by the Engineer, and shall be adequately keyed and, if required by the Engineer, be provided with 6"x3/8" polyvinyl chloride hollow bulb waterstops.

FORMED SURFACE FINISH

All unformed surfaces shall be constructed to lines and contours shown on the drawings with a wood or hard rubber float finish. Formed surfaces shall be made with plywood faced wood forms or with steel faced forms.

CURING

Concrete shall be protected as required by AREMA Specification, Chapter 8, Section 1.18, for a minimum of 7 days. Membrane curing compounds are permitted, on all cast-in-place concrete surfaces except those that will abut other new concrete. Curing of such surfaces shall be by wet curing methods. Membrane curing shall be compatible with the specified Concrete Surface Sealer, or the membrane curing compound shall be removed to promote adhesion of the sealer to the concrete.

BEARING PADS

Bearing pads shall be used whenever steel Masonry Plate, or other steel bearing plate, bears on concrete. Pads shall be preformed fabric bearing pads, 1/2" thick, and shall be either Shock Pad Style 15175, as manufactured by the Alert Manufacturing and Supply Company, Chicago, IL. Or Fabreeka Pads, as manufactured by the Fabreeka Production Company, Boston, MA; or SORBTEX Pads as manufactured by Voss Engineering, Inc., Chicago, Illinois, or an approved equal.

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MEASUREMENT AND PAYMENT

SUBSTRUCTURE CONCRETE

1. **Measurement:** The quantity of Substructure Concrete to be paid for, will be the number of cubic yards of concrete which has been incorporated into the completed and accepted work. The number of cubic yards of concrete will be computed from dimensions shown on the plans or from revised dimensions authorized by the Engineer. No deduction will be made for the volume of encased reinforcement.

The dampproofing quantity will be the surface area of the backface of backwall, wingwalls, and seats on Abutment 1 and 2, and the top of footing and columns face to the ground line on the pier.

The quantity of Reinforcing Steel to be paid for, will be the number of pounds of reinforcing steel incorporated in the completed and accepted work. The number of pounds of reinforcing steel will be computed from dimensions and sizes shown on the plans or from revised dimensions authorized by the Engineer.

2. **Payment:** The quantity of Substructure Concrete, as measured above, will be paid for at the contract unit price per cubic yard for the item SUBSTRUCTURE CONCRETE. The above price will be full compensation for furnishing all material, equipment and labor necessary for placing, dewatering, curing, excavation and backfill, forms, finishing, and casting, curing and testing concrete test cylinders.

The quantity for dampproofing, as measured above, will be paid for at the contract unit price per square feet for the item "DAMPPROOFING (RAILROAD STRUCTURES)". The above price shall be full compensation for all material, equipment and labor.

The quantity of reinforcing steel, as measured above, will be paid for at the contract unit price per pound for the item REINFORCING STEEL and SPIRAL COLUMN REINFORCING STEEL. The above price will be full compensation for furnishing all material, equipment and labor necessary for furnishing and installing the reinforcing steel.

SUPERSTRUCTURE CONCRETE

1. **Measurement:** The quantity of Superstructure Concrete to be paid for, will be the number of cubic yards of concrete which has been incorporated into the completed and accepted work. The number of cubic yards of concrete will be computed from dimensions shown on the plans or from revised dimensions authorized by the Engineer. No deduction will be made for the volume of encased reinforcement.

The quantity of Epoxy Coated Reinforcing Steel to be paid for, will be the number of pounds of reinforcing steel incorporated in the completed and accepted work. The number of pounds of reinforcing

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steel will be computed from dimensions and sizes shown on the plans or from revised dimensions authorized by the Engineer.

2. Payment: The quantity of Superstructure Concrete, as measured above, will be paid for at the contract unit price per cubic yard for the item SUPERSTRUCTURE CONCRETE. The above price will be full compensation for furnishing all material, equipment and labor necessary for placing, dewatering, dampproofing, curing, excavation and backfill, forms, finishing, and casting, curing and testing concrete test cylinders.

The quantity of Epoxy Coated Reinforcing Steel, as measured above, will be paid for at the contract unit price per pound for the item EPOXY COATED REINFORCING STEEL. The above price will be full compensation for furnishing all material, equipment and labor necessary for furnishing and installing the reinforcing steel.

- END OF SECTION -

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WATERPROOFING
(RAILROAD STRUCTURES)

(SPECIAL)

GENERAL

WATERPROOFING (RAILROAD STRUCTURES)

- A. All joints between spans and between backwall and beams shall be filled with preformed expansion joint material as specified on the plans.
- B. The top surface areas of the concrete deck shall be waterproofed using membrane waterproofing. Waterproofing shall be applied to the entire top surface of the deck, inside faces of parapets, and top of the abutment backwalls. Additional waterproofing will be required as noted on the plans.
- C. Materials and construction shall be in accordance with A.R.E.M.A. Specifications, Chapter 8 Part 29 plus requirements as follows.

MEMBRANE WATERPROOFING

- A. Use 3/32" thick Butyl Rubber membrane waterproofing conforming to the requirements of Section 29.9.5 on the entire top surface of the box beams and ballast retainers.
- B. Adhesive must be applied to the entire surface to be waterproofed.
- C. No. 3 tongue and groove splice, shown on Figure 8-29-3 shall be used for splicing Butyl Rubber Membrane.

WATERPROOFING PROTECTION

- A. Two layers of asphaltic panels, conforming to Section 29.10.3 and 29.14.4, total thickness not less than 1 inch and placed with staggered joints and set in compatible adhesive, shall be used to protect Butyl Rubber Membrane on top of deck slab and ballast retainers. Ballast shall be placed as soon as practicable following placement of the panels to prevent distortion from sunlight.

EXPANSION JOINTS

- A. Materials, fabrication, and installation of the bridge expansion joints shall be in accordance with the Standard Specifications and the details shown on the plans. Expansion joints consist of preformed expansion joint material. Joints at Abutments and Pier 1 include stainless steel plates anchored to the deck slab with stainless steel anchors.
- B. The entire cost of the expansion joints, complete in place, shall be included in the contract price for the various pay items.

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WATERSTOPS

- A. Waterstops shall be used at all construction joints in the bridge abutments and at all retaining wall expansion joints. Waterstops shall be made of an approved flexible polyvinyl chloride plastic, in accordance with the Standard Specifications. Waterstops shall be made in the shape and of the material specified on the plans. The material shall form a continuous Waterstops across all construction joints in the abutments and expansion joints in the walls. Waterstops shall be fabricated in continuous units without splice, using material of the longest length available. Where bonded joints are necessary, like materials shall be bonded together by experienced persons in accordance with the manufacturer's instructions.
- B. The entire cost of waterstops, complete in place, shall be included in the contract unit price bid for "Substructure Concrete".

MEASUREMENTS AND PAYMENT

- A. Payment shall be at the contact unit price bid per square feet for "Waterproofing (Railroad Structures)". Such payment will include, but is not limited to, furnishing all labor, tools, equipment, and materials complete and in place, and all incidentals necessary to complete the work as described in the plans and these special provisions.

- END OF SECTION -

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RAILROAD ROADBED

(SPECIAL)

CLEARING AND GRUBBING

Clearing performed on the railway portion of the project to be in accordance with NCDOT Roadway Standard No. 200.02. Clearing and grubbing will be in accordance with Section 200 of the Standard Specifications, except that grubbing will be performed on all cleared excavation and embankment areas and will include all stumps, roots, and other embedded debris.

EXCAVATION

Excavation on the railway portion of the project will be performed in accordance with Section 225 of Standard Specifications and shall conform to all CSXT requirements. The applicable typical roadbed template will be maintained throughout the railway portion of the project other than the flattening of slopes when so directed by the Engineer. Any waste material will be disposed of in accordance with Section 802 of the Standard Specifications of at locations designated by the Engineer consistent with the Sequence of Events for Constructions of the total project.

EMBANKMENTS

Embankments for the railway portion of the project will be formed in accordance with Section 235 of the Standard Specifications and shall conform to all CSXT requirements. If there is a choice of embankment materials, soils or classifications A-5, A-6 and A-7 will not be used for embankments less than five (5) feet high.

SEEDING AND MULCHING

In addition to the provisions of Section 880 of the Standard Specifications the Contractor will perform the following work:

After trackage has been removed, the Contractor shall dress trackage area to provide adequate drainage away from the permanent roadbed. In the event ditching is required to move the water, this shall be provided at slopes not less than 0.5%. All areas shall be left to drain and provide an acceptable appearance as directed by the Engineer prior to performing the seeding and mulching operations. Should the Department elect to salvage the stone ballast from the track removal locations, the smoothing and shaping will not be performed until completion of the salvage operation. There will be no direct measurement of or payment made for performing this operation. The cost for this work will be included in contract unit price bid for other items of work.

DRAINAGE STRUCTURE

All drainage structures as indicated on the plans and as necessary for the proper protection of the railroad will be furnished and installed in accordance with Section 300, 310 and 840 of the Standard Specifications.

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MAINTENANCE OF TRACK ROADBED

The Contractor shall be responsible for the maintenance of the relocated track roadbed below the stone ballast during the construction period. All maintenance work to be done to the satisfaction of the Railway Engineer or his authorized representative. Items requiring maintenance and degree of urgency will be designated and determined by the Railway Engineer or his authorized representative. As soon as practicable, the Railway Engineer will notify the Contractor of any items that require maintenance so that the Contractor can do the necessary work.

MEASUREMENT AND PAYMENT

All materials furnished and work performed in accordance with the Standard Specifications will be measured and paid for in accordance with the applicable provision of the Standard Specifications.

- END OF SECTION -

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RAILROAD TIMBER TIES

(SPECIAL)

GENERAL

DESCRIPTION

- A. CONTRACTOR shall install ties under the proposed tracks, within the project limits shown on drawings. Ties will be furnished by the CSXT Railroad.

PRODUCTS

MATERIALS

- A. All ties furnished under this item shall be new.
All ties furnished under this item shall be fit.
- B. Ties used in track shall conform to CSXT Timber Crosstie and Switch Tie Specifications, MWI401-01 or latest revision.
- C. Ties used in main tracks, yard leads, ladders, and running tracks shall be grades 4 and 5. At least 70 percent shall be grade 5.
- D. Ties used in yard body tracks may be grades 2 and 3. At least 70 percent shall be grade 3.
- E. Wood preservatives shall be as specified in CSXT standard specification.
- F. All ties shall be free from defects that may impair their strength or durability such as large splits, large shakes, and large holes and knots.
- G. Tie plugs shall be new, treated, 5 inches long, and conform to the current A.R.E.M.A. **Specifications For Tie Plugs**.

EXECUTION

EXECUTION

- A. CONTRACTOR shall place ties, install tie plugs, tie plates, spikes, and anchors, and tamp the ties.
- B. Ties shall not be placed until ENGINEER has advised that the roadbed is satisfactory.
- C. Cross ties shall be spaced 21 inches for mainline tracks and 24 inches for secondary tracks, in accordance with CSXT's "Maintenance of Way Regulations and Instructions",
- D. Ties shall be pre-bored to accommodate the spiking arrangement specified in section, "**Other Track Material**" of these specifications. The cost of pre-boring shall be included in the cost for furnishing ties.
- E. Spiking pattern will be governed by CSXT Standard Drawings No. 2512, 2513, and 2514, or latest revision.

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- F. Bridge approach ties shall be installed in accordance with CSXT Standard Drawing 2607.
- G. When necessary to add ties, an adding machine shall be used. The adzing must be done so as to give the tie plate a full bearing across the tie and parallel with the plane of track.
- H. All ties shall be placed in track at right angles to the center line of the track. The end of the tie on the line side shall be 4'3" from the center line of the track. The line end of the ties shall be to the right hand side of the track, facing north or east (timetable direction) except where these are sidings and multiple tracks, where ties in the two outside tracks are lined to the outside. Switch ties shall be lined on the straight side, except as noted on the standard plans.
- I. When handling or spacing ties, care shall be taken to prevent damage with picks and hammers. Pulling ties into position by picks will not be permitted; tie tongs shall be used for this purpose.

MEASUREMENT AND PAYMENT

- A. Cross Ties will be supplied by CSXT Railroad.
- B. No separate payment is made for "Railroad Timber Ties". The entire cost of labor, materials and equipment used for stockpiling, placing, and installing "Railroad Timber Ties" shall be included with the pay items "RAILROAD TRACK TO BE CONSTRUCTED", "RAILROAD TRACK TO BE REMOVED AND RELAID", AND "RAILROAD TRACK TO BE LINED".

- END OF SECTION -

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RAILROAD TRACK TO BE CONSTRUCTED

GENERAL

DESCRIPTION

- A. This specification is applicable to new track construction. The limits of new track to be constructed are from Sta. 17+10+- -RR- to Sta. 31+25+- -RR-.
- B. All new track construction shall be in accordance with the special provision entitled "CONSTRUCT CONTINUOUS WELDED RAIL TRACK ON TIMBER TIES" and any other applicable provisions for this work.
- C. Track to be supplied by CSXT Railroad.
- D. Ballast to be supplied by CSXT Railroad.
- E. Cut and throw to be performed by CSXT Railroad.

MEASUREMENT AND PAYMENT

- A. Measurement of the item, "RAILROAD TRACK TO BE CONSTRUCTED", shall be the number of feet of new track constructed and in place, as measured along the centerline of track.
- B. Payment shall be at the unit price bid and shall be full compensation for labor, materials not specifically supplied by the CSXT Railroad, placement of ballast, equipment, tools, supplies and all else necessary to construct the track.
- C. No payment will be made under the pay item "RAILROAD TRACK TO BE CONSTRUCTED" for track that has already been paid for under the pay item "RAILROAD TRACK TO BE REMOVED AND RELAID".

- END OF SECTION -

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RAILROAD TRACK TO BE REMOVED AND RELAID

GENERAL

DESCRIPTION

- A. This specification is applicable to track construction for the areas of the project where existing track is removed and relaid after grading, subballast and ballast have been placed to the proposed grade. The limits of track to be removed and relaid are from Sta. 13+50 -RR- to Sta. 17+10+- -RR- and from Sta. 31+25+- -RR- to Sta. 39+00 -RR-.
- B. All track construction shall be in accordance with the special provision entitled "CONSTRUCT CONTINUOUS WELDED RAIL TRACK ON TIMBER TIES" and any other applicable provisions for this work.
- C. Ballast to be supplied by CSXT Railroad.
- D. Cut and throw to be performed by CSXT Railroad.

MEASUREMENT AND PAYMENT

- A. Measurement of the item, "RAILROAD TRACK TO BE REMOVED AND RELAID", shall be the number of feet of track constructed and in place, as measured along the centerline of track.
- B. Payment shall be at the unit price bid and shall be full compensation for labor, materials not specifically supplied by the CSXT Railroad, placement of ballast, equipment, tools, supplies and all else necessary to construct the track.
- C. No payment will be made under the pay item "RAILROAD TRACK TO BE REMOVED AND RELAID" for track that has already been paid for under the pay item "RAILROAD TRACK TO BE CONSTRUCTED".

- END OF SECTION -

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RAILROAD TRACK TO BE LINED

GENERAL

DESCRIPTION

- A. This specification is applicable to track construction for any track beyond project limits (before Sta. 13+50 -RR- or after Sta. 39+00 -RR-) that is lined.
- B. All track construction shall be in accordance with the special provision entitled "CONSTRUCT CONTINUOUS WELDED RAIL TRACK ON TIMBER TIES" and any other applicable provisions for this work.
- C. Ballast to be supplied by CSXT Railroad.

MEASUREMENT AND PAYMENT

- A. Measurement of the item, "RAILROAD TRACK TO BE LINED", shall be the number of feet of track lined, as measured along the centerline of track.
- B. Payment shall be at the unit price bid and shall be full compensation for labor, materials not specifically supplied by the CSXT Railroad, placement of ballast, equipment, tools, supplies and all else necessary to construct the track.
- C. No payment will be made under the pay item "RAILROAD TRACK TO BE LINED" for track that has already been paid for under the pay item "RAILROAD TRACK TO BE REMOVED AND RELAID" or the pay item "RAILROAD TRACK TO BE CONSTRUCTED".

- END OF SECTION -

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RAILROAD TRACK TO BE REMOVED

GENERAL

DESCRIPTION

- A. This specification is applicable to track removal within project limits.
- B. Contractor to furnish labor, equipment, and materials for removal of existing track, existing ties, spikes, plates, and other rail materials.
- C. All materials removed will become the property of the contractor and contractor is responsible for disposal of these items.
- D. Existing ballast to be graded to a smooth surface after rail removal. Contractor shall perform a final walkthrough to pick-up any remaining small items.

MEASUREMENT AND PAYMENT

- A. Measurement of the item, "RAILROAD TRACK TO BE REMOVED", shall be the number of feet of track removed, as measured along the centerline of track. Contractor to take measurement and obtain approval from Engineer before commencing track removal.
- B. Payment shall be at the unit price bid and shall be full compensation for labor, materials, equipment, tools, supplies and all else necessary to remove the track and dispose of properly.

- END OF SECTION -

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TEMPORARY RAILROAD SHORING (SPECIAL)

GENERAL

DESCRIPTION

- A. This specification is applicable to temporary railroad shoring at the beginning of the project and at Abutment 2. Refer to Structure Drawings S-41 and S-42.
- B. Contractor to furnish labor, equipment, and materials for construction of temporary shoring.
- C. All temporary shoring shall be removed when no longer needed. The shoring shall be removed from the project site and disposed of properly. The shoring at the beginning of the project (Sta. 19+00+- -RR- to Sta. 21+00+- -RR-) shall be removed before the new track alignment is activated.
- D. Shoring shall be constructed in accordance with plan details and in accordance with AREMA standards and NCDOT specifications. Shoring shall be constructed in a manner that does not provide unsafe conditions for workers and does not create any obstructions to railroad traffic.

ALTERNATE DESIGN AND PLANS

- A. The submittal of an alternate design and plans for excavation and shoring is permitted in lieu of the excavation and shoring detailed on the plans. The alternate design shall be in accordance with the current railway design criteria. Have the alternate design computations and plans sealed by a North Carolina Registered Professional Engineer and submit them for review, comments and acceptance. After the appropriate State agency accepts them, they are submitted by the State agency to the Railroad for review, comments and acceptance. Allow a minimum of 30 days for the Railroad's review. Do not begin excavation at the excavation site or sites in question until the Engineer confirms that both the State and Railroad accept the alternate design and plans. No extension of intermediate completion dates and/or final completion dates will be allowed due to delays in review of alternate excavation and shoring design and plans.

MEASUREMENT AND PAYMENT

- A. There will be no measurement of the item, "TEMPORARY RAILROAD SHORING". The entire cost of this work, including labor, materials, equipment, supplies and all else needed to construct and remove temporary shoring from Sta. 19+00+- -RR- to Sta. 21+00+- -RR- and to construct and remove temporary shoring adjacent to Abutment 2 shall be included in the Lump Sum quantity for "TEMPORARY RAILROAD SHORING".

- END OF SECTION -

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RUTHERFORD COUNTY

MAINTENANCE AND PROTECTION OF TRAFFIC
BENEATH PROPOSED STRUCTURE AT STATION 45+00.89 -L-

(8-13-04)

1.0 GENERAL

Maintain traffic on US 221 as shown in Traffic Control Plans and as directed by the Engineer.

Provide a minimum temporary vertical clearance of 16'-7" at all times during construction.

Submit plans and calculations for review and approval for protecting traffic and bracing girders, as described herein, at the above station before beginning work at this location. Have the drawings and design calculations prepared, signed, and sealed by a North Carolina Registered Professional Engineer. The approval of the Engineer will not relieve the Contractor of the responsibility for the safety of the method or equipment.

2.0 PROTECTION OF TRAFFIC

Protect traffic from any operation that affords the opportunity for construction materials, equipment, tools, etc. to be dropped into the path of traffic beneath the structure. Based on Contractor means and methods determine and clearly define all dead and live loads for this system, which, at a minimum, shall be installed between beams or girders over any travelway or shoulder area where traffic is maintained. Install the protective system before beginning any construction operations over traffic. In addition, for these same areas, keep the overhang falsework in place until after the rails have been poured.

3.0 BRACING GIRDERS

Brace girders to resist wind forces, weight of forms and other temporary loads, especially those eccentric to the vertical axis of the member during all stages of erection and construction. Before casting of intermediate diaphragms, decks, or connecting steel diaphragms do not allow the horizontal movement of girders to exceed ½ inch (13mm).

4.0 BASIS OF PAYMENT

Payment at the contract unit prices for the various pay items will be full compensation for the above work.

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STRUCTURE DRAINAGE SYSTEM AT STATION 45+00.89 -L- (SPECIAL)

The work in this section covers the furnishing of materials and installation of the drainage system and all its appurtenances called for on the plans at the locations on the plans to the lines and grades shown. The work shall also include the construction of joints or connections to other drainage structures to complete the system as shown on plans. The Contractor shall submit a plan for the drainage system, including but not limited to attachments to the bridge, pipe alignment and pipe lengths, and all necessary fittings, elbows, wyes, adapters, guides and joints.

The pipe, pipe anchors, pipe hangers, inserts and components of each shall be manufactured in accordance with the details and as indicated on the plans. All steel and hardware shall be galvanized.

Structure drainage system installation shall be in accordance with the drawings and manufacture recommendations and as directed by the Engineer.

Drainage outlets shall tie to roadway drainage system. See roadway plans.

Basis of Payment:

Payment will be made at the contract lump sum price for "Structure Drainage System at Station 45+00.89 -L-". Such payment will include full compensation for all work, but not limited to providing materials and labor to install the structure drainage system as detailed in the plans.

METAL HANDRAIL (SPECIAL)

Construct the metal handrail in accordance with the applicable the details shown on the plans and this special provision.

The quantity of metal handrail will be the actual number of linear feet of rail which has been completed and accepted. All hardware used for the handrail is included in the price of the rail and will not be paid for separately.

Work includes but is not limited to furnishing and installing rail pipe, plates, anchor rods, bolts, screws, nuts, and any other materials necessary to complete the work as described in the plans and this special provision.

Payment will be made under:

Metal Handrail _____ Linear Foot

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Rutherford County

FOUNDATION EXCAVATION

(SPECIAL)

Perform foundation excavation and related work at Abutment 1, and Pier 1 in accordance with Section 410 of the Standard Specifications with the following exceptions.

Payment will be made under:

Foundation Excavation at Abutment 1.....Lump Sum

Foundation Excavation at Pier 1.....Lump Sum

ROCKER BEARING ASSEMBLIES

(SPECIAL)

Provide rocker bearing assemblies in accordance with the details shown on the plans. The fabrication and installation of the rocker bearing assemblies shall conform to AREMA Chapter 19, Section 2.2 and AREMA Chapter 15, Steel Structures.

Provide materials for rocker bearing assemblies in conformance with AREMA Chapter 15, Steel Structures and AREMA Chapter 19, Section 1.3.2. Construction of rocker bearing assemblies shall be in conformance with AREMA Chapter 19, Part 2.

Basis of Payment:

Payment will be made at the contract lump sum price for "Rocker Bearing Assemblies". Such payment will include full compensation for all work, but not limited to providing materials and labor to install the bearings as detailed in the plans.

Payment will be made under:

Rocker Bearing Assemblies _____ Lump Sum