



City of Jonesboro

Municipal Center
300 S. Church Street
Jonesboro, AR 72401

Meeting Agenda Public Works Council Committee

Tuesday, March 5, 2024

5:00 PM

Municipal Center, 300 S. Church

1. CALL TO ORDER

2. ROLL CALL (ELECTRONIC ATTENDANCE) CONFIRMED BY CITY CLERK APRIL LEGGETT

3. APPROVAL OF MINUTES

[MIN-24:011](#) Minutes for the Public Works Committee meeting on February 6, 2024

Attachments: [Minutes](#)

4. NEW BUSINESS

RESOLUTIONS TO BE INTRODUCED

[RES-24:016](#) A RESOLUTION OF THE CITY OF JONESBORO, ARKANSAS TO ENTER INTO AN AGREEMENT WITH TRAC-WORK, INC. FOR THE CRAIGHEAD TECHNOLOGY PARK LEAD & NESTLE LEAD MAINTENANCE & GRADE CROSSING IMPROVEMENTS PROJECT (2024:06)

Sponsors: Engineering

Attachments: [Bid Tab](#)
[Contract](#)

5. PENDING ITEMS

6. OTHER BUSINESS

7. PUBLIC COMMENTS

8. ADJOURNMENT



City of Jonesboro

300 S. Church Street
Jonesboro, AR 72401

Text File

File Number: MIN-24:011

Agenda Date:

Version: 1

Status: To Be Introduced

In Control: Public Works Council Committee

File Type: Minutes

Minutes for the Public Works Committee meeting on February 6, 2024



City of Jonesboro

Municipal Center
300 S. Church Street
Jonesboro, AR 72401

Meeting Minutes Public Works Council Committee

Tuesday, February 6, 2024

5:00 PM

Municipal Center, 300 S. Church

1. CALL TO ORDER

2. ROLL CALL (ELECTRONIC ATTENDANCE) CONFIRMED BY CITY CLERK APRIL LEGGETT

Present 7 - John Street; Mitch Johnson; Chris Moore; Charles Coleman; LJ Bryant; Janice Porter and Anthony Coleman

Absent 1 - Ann Williams

3. APPROVAL OF MINUTES

[MIN-24:003](#)

Minutes for the Public Works Committee meeting on January 2, 2024

Attachments: [Minutes](#)

A motion was made by Chris Moore, seconded by Charles Coleman, that this matter be Passed . The motion PASSED with the following vote.

Aye: 6 - Mitch Johnson; Chris Moore; Charles Coleman; LJ Bryant; Janice Porter and Anthony Coleman

Absent: 1 - Ann Williams

4. NEW BUSINESS

[RES-24:010](#)

A RESOLUTION TO THE CITY OF JONESBORO, ARKANSAS TO ACCEPT THE LOW BID AND ENTER INTO A CONTRACT WITH ATLAS ASPHALT INC. FOR THE 2024 ASPHALT MILLING AND OVERLAYS SELECTED CITY STREETS PROJECT - JOB NO. 2024:03

Sponsors: Engineering

Attachments: [Bid 2024-03 Asphalt Cold Milling Overlays Tabulation](#)
[2024 Asphalt](#)

Councilmember Mitch Johnson said, I printed off the streets that were on the schedule. I was just wondering what the criteria was on these. Do we use this off of the street inventory that we did several years back, and these are some of the ones that have the most needs? Chairman John Street said, we hired that company to do that but Craig can explain. Engineering Department Director Craig Light approached the podium and said, yes, we identified all those roads by that inventory that was done several years ago. A lot of them are also roads that people have made request on, or ones the street department have been doing a lot of work on. So we kind of compiled

those three list. The original list was quite a bit more than what we actually put out for bid because of budget constraints but we're hopeful that later in the year you guys might see fit to allow us to add some additional. We have a lot of needs when it comes to overlaying roads. There's a lot of roads out there that need some maintenance and overlay work to them. Councilmember Mitch Johnson said, sure. That's kind of what I wondered. What the criteria of this was. If these were some of the worst ones. Director Craig Light said, the list, it's really ones that the street department have been doing active work on. They're getting multiple calls for potholes but they all ranked poorly on that inspection report that was done, or the residents had been calling about them as well. They all just kind of fell into place that way. Councilmember Mitch Johnson said, thank you Craig.

Councilmember Chris Moore said, I wasn't privy to the list like Mitch was. Was Oak Street one of those, or Warner where CWL has obliterated the street? Director Craig Light said, that will be patched back by CWL's contractor, but the overlay of that road was not included. The conversation with CWL was not had that that was going to happen. Councilmember Chris Moore said, I'm not sure if we can patch that back. Director Craig Light said, yeah the spots going to be patched back and then we'll have to look what we do after that. Councilmember Chris Moore said, because about every 20 to 30 feet there's about a 40 square foot patch in the middle of the road. Director Craig Light said, I've driven down it. I'm aware of what it looks like, but when we were putting the list together that was not going on. Those will get patched back and then we're going to have to look at what we do with the final surface treatment. After the fact on that. Councilmember Mitch Johnson said, that was a pretty lengthy document. I just happen to come across page nine that showed them so I just printed them off. I just wanted to answer that question. I appreciate it.

Councilmember Dr. Anthony Coleman said, I just wanted to concur with my colleague that I too looked at that list and that was the exact question I was going to ask, so I appreciate that. For more clarity. Thank you.

A motion was made by Mitch Johnson, seconded by Chris Moore, that this matter be Recommended to Council . The motion PASSED with the following vote.

Aye: 6 - Mitch Johnson;Chris Moore;Charles Coleman;LJ Bryant;Janice Porter and Anthony Coleman

Absent: 1 - Ann Williams

5. PENDING ITEMS

6. OTHER BUSINESS

7. PUBLIC COMMENTS

8. ADJOURNMENT

A motion was made by Mitch Johnson, seconded by Chris Moore, that this meeting be Adjourned. The motion PASSED with the following vote.

Aye: 6 - Mitch Johnson;Chris Moore;Charles Coleman;LJ Bryant;Janice Porter and Anthony Coleman

Absent: 1 - Ann Williams



City of Jonesboro

300 S. Church Street
Jonesboro, AR 72401

Text File

File Number: RES-24:016

Agenda Date:

Version: 1

Status: To Be Introduced

In Control: Public Works Council Committee

File Type: Resolution

A RESOLUTION OF THE CITY OF JONESBORO, ARKANSAS TO ENTER INTO AN AGREEMENT WITH TRAC-WORK, INC. FOR THE CRAIGHEAD TECHNOLOGY PARK LEAD & NESTLE LEAD MAINTENANCE & GRADE CROSSING IMPROVEMENTS PROJECT (2024:06)

WHEREAS, the City of Jonesboro has desires to accept the low bid and enter into a contract for the Craighead Technology Park Lead & Nestle Lead Maintenance & Grade Crossing Improvements;

WHEREAS, the low bidder and the firm selected for the project is Trac-Work, Inc.; and

WHEREAS, the funding for the execution of the contract shall come from the Capital Improvement budget and compensation shall be paid in accordance with the agreement.

NOW, THEREFORE BE IT RESOLVED, BY THE CITY COUNCIL OF THE CITY OF JONESBORO, ARKANSAS;

Section 1: That the City of Jonesboro shall accept the low bid and enter into a contract with Trac-Work, Inc. for the Craighead Technology Park Lead & Nestle Lead Maintenance & Grade Crossing Improvements.

Section 2. The funding for the execution of the contract shall come from the Capital Improvement budget and compensation shall be paid in accordance with the agreement.

Section 3. The Mayor and the City Clerk are hereby authorized by the City Council for the City of Jonesboro to execute all documents necessary to effectuate the agreement.

W. WILLIAM GRAHAM, JR., INC.

CONSULTING ENGINEERS
100 NORTH RODNEY PARHAM RD. - SUITE 2B
LITTLE ROCK, ARKANSAS 72205
(501) 227-0078

W. WILLIAM GRAHAM, JR., P.E. (1925-2001)

ROBERT B. GRAHAM, P.E.

CODY C. RANKIN, P.E.

February 22, 2024

City of Jonesboro
Attn: Mr. Craig Light
P.O Box 1845
Jonesboro, AR 72403

Ref: CTP Lead-Nestle Lead – Rail Maintenance & Grade Crossing Improvements Projects
Craighead Technology Park – Jonesboro, AR (BID #2024:06)

Dear Mr. Light,

Our firm has reviewed and checked the bid submitted for the above referenced Project for the City of Jonesboro. Please see the attached, certified bid tabulation results for your use. Our firm would like to recommend that the City of Jonesboro proceed with awarding the Project (Bid #2024:06) to TRAC-WORK, INC for the amount bid of \$326, 127.79.

Once the award has been approved and delivered to the Contractor, the Contract for the Project can be prepared and executed.

Please contact our office at (501)227-0078 with any questions or concerns.

Respectfully Submitted,



Robert B. Graham, P.E.

President

CITY OF JONESBORO
 300 S. Church Street
 Jonesboro, AR 72401
 CTP Nestle Lead Maintenance Project
 (Bid #2024:06)

W. WILLIAM GRAHAM JR., INC.
 CONSULTING ENGINEERS
 100 N. Rodney Prham Rd (Suite 2B)
 Little Rock, AR 72205
 (501)227-0078

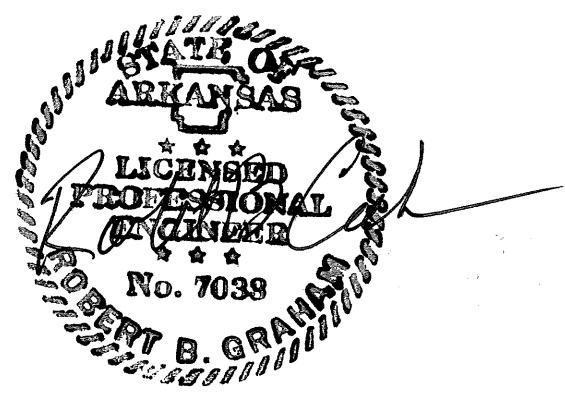
				TRAC-WORK, INC. 7700 Jamison Road Little Rock, AR 72209	
CTP IND LEAD-NESTLE IND LEAD - Maintenance & Grade Crossing Improvements					
Item	Description of Item	Qty	Unit	Unit Price	Amount
1	Surface, Regulate, Line and Tamp Ex. Trackage	26,026	LF	\$4.19	\$109,048.94
2	Ballast Aggregate Material (BNSF Specifications)	2,260	TONS	\$50.87	\$114,966.20
3	Furnish & Install New 7"x9"x8.5' Crossties (wood)	200	Ea.	\$194.34	\$38,868.00
4	Quality Way Grade Crossing rebuild (Incl. Conc. Panels, 7"x9"x10' crossties, etc.)	100%	LS	\$49,676.54	\$49,676.54
5	Surface, Regulate, Line and Tamp Ex. Turnouts	3	Ea.	\$3,025.29	\$9,075.87
6	Final Inspection	100%	LS	\$4,492.24	\$4,492.24
TOTAL BID					\$326,127.79

This is a certified copy of the tabulation of bids on the captioned work as submitted by the Contractors listed above.

W. WILLIAM GRAHAM JR., INC. CONSULTING ENGINEERS

BY: Robert B. Graham

DATE: 2/22/24



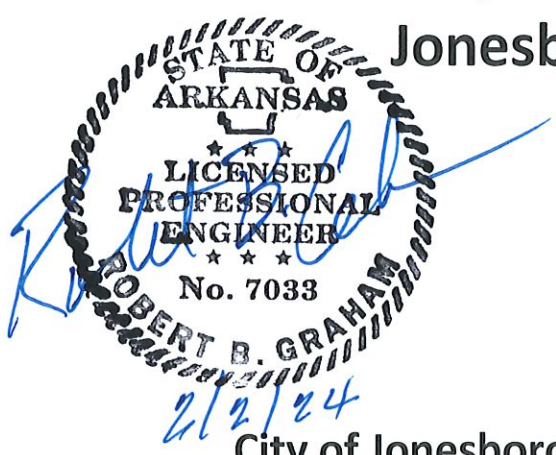


Specifications For

Craighead Technology Park Industrial Lead and Nestle Lead – Maintenance & Grade Crossing Improvements Project

(Bid #2024:06)

Jonesboro, Arkansas



City of Jonesboro - Engineering Department

P.O. Box 1845 ■ 300 South Church Street ■ Jonesboro, AR 72403 ■ 870.932.2438

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I. ADVERTISEMENT FOR BIDS

Sealed bids for the **Craighead Technology Park Industrial Lead and Nestle Lead – Maintenance & Grade Crossing Improvements Project** will be received at the Purchasing Department, Room 421, of the City of Jonesboro City Hall, 300 South Church, Jonesboro, Arkansas until 2:00 P.M. (Local Time) on Wednesday, February 21, 2024 and then publicly opened and read aloud in the Third Floor Conference Room for furnishing all labor, material, and equipment, and all work required to furnish and construct the industrial rail grade crossing complete. All Submissions shall be annotated on the outside of the envelope with the bid number **2024:06**.

The Project consists of placing a surface lift of ballast for resurfacing, regulating, and tamping 26,026 LF of trackage using 2,260 tons of ballast aggregate. The Project also includes the removal of the existing Quality Way concrete at-grade crossing and reconstruction of the at-grade crossing with new 7"x9"x10' crossties, aggregate, the salvageable concrete panels, new concrete panels, and associated asphalt paving.

Proposals shall be accompanied by a cashier's or certified check upon a national or state bank in an amount not less than five percent (5%) of the total maximum bid price payable without recourse to the City of Jonesboro or a bid bond in the same amount from a reliable surety company, as a guarantee that the Bidder will enter into a contract and execute performance and payment bonds within ten (10) days after notice of award of Contract to him. The notice of award of Contract shall be given by the Owner within sixty (60) days following the opening of bids.

The successful Bidder must furnish a performance and payment bond upon the form provided in the amount of one hundred percent (100%) of the contract price from an approved surety company holding a permit from the State of Arkansas to act as surety, or other surety or sureties acceptable to the Owner.

The attention of bidders is called to the fact that no contractor's license is required to submit a bid, but successful bidder must be licensed prior to entering into a contract with the City for the project.

Plans, specifications, proposal forms and other contract documents may be examined at City of Jonesboro Engineering Department, 300 South Church Street, Jonesboro, Arkansas 72401 and may be secured at the cost of printing per set from the Jonesboro Blueprint, 222 Madison Street, Jonesboro, Arkansas 72401, ph. (870)932-4349. No partial sets will be issued. No refunds will be made. Any addendum to this bid will be posted no later than 7 days before bid opening by clicking on "Purchasing" at www.jonesboro.org.

Proposals will be considered on the basis of cost, the bidder's financial responsibility, his equipment, and his past performance in completing similar work. The City of Jonesboro reserves the right to reject any or all bids, to waive any informalities, and to accept the proposal deemed to be for their best interest.

The City of Jonesboro hereby notifies all bidders that this contract is subject to applicable labor laws,

non-discrimination provisions, wage rate laws and other federal laws including the Fair Labor Standards Acts of 1938. The Work Hours Act of 1962 and Title VI of the Civil Rights Act of 1964 also apply.

The City of Jonesboro encourages participation of small, minority, and woman owned business enterprises in the procurement of goods, services, and construction, either as a general contractor or subcontractor. It is further requested that whenever possible, majority contractors who require sub-contractors seek qualified small, minority; and women owned businesses to partner with them.

II. INSTRUCTION TO BIDDERS

1. PREPARATION OF BID

Each bid must be submitted on the prescribed form (Proposal) and Unit Price Schedule. All blank spaces must be filled in legibly with ink or typed. All blank spaces for bid prices on the Unit Price Schedule must be filled in with figures; the extended total for each item shall be entered. If the unit price and the extended total of any item are not in agreement, the unit price shall govern and the extended total be corrected to conform thereto. Erasures or other corrections on the Proposal form or Unit Price Schedule shall be initialed by the signer of the bid. All bids must be signed in ink by an individual authorized to bind the Bidder. All bids must be regular in every respect and no interlineations, excisions or special conditions shall be made or included in the Proposal by the Bidder. Total Base Bid will equal Invoice Price.

There must be a bid on all items which may appear on the Unit Price Schedule. No bid will be considered which covers only a part of the work. A conditional bid will not be considered.

The bid form and Unit Price Schedule shall not be detached, but shall be **submitted in the original binding** as furnished by the Engineer. Submission must be at the place, and at or prior to the time specified in the Advertisement for Bids.

The Anti-Collusion and Debarment Certification in Section IV must be executed and submitted with the bids at the time proposals are submitted.

“Buy America” provisions apply to this project in accordance with provisions of the F.R.A Buy America requirements of 49 U.S.C. Section 22905(a) and associated sections (see Sec IV).

Each bid must be submitted in a sealed envelope clearly marked on the outside that it contains a bid for the **Craighead Technology Park Industrial Lead and Nestle Lead – Maintenance & Grade Crossing Improvements Project**, Bid Number **2024:06** and with the hour and date of bid opening shown thereon. The name and address of the Bidder shall appear in the upper left hand corner of the envelope. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope properly addressed as noted in the NOTICE TO CONTRACTORS.

A bid which obviously is unbalanced may be rejected.

2. INTERPRETATIONS AND ADDENDA

No oral interpretation will be made to any Bidder as to the meaning of the Contract Documents or any part thereof. Every request for such an interpretation shall be made in writing to the City of Jonesboro Engineering Department. Any inquiry received up to seven (7) days prior to the opening of bids will be given consideration. Every interpretation made to a Bidder will be in the form of an Addendum to the contract Documents. All such Addenda shall become part of the Contract and all Bidders shall be bound by such Addenda, whether or not received by the Bidders.

3. INSPECTION OF SITE

Each Bidder shall visit the site of the proposed work and fully acquaint himself with the existing conditions there relating to construction and labor, and shall fully inform himself as to the facilities involved, and the difficulties and restrictions attending the performance of the Contract. The Bidder shall thoroughly examine and familiarize himself with the Plans, Technical Specifications, and other Contract Documents. The Contractor by the execution of the Contract shall not be relieved of any obligation under it due to his failure to receive or examine any form or legal instrument or to visit the site and acquaint himself with the conditions there existing. The Owner will be justified in rejecting any claim based on facts regarding which the contractor should have been on notice as a result thereof.

4. BID GUARANTY

The bids must be accompanied by a Bid Guaranty which shall not be less than five percent (5%) of the amount of the bid. At the option of the Bidder, the guaranty may be a certified check, or may be a bid bond (substantially in the form attached). No bid will be considered unless it is accompanied by the required guaranty. Certified check must be payable to the City of Jonesboro, Arkansas. Cash deposits will not be accepted. The Bid Guaranty shall insure the execution of the Contract and the furnishing of the surety bond or bonds by the successful Bidder, all as required by the Contract Documents.

Certified checks, or bid bonds, of unsuccessful Bidders, will be returned upon request as soon as feasible after the opening of the bids.

5. COLLUSION; SUBCONTRACTS

A Bidder submitting a Proposal to the Owner for the work contemplated by the Documents on which bidding is based shall not collude with any other person, firm, or corporation in regard to any bid submitted.

Before executing any subcontract, the successful Bidder shall submit the name of any proposed Subcontractor for prior approval of the Owner.

6. STATEMENT OF BIDDER'S QUALIFICATIONS

Each Bidder shall submit on the form furnished for that purpose (a copy of which is included in the Contract Documents), a statement of the Bidder's qualifications, his experience record in construction of work similar to that which here is involved, and his organization and equipment available for the work contemplated; and when specifically requested by the Owner, the Bidder shall provide a detailed financial statement. The Owner shall have the right to take such steps as it deems necessary to determine the ability of the Bidder to perform his obligations under the Contract, and the Bidder shall furnish the Owner all such information and data for this purpose as it may request. The right is reserved to reject any bid where an investigation of the available evidence or information does not satisfy the Owner that the Bidder is qualified to carry out properly the terms of the Contract.

7. BALANCED BIDS; VARIATIONS IN QUANTITIES

The lump sum price and unit price for each of the several items in the Proposal of each Bidder shall be balanced and shall include its pro rata share of overhead.

The Owner shall have the right to increase or decrease the extent of the work or to change the location, gradient, or the dimensions of any part of the work, provided that the length of the improvement is not increased or decreased in excess of 25% of the contract length, or that the quantities of work to be done or the materials to be furnished are not increased or decreased in money value in excess of 25% of the total Contract. Such changes shall not be considered as a waiver of any conditions of the Contract nor invalidate any of the provisions thereof. The Contractor shall perform the work as increased or decreased within the qualifying limits named and no allowance will be made for anticipated profits on increases or decreases so incurred.

Increases or decreases in items of work, and the cost thereof, shall be done in accordance with the Section entitled, CHANGES IN THE WORK under GENERAL CONDITIONS.

8. TIME FOR RECEIVING BIDS

A bid received prior to the advertised time of opening will be kept securely, and will remain sealed until the time of opening. The officer whose duty it is to open them will decide when the specified time has arrived, and any bid received subsequent to that time will be returned unopened.

9. OPENING OF BIDS

At the time and place fixed for the opening of bids, the Owner first will cause the bid guarantees to be checked as stipulated above. The Owner then will cause the qualified bids to be opened and publicly read aloud, irrespective of any irregularities therein. Bidders and other persons properly interested may be present, in person or by representative.

10. WITHDRAWAL OF BIDS

Bids may be withdrawn on written request if the request is received prior to the time fixed for the opening of bids.

11. AWARD OF CONTRACT; REJECTION OF BIDS

The Contract will be awarded to the responsible Bidder submitting the lowest total bid complying with the conditions of the Notice to Contractors and other parts of these Contract Documents. The Bidder to whom the award is made will be notified at the earliest possible date. The Owner, however, reserves the right to reject any or all bids and to waive any informality in bids received whenever such rejection or waiver is in its interests.

The Owner reserves the right to consider as unqualified to do the work any Bidder who does not habitually perform with his own forces the major portions of such work as is involved in construction of these improvements.

12. EXECUTION OF AGREEMENT; PERFORMANCE AND PAYMENT BOND

Subsequent to the award and within ten (10) days after the prescribed forms are presented for signature, the successful Bidder shall execute and deliver to the Owner a Contract in the form included in the Contract Documents in such number of copies as the Owner may require.

Having satisfied all conditions of award as set forth elsewhere in these Documents, the successful Bidder shall, within the period specified above, furnish a surety bond in a penal sum not less than the amount of the Contract as awarded, as security for the faithful performance of the Contract, and for the payment of all persons, firms or corporations to whom the Contractor may become legally indebted for labor, materials, tools, equipment, or services of any nature, including utility and transportation services employed or used by him in performing the work. Such bond shall be as included in the Contract Documents and shall bear the same date as, or a date subsequent to, that of the Contract. The current power of attorney for the person who signs for any surety company shall be attached to such bond.

The failure of the successful Bidder to execute such Contract and to supply the required bond or bonds within ten (10) days after the prescribed forms are presented for signature, or within such extended period as the Owner may grant, based upon reasons determined insufficient by the Owner, shall constitute a default, and the Owner may either award the Contract to the next lowest responsible Bidder or re-advertise for bids.

13. BONDS AND INSURANCE

Attention of Bidders is called to Act 82 of the 1935 Acts of the Arkansas General Assembly, which has certain requirements pertaining to performance bonds, labor bonds, employer's liability insurance, public liability insurance, workmen's collective insurance, and property damage insurance.

All companies furnishing bid bonds and performance bonds shall furnish evidence of being on the U.S. Treasury Department's most current list (Circular 570, as amended) and be authorized to transact business in the State of Arkansas.

14. LEGAL QUALIFICATIONS

The successful Bidder, if a corporation created under the laws of a state other than the State of Arkansas, will be required to qualify, or to have qualified, with the Secretary of State of Arkansas to do business in the State of Arkansas.

15. MODIFICATION OF BID

No modification of any bid already submitted will be considered unless such modification is received prior to the time set for opening of bids.

16. SURVEY CONSTRUCTION CONTROLS

CONSTRUCTION SURVEY STAKING (IF NEEDED) TO BE PROVIDED BY CONTRACTORS.

III. BID PROPOSAL FOR UNIT PRICES

Bid Proposal for Unit Price "Line Item" Contract

City of Jonesboro, Arkansas (City/County), Arkansas

Proposed Craighead Technology Park Industrial Lead and Nestle Lead - Maintenance & Grade Crossing Improvements Project Type of Project

Craighead Technology Park Ind Lead, Nestle Lead, and Quality Way (Jonesboro) Project Location

Bid # 2024:06

As bidder, Trac-Work, Inc. (Insert name of corporation, partnership or individual), in accordance with your invitation for bids for the construction of the above-identified project, having examined all contract documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the contract documents, within the time set forth therein, and at the prices as stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this proposal is a part.

TO: CITY OF JONESBORO
Attn: Mayor Harold Copenhaver
c/o City of Jonesboro
300 S. Church Street
Jonesboro, AR 72401

Gentlemen:

The undersigned do hereby declare:

1. That they have been regularly engaged in contract work of the class required by the drawings, specifications, and contract for 56 years, and respectfully invites your attention to the following similar improvements that have been constructed by them:

<u>Place</u>	<u>Character of Work</u>	<u>Year</u>	<u>Owner</u>
See attachments			
#			

2. That they have carefully examined the nature and the location of the work, the contract and specifications governing the same and hereby agree to complete the work covered in this proposal in strict conformity with all documents appended.

3. That they have examined and familiarized themselves with the laws of Arkansas governing work of this class and safeguarding the public construction will conform to such laws.

4. That if awarded a contract, to commence the work within 10 days of receipt of the Notice to Proceed from the Owner and to fully complete it on or before the expiration of * days after the date of the Notice to Proceed. The bidder further agrees to pay as liquidated damaged, the sum of \$ ** for each consecutive calendar day thereafter as provided in the General Conditions.

*Section I - 60 Days; **see SC.6.4

5. That if awarded a contract, to furnish the Owner within 10 days of the date of the Award, an approved Performance Bond and Payment Bond in the amount of 100% of the contract with an approved surety company authorized to do business in Arkansas, which bonds shall particularly provide for the performance of the contractor and payment of all material and labor claims arising from the work. In addition, that in order to comply fully with the statutes of the State of Arkansas, the originals of the Performance Bond and Payment Bond will be filed with the Circuit Clerk of Craighead County by the Owner.

6. That the undersigned also acknowledges receipt and inclusion in this proposal of the following addendum or addenda:

None _____

7. That the undersigned does hereby offer to perform the whole of the work and to furnish all appurtenances, labor tools, machinery and equipment necessary for the work contemplated under these contracts in accordance with the specifications for roadbed and industrial spur tracks contained herein, as applicable, for the following unit prices and lump sum prices:

CTP IND LEAD-NESTLE IND LEAD – Maintenance & Grade Crossing Improvements

Item No.	Description of Item	Approx. Quantity	Unit	Unit Price	Amount
1.	Surface, Regulate, Line and Tamp Existing Trackage	26,026	TF		
			Dollars	(\$ 4.19)	\$ 109,048.94
2.	Ballast Aggregate Material (BNSF Spec)	2,260	TONS		
			Dollars	(\$ 50.87)	\$ 114,966.20
3.	New 7"x9"x8.5' Crossties (wood)	200	EA		
			Dollars	(\$ 194.34)	\$ 38,868.00
4.	Quality Way Grade Crossing Rebuild Incl. Conc Panels, 7"x9"x10' Crossties	100%	LS		
			Dollars	(\$ 49,676.54)	\$ 49,676.54
5.	Surface, Regulate, Line and Tamp Existing Turnouts	3	EA		
			Dollars	(\$ 3,025.29)	\$ 9,075.87
6.	Final Inspection	100%	LS		
			Dollars	(\$ 4,492.24)	\$ 4,492.24

TOTAL \$ 326,127.79 ✓

Three Hundred Twenty-Six Thousand, One Hundred Twenty-Seven dollars and 79/100

* * * * *

8. The bidder proposes to use the following equipment or material on the construction of TRACK:

A. RAIL
Supplier's Name: _____

B. BALLAST **Roger's Group**
Supplier's Name: _____

C. SWITCHES
Manufacturer's or Supplier's Name: _____

D. TIES **Stella Jones**
Supplier's Name: _____

9. The bidder, at his expense, will supply the Owner with Certification of Authenticity certificates that all rails will be Number One relay (min.) according to BNSF RR Standards. The rail may be measured again once shipped to the site. Rail not meeting the standards will be rejected.

10. The bidder proposes to use the following subcontractors to construct a portion of the project:

A. Name: **Sugg Construction**
Address: **PO Box 17164, Jonesboro, AR 72403**
Brief List of Work: **traffic control, repairs to crossing**
Approximate Amount of Subcontract: \$ **\$20,000**

B. Name: _____
Address: _____
Brief List of Work: _____
Approximate Amount of Subcontract \$ _____

C. Name: _____
Address: _____
Brief List of Work: _____
Approximate Amount of Subcontract \$ _____

11. The contractor receiving the award of contract shall post a Performance and Payment Bonds in the amount of the contract for the Section being bid on.

12. Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding. The Owner reserves the right to award the contract to the bidder that is deemed to have presented the proposal that is in the best interest of the Owner.

13. The bidder agrees that this bid shall be good and may not be withdrawn for a period of 30 calendar days after the scheduled closing time for receiving bids.

14. The Bidder understands that this Bid Proposal is based on the required usage of a large production tamper being equivalent to a 6700 series, or better.

RESPECTFULLY SUBMITTED

Trac-Work, Inc. _____

By  _____

Title Senior Vice President _____

Address 3801 N I-45 _____

Ennis, TX 75119 _____

Arkansas License Number 003507 _____

IV. BID BOND

KNOW ALL MEN BY THESE PRESENTS:

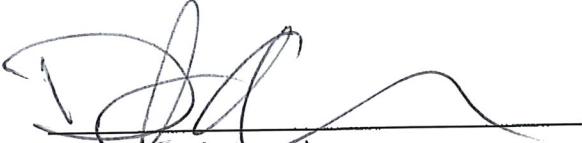
THAT we the undersigned, Trac-Work, Inc., as PRINCIPAL, and
Fidelity and Deposit Company of Maryland, as SURETY, are held and firmly bound unto the
City of Jonesboro, hereinafter called the OWNER in the penal sum of _____
5% of the Greatest Amount Bid

(\$ 5% GAB), lawful money of the United States, for the payment of which sum
well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and
assigns, jointly and severally, firmly by these Presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT WHEREAS, the Principal has submitted the
accompanying Proposal, dated February 21, 2024, for the **Craighead Technology Park
Industrial Lead and Nestle Lead – Maintenance & Grade Crossing Improvements Project.**
(Bid Number **2024:06**)

NOW, THEREFORE, if the Principal shall not withdraw said Proposal within sixty (60) days after the
opening of same, and shall within ten (10) days after the prescribed forms are presented to him for
signature, enter into a written Contract with the Owner in accordance with the Proposal as accepted,
and give bond with good and sufficient surety or sureties, as may be required, for the faithful
performance and proper fulfillment of such Contract, then the above obligation shall be void and of no
effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above bounded parties have executed this instrument, under their several
seals this 21st day of February, 2024, the name and corporate seal of each
corporate party being hereto affixed and these presents duly signed by its undersigned representatives,
pursuant to authority of its governing body.


(Witness)

3801 N. I-45

Ennis, TX 75119

Trac-Work, Inc.

(Principal)

By Erica Allen Erica Allen
Sec. / Treas.
(Title)

3801 N. I-45

Ennis, TX 75119
(Address)

SEAL



Fidelity and Deposit Company of
(Corporate Surety)

By Debra Lee Moon
Debra Lee Moon

1299 Zurich Way, 5th Floor

Schaumburg, IL 60196
(Address)

NOTE: Power-of-attorney for person signing for surety company must be attached to bond.

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Illinois, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Illinois (herein collectively called the "Companies"), by Robert D. Murray, Vice President, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint to o John R. WARD, Monica Ruby VEAZEY, John William NEWBY, Thomas Douglas MOORE, Sandra Lee RONEY, Debra Lee MOON, Andrea Rose CRAWFORD, Troy Russell KEY, Emily Allison MIKESKA, Allyson W. DEAN, Colin E. CONLY, Andrew Gareth ADDISON, Patrick Thomas COYLE, Michael Donald HENDERICKSON, Bryan Kelly MOORE, Elizabeth ORTIZ Ana OWENS, Betty J. REEH, Andrew CLARK, Faith Ann HILTY of Addison, Texas, its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: **any and all bonds and undertakings**, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND, this 31st day of January, A.D. 2024.



ATTEST:
ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND

By: *Robert D. Murray*
Vice President

By: *Dawn E. Brown*
Secretary

**State of Maryland
County of Baltimore**

On this 31st day of January, A.D. 2024, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **Robert D. Murray, Vice President and Dawn E. Brown, Secretary** of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, depose and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

Genevieve M. Maison

Authenticity of this bond can be confirmed at bondvalidator.zurichna.com or 410-559-8790

GENEVIEVE M. MAISON
NOTARY PUBLIC
BALTIMORE COUNTY, MD
My Commission Expires JANUARY 27, 2025



EXTRACT FROM BY-LAWS OF THE COMPANIES

"Article V, Section 8, Attorneys-in-Fact. The Chief Executive Officer, the President, or any Executive Vice President or Vice President may, by written instrument under the attested corporate seal, appoint attorneys-in-fact with authority to execute bonds, policies, recognizances, stipulations, undertakings, or other like instruments on behalf of the Company, and may authorize any officer or any such attorney-in-fact to affix the corporate seal thereto; and may with or without cause modify or revoke any such appointment or authority at any time."

CERTIFICATE

I, the undersigned, Vice President of the ZURICH AMERICAN INSURANCE COMPANY, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing Power of Attorney is still in full force and effect on the date of this certificate; and I do further certify that Article V, Section 8, of the By-Laws of the Companies is still in force.

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the ZURICH AMERICAN INSURANCE COMPANY at a meeting duly called and held on the 15th day of December 1998.

RESOLVED: "That the signature of the President or a Vice President and the attesting signature of a Secretary or an Assistant Secretary and the Seal of the Company may be affixed by facsimile on any Power of Attorney...Any such Power or any certificate thereof bearing such facsimile signature and seal shall be valid and binding on the Company."

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at a meeting duly called and held on the 5th day of May, 1994, and the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 10th day of May, 1990.

RESOLVED: "That the facsimile or mechanically reproduced seal of the company and facsimile or mechanically reproduced signature of any Vice-President, Secretary, or Assistant Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, this 21st day of February, 2024.



Thomas O. McClellan
Thomas O. McClellan
Vice President

TO REPORT A CLAIM WITH REGARD TO A SURETY BOND, PLEASE SUBMIT A COMPLETE DESCRIPTION OF THE CLAIM INCLUDING THE PRINCIPAL ON THE BOND, THE BOND NUMBER, AND YOUR CONTACT INFORMATION TO:

Zurich Surety Claims
Authenticity of this bond can be confirmed at bondvalidator.zurichna.com or 410-559-8790



Texas Important Notice

IMPORTANT NOTICE

To obtain information or make a complaint:

You may call Zurich North America's toll-free telephone number for information or to make a complaint at:

1-800-382-2150

You may contact the Texas Department of Insurance to obtain information on companies, coverages, rights, or complaints at:

1-800-252-3439

You may write the Texas Department of Insurance:

P.O. Box 149104

Austin, TX 78714-9104

Fax: (512) 490-1007

Web: www.tdi.texas.gov

E-mail: ConsumerProtection@tdi.texas.gov

PREMIUM OR CLAIM DISPUTES:

Should you have a dispute concerning your premium or about a claim, you should contact the company first. If the dispute is not resolved, you may contact the Texas Department of Insurance.

ATTACH THIS NOTICE TO YOUR POLICY:

This notice is for information only and does not become a part or condition of the attached document.

AVISO IMPORTANTE

Para obtener información o para presentar una queja:

Usted puede llamar al número de teléfono gratuito de Zurich North America's para obtener información o para presentar una queja al:

1-800-382-2150

Usted puede comunicarse con el Departamento de Seguros de Texas para obtener información sobre compañías, coberturas, derechos, o quejas al:

1-800-252-3439

Usted puede escribir al Departamento de Seguros de Texas a:

P.O. Box 149104

Austin, TX 78714-9104

Fax: (512) 490-1007

Sitio web: www.tdi.texas.gov

E-mail: ConsumerProtection@tdi.texas.gov

DISPUTAS POR PRIMAS DE SEGUROS O RECLAMACIONES:

Si tiene una disputa relacionada con su prima de seguro o con una reclamación, usted debe comunicarse con la compañía primero. Si la disputa no es resuelta, usted puede comunicarse con el Departamento de Seguros de Texas.

ADJUNTE ESTE AVISO A SU PÓLIZA: Este aviso es solamente para propósitos informativos y no se convierte en parte o en condición del documento adjunto.

Buy America Requirements

49 U.S.C. 5323(j)
49 CFR Part 661

Buy America - The contractor agrees to comply with 49 U.S.C. 5323(j) and 49 C.F.R. Part 661, which provide that Federal funds may not be obligated unless steel, iron, and manufactured products used in FTA-funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 C.F.R. 661.7, and include final assembly in the United States for 15 passenger vans and 15 passenger wagons produced by Chrysler Corporation, and microcomputer equipment and software. Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11. Rolling stock must be assembled in the United States and have a 60 percent domestic content. A bidder must submit to the FTA recipient the appropriate Buy America certification (below) with all bids or offers on FTA-funded contracts, except those subject to a general waiver. Bids or offers that are not accompanied by a completed Buy America certification must be rejected as nonresponsive. This requirement does not apply to lower tier subcontractors.
Certification requirement for procurement of steel, iron, or manufactured products.

- Certificate of Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it will meet the requirements of 49 U.S.C. 5323(j)(1) and the applicable regulations in 49 CFR Part 661.5.

Date 2/15/24
Signature [Signature]
Company Name Trac-Work, Inc.
Title Senior Vice President

- Certificate of Non-Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(1) and 49 C.F.R. 661.5, but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date _____
Signature _____
Company Name _____
Title _____

Certification requirement for procurement of buses, other rolling stock and associated equipment.

- Certificate of Compliance with 49 U.S.C. 5323(j)(2)(C).

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and the regulations at 49 C.F.R. Part 661.11.

Date _____
Signature _____
Company Name _____
Title _____

- Certificate of Non-Compliance with 49 U.S.C. 5323(j)(2)(C)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11, but may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date _____
Signature _____
Company Name _____
Title _____

V. STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information he desires.

1. Name of Bidder. Trac-Work, Inc.
2. Permanent main office address. 3801 N. I-45 Ennis, TX 75119
3. When organized. August 22, 1968
4. If a corporation, where incorporated. Texas
5. How many years have been engaged in the contracting business under your present firm or trade name? 55 years
6. Arkansas Contractor's License Number # 003507
7. DUNS # 04-462-9020
8. System of Award Management (SAM) expiration date 1/14/2025
9. Contracts on hand: (Schedule these, showing amount of each contract and the appropriate anticipated dates of completion). See attached.
10. General character of work performed by your company. Railroad Track Construction
11. Have you ever failed to complete any work awarded to you? No.
12. Have you ever defaulted on a Contract? No.
If so, Where and why?
13. Have you ever been fined or had your license suspended by a Contractor's Licensing Board? No.
If so, where and why?
14. List the more important projects recently completed by your company, stating the approximate cost for each, and the month and year completed. See attached.
15. List your major equipment available for this Contract. See attached.
16. Experience in construction work similar in importance to this project.

- 17. Background & experience of the principal members of your organization, including the officers.
- 18. Credit available: \$ 500,000.
- 19. Give Bank reference: Ennis State Bank.
- 20. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the Owner? Yes.
- 21. The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the Owner, in verification of the recitals comprising this statement of Bidder's Qualifications.

Dated at Ennis, TX this 15th
 day of February, 20 24.

Trac-Work, Inc.
 (Name of Bidder)
 By Ericka Allen
 Title Vice President, HR/Risk Management

STATE OF Texas)
) SS.
 COUNTY OF Ellis)

Ericka Allen being duly sworn deposes and says that
 He/she is Vice President, HR/Risk Management of Trac-Work, Inc.
 (Name of Organization)
 and that the answers to the foregoing questions and all statements therein contained are true and correct.

SUBSCRIBED AND SWORN TO BEFORE ME this 15th day of February, 20 24.

My Commission Expires:
06/09/2027



Amanda McDaniel
 (Notary Public)

TRAC-WORK, INC.
LARGEST JOBS COMPLETED IN LAST 3 YEARS
DECEMBER 31, 2023

<u>JOB NO.</u>	<u>JOB DESCRIPTION</u>	<u>CITY</u>	<u>ST</u>	<u>CONTRACT DATE</u>	<u>COMPLETE DATE</u>	<u>CONTRACT AMOUNT</u>
347068	UPRR SHOOFLY HEMPHILL	FORT WORTH	TX	7/21/17	8/21/21	3,793,195.14
320008	PORT OF BATON ROUGE	PORT ALLEN	LA	2/18/20	3/11/21	3,702,358.38
260017	TURNER INDUSTRIES (EXXON MOBIL) BATON ROUGE	BATON ROUGE	LA	4/20/20	1/1/23	3,174,969.52
249049	AM/NS CALVERT, LLC	CALVERT	AL	5/2/19	12/1/21	2,941,050.06
240026	TOYOTA-TRANSDEVELOPMENT	MADISON	AL	3/2/20	1/1/23	2,809,791.14
239073	MARTIN MARIETTA	NEW BRAUNFELS	TX	12/23/19	3/11/21	2,751,687.11
2321067	BEARD CONSTRUCTION - SHINTECH	ADDIS	LA	10/11/21	9/30/22	2,593,644.00
239027	SOUTHEAST TOYOTA	COMMERCE	GA	5/7/19	3/11/21	2,399,008.45
249067	ASD ROLL ON/ROLL OFF	MOBILE	AL	10/14/19	7/19/21	2,279,618.00
130048	TYSON FOODS	CENTER	TX	12/1/20	1/1/22	2,221,231.25
348097	SEMA-US377 UPRR SHOOFLY	DENTON	TX	9/12/18	9/20/21	2,203,921.05
340018	PILGRIMS PRIDE	RANGER	GA	8/21/19	9/20/21	2,055,845.55
1121038	TYSON FOODS, INC.	FULTON	AR	3/2/21	7/2/22	1,932,257.73
1122039	CITY OF JONESBORO	JONESBORO	AR	2/28/22	2/13/23	1,903,777.96
3222038	CARLISLE-NEW MANUFACTURING F. SIKESTON	SIKESTON	MO	6/1/22	3/5/23	1,789,674.00
260025	BROWN INDUSTRIAL CONST	ST. GABRIEL	LA	9/1/20	1/1/23	1,740,885.25
210038	MARCUS CONSTRUCTION	FREEMONT	TX	12/1/20	3/31/22	1,717,231.65
240047	ENVIVA PELLETS LUCEDALE, LLC	LUCEDALE	MS	10/1/20	1/1/22	1,713,830.47
210049	METRO PORTS	GALVESTON	TX	1/1/21	9/20/21	1,710,083.10
219049	REAGENT CHEMICAL & RESE	HOUSTON	TX	12/19/19	3/11/21	1,668,223.28
330044	HERITAGE CONSTRUCTORS	NEW BOSTON	TX	11/16/20	12/1/21	1,564,049.51
310011	BUZZI UNICEM USA	DALLAS	TX	2/6/20	7/19/21	1,545,896.30
1121043	CITY OF JONESBORO	JONESBORO	AR	6/3/21	7/2/22	1,537,136.21
2421028	KOCH FOODS	ATTALLA	AL	3/16/21	3/31/22	1,429,872.21
110051	EL DORADO CHEMICAL	EL DORADO	AR	11/15/20	1/1/22	1,374,313.08
230030	BIG SKY - FRED OWEN RAILROAD CC ADAMSVILLE	ADAMSVILLE	AL	8/11/20	3/22/22	1,359,792.46
3221018	KOCH FERTILIZER RAIL YARD & LOO ENID	ENID	OK	4/21/21	11/30/22	1,356,186.81
3121085	MARS WRIGLEY CONFECTIONERY U: WACO	WACO	TX	9/1/21	11/2/22	1,344,031.09
3221024	MEMPHIS & SHELBY COUNTY PORT	MEMPHIS	TN	5/7/21	11/30/22	1,288,131.56
210022	FORMOSA PLASTICS	POINT COMFORT	TX	6/5/20	6/11/21	1,225,458.28
2421022	MISSISSIPPI EXPORT RAILROAD	LUCEDALE	MS	3/1/21	3/31/22	1,225,032.49
2222010	KINDER MORGAN TRACK 797A NEW HARVEY	HARVEY	LA	8/15/22	4/28/23	1,046,635.00
3221006	GOLDEN TRIANGLE ENERGY	CRAIG	MO	1/25/21	1/1/22	1,041,779.41
357015	RJR TRUCKING	EL RENO	OK	8/31/17	8/31/21	1,035,070.83
269032	DUPONT	LAPLACE	LA	10/24/19	1/31/22	993,107.00
260026	WESTLAKE VINYL CO.	GEISMAR	LA	9/28/20	4/30/22	963,069.86
2121043	CLEAN HARBORS	LAPORTE	TX	11/15/21	4/4/23	962,386.86
320047	BECCO CONTRACTORS, INC.	CATOOSA	OK	11/9/20	1/1/22	957,287.22
210040	SUPREME RICE	CROWLEY	LA	1/1/21	2/28/22	956,860.64
230035	CENTRAL STATE RESOURCES	SEGUIN	TX	8/30/20	6/11/21	934,515.17
3222020	VULCAN MATERIALS COMPANY	MILLCREEK	OK	3/31/22	11/30/22	900,380.57
320040	BRASFIELD & GORRIE	QUINTON	AL	10/1/20	1/1/22	833,647.39
2321014	LHOIST NORTH AMERICA	BURNET	TX	1/26/21	1/1/22	817,539.78
2422055	SKM TURNKEY - NATIONAL CEMENT	RAGLAND	AL	9/12/22	7/1/23	779,669.30
2422038	PEANUT FARM	ATMORE	AL	5/9/22	3/20/23	775,480.00
110048	PHILLIPS CONTRACTING CO	COLUMBUS	MS	9/1/20	1/1/22	769,953.32
2421037	MAR-JAC POULTRY	MAYSVILLE	GA	7/12/21	5/31/22	761,428.50
310065	F.A. PEINADO, LLC	HILLSBORO	TX	12/1/20	4/30/22	748,245.08
2421047	CEMEX	BUFORD	GA	11/15/21	6/15/22	743,619.50

TRAC-WORK, INC.
LARGEST JOBS IN PROGRESS
DECEMBER 31, 2023

<u>JOB NO.</u>	<u>JOB DESCRIPTION</u>	<u>CITY</u>	<u>ST</u>	<u>CONTRACT DATE</u>	<u>CONTRACT AMOUNT</u>
2322016	SHINTECH LOUISIANA	PLAQUEMINE	LA	03/16/22	4,309,876.15
2422034	BALDWIN COUNTY MEGA SITE	BAY MINETTE	AL	04/11/22	3,761,036.10
2223033	BASF CORP	GEISMAR	LA	08/07/23	3,484,951.00
2323015	SHINTECH LOUISIANA	PLAQUEMINE	LA	02/10/23	3,408,530.00
3323007	DOLESE BROS-BIG CANYON SIDE	SULPHUR	OK	01/01/23	3,078,595.34
2123021	FORMOSA 62 RAILCAR FACILITY	POINT COMFORT	TX	04/05/23	2,939,424.05
3423060	SUNNY SIDE MATERIALS	FORT WORTH	TX	07/12/23	2,826,541.91
2623020	SKM-GEISMAR	GEISMAR	LA	06/27/23	2,769,017.97
3222078	PORT OF MUSKOGEE RAIL ACCESS	MUSKOGEE	OK	12/05/22	2,676,028.92
3122031	PMCI PROPERTIES II, LP	MOUNT PLEASANT	TX	04/28/22	2,072,338.00
1323036	PROJECT CARDINAL	JACKSON	TN	07/01/23	1,627,656.39
2422047	TOYOTA INDIANA	PRINCETON	IN	06/30/22	1,554,892.00
2323011	BIG RIVER STEEL	OSCEOLA	AR	02/02/23	1,551,424.22
1122064	GRANITE MOUNTAIN QUARRIES	LITTLE ROCK	AR	02/19/23	1,438,037.93
3122012	MERRICK ENGINEERING (MITCHELL	WACO	TX	03/28/22	1,424,095.65
2621026	WESTLAKE VINYL-PVC PHASE III EX	GEISMAR	LA	11/15/21	1,387,865.00
3423040	PROJECT RODEO	MCGREGOR	TX	04/04/23	1,359,304.38
340033	AUSTIN BRIDGE AND ROAD	ROANOKE	TX	04/08/20	1,092,413.65
2423036	AM/NS CALVERT	CALVERT	AL	09/13/23	1,063,974.66
1223041	GEORGIA PACIFIC PASSPORT (CELLU	MEMPHIS	TN	07/01/23	1,014,713.18
3424013	CONAGRA	FORT WORTH	TX	01/18/24	990,040.37
2423041	PEAK PELLET MILL	DOTHAN	AL	10/31/23	860,989.00
3121001	VIA RAIL ENGINEERING INC	ARLINGTON	TX	01/07/21	855,997.61
3421047	KINDER MORGAN DFW ETHANOL F	EULESS	TX	05/17/21	821,461.60
3423051	RAGLE-TXDOT	FORT WORTH	TX	05/31/23	800,983.69
2123050	FORMOSA GVC20 NEW CONSTRUCT	POINT COMFORT	TX	12/01/23	766,911.23
2223007	SHINTECH PLAQUEMINE	PLAQUEMINE	LA	01/23/23	754,402.00
3122050	GRAY CONSTRUCTION	HUTCHINS	TX	08/01/22	740,666.27
3123011	GORDAN HIGHLANDER	LANCASTER	TX	08/25/23	731,800.00
1223044	MACROSOURCE TRACK REHABILITA	MEMPHIS	TN	08/28/23	718,355.07
3223038	CLEAN HARBORS-BUILD NEW TURN	WAYNOKA	OK	06/30/23	688,674.50
3422042	PURINA	FORT WORTH	TX	05/11/22	649,678.90
2323050	SKM-GEISMAR	GEISMAR	LA	10/16/23	608,234.22
2423040	NEXUS CIRCULAR	MCDONOUGH	GA	10/02/23	583,130.70
1123031	D&R-RUSSELLVILLE	RUSSELLVILLE	AR	05/18/23	482,050.49
1322039	COOPER TIRE	TEXARKANA	AR	07/06/22	464,678.54
2123034	LAKE CHARLES-TRACK UPGRADE	LAKE CHARLES	LA	08/01/23	459,635.55
3122016	SANDERSON FARMS-FRANKLIN-CO	FRANKLIN	TX	04/20/22	409,835.00
3424012	FORT WORTH ZOO	FORT WORTH	TX	01/03/24	403,498.74
2423035	WEYERHAEUSER	MILLPORT	AL	08/21/23	402,466.00
3323034	LEE LEWIS CONSTRUCTION-NEW CC	LUBBOCK	TX	09/01/23	399,810.80
2223010	BIRLA CARBON	CENTERVILLE	LA	07/07/23	390,000.00
3223007	COVIA FT SMITH-NEW TRACK CONS	FT. SMITH	AR	02/09/23	357,948.84
3424009	JAMES HARDIE	CLEBURNE	TX	01/04/24	357,713.51
2623004	WESTLAKE SUB ZERO RAIL	GEISMAR	LA	01/05/23	333,103.00
2122028	THE COMMONS AT HERMAN PARK	HOUSTON	TX	04/25/22	323,903.86
2423038	ELMORE SIDING EXTENSION	ELMORE	AL	09/01/23	293,960.00
3223073	COVIA FT SMITH-CONCRETE TRACK	FORT SMITH	AR	12/06/23	284,966.80
3223067	WESTERN FARMERS ELECTRIC-ANA	ANADARKO	OK	10/18/23	248,441.02

License No. 0035070424

State of Arkansas
Commercial Contractors Licensing Board

TRAC-WORK, INC.
PO BOX 550
ENNIS, TX 75120

TRAC-WORK, INC.

This is to Certify That _____

is duly licensed under the provisions of Ark. Code Ann. § 17-25-101 et. seq. as amended and is entitled to practice Contracting in the State of Arkansas within the following classifications/specialties:

HIGHWAY, RAILROAD, AIRPORT
CONSTRUCTION

This contractor has an unlimited suggested bid limit.

from April 14, 2023 until April 30, 2024 when this Certificate expires.

Witness our hands of the Board, dated at North Little Rock, Arkansas:



Ray [Signature]

CHAIRMAN

Michelle [Signature]

SECRETARY

April 14, 2023 - dsa

Recd 4-20-23
cc: 11, 12, 13, 33, 50



City of Little Rock

Treasury Management Division

100 City Hall
500 West Markham St
Little Rock, Ar 72201
Phone: (501) 371-4566
Fax: (501) 371-4569

2024

Business License

2024

License is **ROBERT FAVORS**
Granted To: **TRAC-WORK INC**
7700 JAMISON RD
LITTLE ROCK, AR 72209

License **TRAC-WORK INC**
Address: **7700 JAMISON RD**
LITTLE ROCK, AR 72209

Account Number: **BL113981**

Item	Description of Business	Amount
2720	GENERAL CONT. - CLASS 5-BASE	1600.00
2721	GENERAL CONT. - CLASS 5-EMP.	180.00
	Auto Assessment Charge	0.00
	TOTAL PAID	\$1780.00

In the City of Little Rock, County of Pulaski, State of Arkansas. For 12 months from the 1st day of **January, 2024**
Given under my hand this the **16th** day of **October, 2023**

Scott Massanella **Treasury Manager**

By: **Amanda McKinney**

INFORMATION OF IMPORTANCE TO HOLDER OF THIS ORIGINAL LICENSE:

- This License:
- Does not authorize a business to operate in conflict with the laws of the City of Little Rock (inclusive of zoning regulations) or the State of Arkansas.
 - Must be posted in a conspicuous place at the business location being licensed.
 - Is **NOT** transferable with respect to location, business classification, or ownership. Change in location, classification or ownership will necessitate a new license.

AGENCY CUSTOMER ID: TRACINC-03

LOC #: _____



ADDITIONAL REMARKS SCHEDULE

Page 1 of 1

AGENCY Mullis Newby Hurst – Texas		NAMED INSURED Trac-Work, Inc Division #11 P.O. Box 550 Ennis, TX 75120	
POLICY NUMBER		EFFECTIVE DATE:	
CARRIER	NAIC CODE		

ADDITIONAL REMARKS

**THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,
FORM NUMBER: 25 FORM TITLE: CERTIFICATE OF LIABILITY INSURANCE**

APPLIES ONLY IF APPLICABLE COVERAGE IS EVIDENCED ON ACORD 25 – CERTIFICATE OF LIABILITY INSURANCE

The General Liability, Auto, and Excess Liability policies include a blanket additional insured endorsement that provides additional insured status to the certificate holder only when there is a written contract between the named insured and the certificate holder that requires such status.

The General Liability policy includes a blanket additional insured endorsement that provides additional insured status to the certificate holder for ongoing and completed operations only when there is written contract between the named insured and the certificate holder that requires such status.

The General Liability, Auto, and Excess Liability policies contain an endorsement with primary and noncontributory wording that may apply only when there is a written contract between the named insured and the certificate holder that may require such status.

The General Liability, Auto, Excess Liability, and Workers Compensation policies include a blanket waiver of subrogation endorsement that provides this feature only when there is a written contract between the named insured and the certificate holder that requires this.

The Contractors Equipment policy includes a blanket Loss Payee endorsement that provides loss payee status to the certificate holder as their interest may appear.

The Automobile policy includes a Loss Payee endorsement that provides loss payee status to the certificate holder as their interest may appear.

Excess Liability follows form over Auto Liability and General Liability as respects to Additional Insured subject to policy forms, terms, conditions and exclusions.

General Liability - no XCU exclusion

All Operations of Insured

Request for Taxpayer Identification Number and Certification

**Give Form to the
requester. Do not
send to the IRS.**

▶ Go to www.irs.gov/FormW9 for instructions and the latest information.

Print or type.
See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank. Trac-Work, Inc	
2 Business name/disregarded entity name, if different from above	
3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes. <input type="checkbox"/> Individual/sole proprietor or single-member LLC <input checked="" type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____ Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner. <input type="checkbox"/> Other (see instructions) ▶ _____	4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): Exempt payee code (if any) _____ Exemption from FATCA reporting code (if any) _____ <i>(Applies to accounts maintained outside the U.S.)</i>
5 Address (number, street, and apt. or suite no.) See instructions. Mailing: PO Box 550 Physical: 3801 N I-45	Requester's name and address (optional)
6 City, state, and ZIP code Ennis, TX 75120 Ennis, TX 75119	
7 List account number(s) here (optional)	

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number									
or									
Employer identification number									
7	5	-	1	3	1	4	6	4	0

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here	Signature of U.S. person ▶	Date ▶ 1-8-24
------------------	----------------------------	----------------------

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)

- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)
Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.

VI. CONTRACT

THIS AGREEMENT made this ____ day of _____, 20____, by and

between _____

(a Corporation organized and existing under the laws of the State of _____)

(a partnership consisting of _____)

(an individual trading as _____)

(Strike out the two terms not applicable)

Hereinafter called the "Contractor" and the City of Jonesboro, Arkansas, hereinafter called the "Owner".

WITNESSETH:

That the Contractor and the Owner for the consideration stated herein mutually agree as follows:

ARTICLE 1. Statement of Work. The Contractor shall furnish all supervision, technical personnel, labor, materials, machinery, tools, equipment, incidentals and services, including utility and transportation services and perform and complete all work required for the **Craighead Technology Park Industrial Lead and Nestle Lead – Maintenance & Grade Crossing Improvements Project** (Bid Number **2024:06**) in strict accordance with the Contract Documents, including all Addenda thereto

_____ dated _____

_____ dated _____

_____ dated _____

as prepared by the Engineer.

ARTICLE 2. The Contract Price. The Owner will pay the Contractor, because of his performance of the Contract, for the total quantities of work performed at the lump sum and unit prices stipulated in the Proposal, subject to additions and deductions as provided in the Section entitled "CHANGES IN THE WORK" under the GENERAL CONDITIONS.

ARTICLE 3. Contract Time. The Contractor agrees to begin work within ten (10) calendar days after issuance by the Owner of a "Work Order" or "Notice to Proceed" and to complete the work within

the time specified in the BID PROPOSAL FOR UNIT PRICES (except as modified in the GENERAL CONDITIONS of these Contract Documents). If the Contractor shall fail to complete the work within the time specified, he and his Surety shall be liable for payment to the Owner, as liquidated damages ascertained and agreed, and not in the nature of a penalty, the amount specified in the SPECIAL CONDITIONS of these Contract Documents for each day of delay. To the extent sufficient in amount, liquidated damages shall be deducted from the payments to be made under this Contract.

ARTICLE 4. Contract. The executed Contract Documents shall consist of the following:

- | | |
|------------------------------|---|
| a. This Agreement (Contract) | f. General Conditions |
| b. Addenda | g. Supplemental General Conditions |
| c. Advertisement for Bids | h. Special Conditions |
| d. Instructions to Bidders | i. Technical Specifications including
Special Provisions |
| e. Bid Proposal | j. Drawings (Plans) |
| | k. Performance-Payment Bond |

This Contract, together with other Documents enumerated in this Article 4, which said other Documents are as fully a part of the Contract as if hereto attached or herein repeated, form the Contract between the parties hereto. In the event that any provisions in any component part of this Contract conflicts with any provision of any other component part, the conflict shall be resolved by the Engineer whose decision shall be final.

ARTICLE 5. Surety. The Surety on the Performance-Payment Bond shall be a surety company of financial resources satisfactory to the Owner, authorized to do business in the State of Arkansas, and shall comply with applicable Arkansas laws.

IN WITNESS WHEREOF, the parties hereto have caused this CONTRACT to be executed in four (4) counterparts, each of which shall be considered an original on the day and year first above written.

ATTEST:

(Contractor)

By _____

_____ Title _____

(Street)

(City)

City of Jonesboro

(Owner)

By _____

VII. ARKANSAS PERFORMANCE-PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT WE, _____

as Principal, hereinafter called Principal, and _____

of _____ State of _____, as
 Surety, hereinafter called the Surety, are held and firmly bound unto the City of Jonesboro as Obligee,
 hereinafter called Owner, in the amount _____
 _____ Dollars (\$ _____) in lawful money of the United States of America,
 for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors,
 administrators, and successors, jointly, severally, and firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, The Principal entered into a Contract with the Owner by written Agreement dated
 the _____ day of _____, 20____, a copy of which is attached hereto and
 made a part hereof, hereinafter referred to as the Contract, for the **Craighead Technology Park
 Industrial Lead and Nestle Lead – Maintenance & Grade Crossing Improvements Project.** (Bid
 Number **2024:06**)

NOW THEREFORE, if the Principal shall well and truly perform and complete in good, sufficient, and
 workmanlike manner all of the work required by said Contract and within the time called for thereby to
 the satisfaction of the Owner, and shall pay all persons for labor, materials, equipment, and supplies
 furnished by said Principal in accordance with said Contract (failing which such persons shall have a
 direct right to action against the Principal and Surety under this obligation, but subject to the Owner's
 priority) and shall hold and save harmless the Owner from any and all claims, loss, and expense of every
 kind and nature arising because of or resulting from the Principal's operation under said Contract, except
 payments to the Principal rightly due the Principal for work under said Contract, then this obligation
 shall be null and void; otherwise to remain in full force and effect.

Any alterations which may be made in the terms of the Contract, or in the work to be done under it, or
 the giving by the Owner of an extension of time for the performance of the Contract, or any other
 forbearance on the part either of the Owner or Principal to the other shall not release in any way the
 Principal and Surety, or either of them, their heirs, personal representatives, successors, or assigns from
 their liability hereunder, notice to the Surety of any alteration, extension, or forbearance hereby being
 waived.

In no event shall the aggregate liability of the Surety exceed the sum set herein.

No suit, action, or proceeding shall be brought on this bond outside the State of Arkansas. No suit, action, or proceeding shall be brought on this bond, except by the Owner, after six (6) months from the date on which final payment to the Contractor falls due. No suit, action, or proceeding shall be brought by the Owner after two (2) years from the date on which final payment to the Contractor falls due.

This bond is executed pursuant to the terms of Arkansas Code Ann. §§ 18-44-501 et. seq.

Executed on this _____ day of _____, 20____.

(Principal)

By _____

Title _____

SEAL

(Surety)

By _____
(Attorney-in-Fact)

NOTES:

1. This bond form is mandatory. No other forms will be acceptable.
2. The date of the Bond must not be prior to the date of the Contract.
3. Any surety executing this Bond must appear on the U.S. Treasury Department's most current list (Circular 570, as amended) and be authorized to transact business in the State of Arkansas.
4. Attach Power of Attorney.

VIII. GENERAL CONDITIONS

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GC.1 DEFINITIONS

Wherever used in any of the Contract Documents, the following meanings shall be given to the terms herein defined:

(1) The term "Addendum" means any change, revision, or clarification of the Contract Documents which has been duly issued by the Local Public Agency, or the Engineer, to prospective Bidders prior to the time of receiving bids.

(2) The term "Award" means the acceptance by the owner of the successful bidder's proposal.

(3) The term "Bidder" means any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.

(4) The term "Calendar Day" means every day shown on the calendar.

(5) The term "Change Order" means a written order to the contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for the scope of work affected by the change. The work covered by the change order shall be within the scope of the contract.

(6) The term "Contract" means the Contract executed by the Local Public Agency and the Contractor of which these GENERAL CONDITIONS form a part.

(7) The term "Contract Documents" means and shall include the following: Executed Contract, Addenda (if any), Advertisement For Bids, Instructions to Bidders, Proposal, Performance-Payment Bond, General Conditions, Supplemental General Conditions, Special Conditions, Supplemental Special Conditions, Technical Specifications, and Drawings.

(8) The term "Contractor" means the person, firm, or corporation entering into the Contract with the Local Public Agency to construct and install the improvements embraced in this project.

(9) The term "Engineer" means the City of Jonesboro Engineering Department, serving the Local Public Agency with engineering services, its successor, or any other person or persons employed by said Local Public Agency to furnish engineering services in connection with the construction embraced in the Contract.

(10) The term "Local Government" means the City of Jonesboro, Arkansas, within which the Project is situated.

(11) The term "Local Public Agency" or "Owner" means the City of Jonesboro, which is

authorized to undertake this Contract.

(12) The term "Plans" or "Drawings" means the official drawings or exact reproductions which show the location, character, and details of the work contemplated, and which are to be considered part of the contract, supplementary to the specifications.

(13) The term "Proposal" means the written offer of the Bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the Plans and Specifications.

(14) The term "Specifications" means a part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials, or testing, which are cited in the specifications by reference shall have the same force and effect as if included in the contract physically.

(15) The term "Subcontractors" shall mean the individual, partnership or corporation entering into an agreement with the Contractor to perform any portion of the work covered by the Plans and Specifications.

(16) The term "Surety" shall mean any person, firm, or corporation that has executed, as Surety, the Contractor's Performance Bond securing the performance of the Contract.

(17) The term "Technical Specifications" means that part of the Contract documents which describes, outlines and stipulates the quality of the materials to be furnished; the quality of workmanship required; and the controlling requirements to be met in carrying out the construction work to be performed under this Contract. This also includes Special Provisions.

(18) The term "Work" shall mean the furnishing of all necessary labor, tools, equipment, appliances, supplies, and material other than materials furnished by the Owner as specified to complete the construction covered by the Plans and Specifications.

GC.2 SUPERINTENDENCE BY CONTRACTORS

Except where the Contractor is an individual and gives his personal superintendence to the work, the Contractor shall provide a competent superintendent, satisfactory to the Local Public Agency and the Engineer, on the work at all times during working hours with full authority to supervise and direct the work and who shall be the Contractor's agent responsible for the faithful discharge of the Contractor's obligations under the Contract.

The Owner shall have the authority to require the Contractor to remove from the work any incompetent or insubordinate superintendent.

GC.3 CONTRACTOR'S EMPLOYEES

The Contractor shall employ only competent skillful workers and shall at all times enforce strict discipline and good order among the employees.

The Contractor shall neither permit nor suffer the introduction or use of alcoholic beverages or controlled substances upon or about the work embraced in this Contract.

The Owner may require the Contractor to dismiss from the work such employee or employees as the Owner or the Engineer may deem incompetent, or careless, or insubordinate.

GC.4 SAFETY OF CONTRACTOR'S EMPLOYEES

The Contractor shall be responsible for the safety of his employees during the progress of the work as well as the safety, efficiency, and adequacy of his plant, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance or operation.

GC.5 SUBCONTRACTS

The Contractor is responsible to the Owner for the acts and omissions of his subcontractors and of persons either directly, or indirectly, employed by the subcontractors, and is aware that nothing contained in the Contract Documents shall create any contractual relation between any subcontractor and the Owner.

GC.6 OTHER CONTRACTS

The Local Public Agency may award, or may have awarded other Contracts for additional work, and the Contractor shall cooperate fully with such other Contractors, by scheduling his own work with that to be performed under other Contracts as may be directed by the Local Public Agency. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other Contractor as scheduled.

GC.7 CONTRACTOR'S INSURANCE

Before any work is commenced, the Contractor shall furnish an approved certificate of insurance addressed to the Owner, showing that he carries the following insurance which shall be maintained throughout the term of the Contract.

- | | |
|---|-------------------|
| (1) Workmen's Compensation | - Statutory Limit |
| (2) Employer's Liability for Hazardous Work | - If Needed |

(3) Public Liability (Bodily Injury) and Property Damage	- \$1,000,000/occurrence - \$2,000,000/aggregate
(4) Builder's Risk	- Insurable Portion

The Contractor shall carry or require that there be carried the insurance listed in (1) through (3) above for the protection of all his employees and those of his Subcontractors engaged in work under this Contract, and for the protection of the public.

If the work includes pipelines or other underground structures, the Property Damage Liability shall include explosion, collapse, and underground coverage.

The premiums for all insurance and the bond required herein shall be paid by the Contractor.

It shall be the obligation of the Contractor to complete and deliver to the Owner the structure required by these Contract Documents regardless of any loss, damage to, or destruction of the structure prior to delivery.

GC.8 OWNER'S AND ENGINEER'S PROTECTIVE LIABILITY INSURANCE

The Owner requires the Contractor to name the City of Jonesboro and the Engineer as an additional insured on their Protective Liability insurance, which shall be in force for the entire project period. Limits of liability shall be the following:

Bodily Injury Liability (Including Death) and Physical Damage Liability	- \$1,000,000/occurrence
(Damage to or Destruction of Property)	- \$2,000,000/aggregate

GC.9 FITTING AND COORDINATION OF THE WORK

The Contractor shall be responsible for the proper fitting of all work and for the coordination of the operations of all trades, Subcontractors, or material men engaged upon this Contract. He shall be prepared to guarantee to each of his Subcontractors the locations and measurements which they may require for the fitting of their work to all surrounding work.

GC.10 MUTUAL RESPONSIBILITY OF CONTRACTORS

If, through acts of neglect or through failure to comply with any applicable Government regulations by the Contractor, any other Contractor or any Subcontractor shall suffer loss or damage on the work, the Contractor shall settle with such other Contractor or Subcontractor by agreement or arbitration, if such other Contractor or Subcontractor will so settle. If such other Contractor or Subcontractor shall assert any claim against the Local Public Agency on account of any damage alleged to have been so sustained,

the Local Public Agency will notify this Contractor, who shall defend at his own expense any suit based upon such claim, and, if any judgments or claims against the Local Public Agency shall be allowed, the Contractor shall pay or satisfy such judgments or claim and pay all costs and expenses in connection therewith.

GC.11 PAYMENT TO CONTRACTOR

Payment may be made to the Contractor once a month in accordance with the Payment to Contractors Schedule provided at the end of this section. The Engineer will prepare (with the required assistance from the Contractor) the application for partial payment. If the bid contains lump sum prices, the Contractor shall furnish to the Engineer, upon request, a detailed cost breakdown of the several items of work involved in the lump sum prices. The Engineer will use this cost breakdown to determine the amount due the Contractor as progress payment.

The amount of the payment due to the Contractor shall be determined by the total value of work completed to date, deducting five percent (5%) for retainage, adding the value of submitted paid invoices covering construction materials, properly stored on the site, and deducting the amount of all previous payments. The total value of work completed to date shall be based on the estimated quantities of work completed and on the unit and lump sum prices contained in the Proposal. The value of materials properly stored on the site shall be based upon the estimated quantities of such materials and the invoice prices. Copies of paid invoices, covering construction materials for which material payments are made, shall be furnished to the Engineer before such material payments are made.

NOTE: It has been the policy of the Owner to make payments for properly stored materials/equipment based upon invoice price and allow the Contractor to submit paid invoices within 30 days (or the next partial payment period). If paid invoices are not provided within the time allowed, then the materials/equipment so paid for will be removed from the next partial payment.

Monthly or partial payments made by the Owner to the Contractor are monies advanced for the purpose of assisting the Contractor to expedite the work of construction. All material and complete work covered by such monthly or partial payments shall remain the property of the Contractor, and he shall be responsible for the care and protection of all materials and work upon which payments have been made. Such payments shall not constitute a waiver of the right of the Owner to require the fulfillment of all terms of the Contract and the delivery of all improvements embraced in this Contract complete and satisfactory to the Owner in all details.

GC.11.1 Withholding Payments: The Local Public Agency may withhold from any payment otherwise due the Contractor so much as may be necessary to protect the Local Public Agency and if it so elects may also withhold any amounts due from the Contractor to any Subcontractors or material dealers, for work performed or material furnished by them. The foregoing provisions shall be construed solely for the benefit of the Local Public Agency and will not require the Local Public Agency to determine or adjust any claims or disputes between the Contractor and his Subcontractors or material dealers, or to

withhold any monies for their protection unless the Local Public Agency elects to do so. The failure or refusal of the Local Public Agency to withhold any monies from the Contractor shall not impair the obligations of any Surety or Sureties under any bond or bonds furnished under this Contract. Such withholding may also occur as a result of the Contractor's failure or refusal to prosecute the work with such diligence as will insure its completion within the time specified in these Contract Documents, or as modified as provided in these Contract Documents, or if the Contractor fails to comply with any applicable regulations promulgated by the U.S. Government or any other Government agencies.

GC.11.2 Final Payment: After final inspection and acceptance by the Local Public Agency of all work under the Contract, the application for final payment shall be prepared which shall be based upon the carefully measured or computed quantity of each item of work at the applicable unit and lump sum prices stipulated in the Unit Price Schedule. The total number of the final payment due the Contractor under this Contract shall be the amount computed as described above less all previous payments. All prior payments shall be subject to correction in the final payment. Final payment to the Contractor shall be made subject to his furnishing the Local Public Agency with a release in satisfactory form of all claims against the Local Public Agency arising under and by virtue of his Contract, other than such claims, if any, as may be specifically excepted by the Contractor from the operation and the release as provided under the section entitled DISPUTES under GENERAL CONDITIONS.

The Local Public Agency, before paying the final estimate, may require the Contractor to furnish releases or receipts from all Subcontractors having performed any work and all persons having supplied materials, equipment (installed on the Project), and services to the Contractor, if the Local Public Agency deems the same necessary in order to protect its interest. The Local Public Agency, however, may, if it deems such action advisable, make payment in part or in full to the Contractor without requiring the furnishing of such releases or receipts and any payments so made shall not impair the obligations of any Surety or Sureties furnished under this Contract.

Withholding of any amount due the Local Public Agency under the section entitled LIQUIDATED DAMAGES FOR DELAY under SPECIAL CONDITIONS, shall be deducted from the payments due the Contractor.

All equipment warranties and general guarantee and maintenance bond provisions shall become effective for one year upon date of final acceptance of the completed, project by the Local Public Agency.

GC.11.3 Payments Subject to Submission of Certificates: Each payment to the Contractor by the Local Public Agency shall be made subject to submission by the Contractor of all written certifications required of him.

PAYMENT TO CONTRACTORS	
2024 SCHEDULE - CONTRACTED PROJECTS	
City of Jonesboro Payment Schedule	Deadline for Invoice Submittal to Engineering
Monday, January 8, 2024	Friday, December 29, 2023
Thursday, February 8, 2024	Monday, January 29, 2024
Friday, March 8, 2024	Tuesday, February 27, 2024
Monday, April 8, 2024	Friday, March 29, 2024
Wednesday, May 8, 2024	Monday, April 29, 2024
Monday, June 10, 2024	Friday, May 31, 2024
Monday, July 8, 2024	Friday, June 28, 2024
Thursday, August 8, 2024	Monday, July 29, 2024
Monday, September 9, 2024	Friday, August 30, 2024
Tuesday, October 8, 2024	Monday, September 30, 2024
Friday, November 8, 2024	Tuesday, October 29, 2024
Monday, December 9, 2024	Friday, November 29, 2024

GC.12 USE OF COMPLETED PORTIONS

The Owner shall have the right to use any completed or partially completed portion of the work and such use shall not be considered as an acceptance of any work.

GC.13 CHANGES IN THE WORK

The Local Public Agency may make changes in the scope of the work required to be performed by the Contractor under the Contract or make additions thereto, or omit work therefrom without invalidating the Contract, and without relieving or releasing the Contractor from any of his obligations under the Contract or any guarantee given by him pursuant to the Contract provisions, and without affecting the validity of the Guaranty Bonds, and without relieving or releasing the Surety or Sureties of said bonds. All such work shall be executed under the terms of the original Contract unless it is expressly provided otherwise.

Except for the purpose of affording protection against any emergency endangering life or property, the Contractor shall make no change in the materials used or in the specified manner of constructing and/or installing the improvements, or supply additional labor, services or materials beyond that actually required for the execution of the Contract, unless in pursuance of a written order from the Local Public Agency authorizing the Contractor to proceed with the change. No claim for an adjustment of the Contract price will be valid unless so ordered.

After the work is complete, a final change order may be prepared to be accepted by the Owner and Contractor to adjust final payment as required to cover the actual units of work acceptably completed.

If the applicable unit prices are contained in the Proposal (established as a result of either a unit price or a Supplemental Schedule of Unit Prices) the Local Public Agency may order the Contractor to proceed with desired changes in the work, the value of such changes to be determined by the measured quantities involved and the applicable unit and lump sum prices specified in the Contract; provided that in case of a unit price Contract the net value of all changes does not increase or decrease the original total amount shown in the Agreement by more than twenty-five (25) percent in accordance with the section entitled BALANCED BID; VARIATION IN QUANTITIES under INSTRUCTIONS TO BIDDERS.

If applicable unit prices are not contained in the Unit Price Schedule as described above or if the total net change increases or decreases the total Contract price more than twenty-five (25) percent, the Local Public Agency shall, before ordering the Contractor to proceed with a desired change, request an itemized Proposal from him covering the work involved in the change after which the procedure shall be as follows:

- (1) If the Proposal is acceptable the Local Public Agency will prepare the Change Order in accordance therewith for acceptance by the Contractor and

- (2) If the Proposal is not acceptable and prompt agreement between the two (2) parties cannot be reached, the Local Public Agency may order the Contractor to proceed with the work on a Force Account basis, under which the net cost shall be the sum of the actual costs that follow:
- (A) Labor, including foremen;
 - (B) Materials entering permanently into the work;
 - (C) The ownership or rental cost of construction plant and equipment during the time of use on the extra work;
 - (D) Power and consumable supplies for the operation of power equipment;
 - (E) Insurance;
 - (F) Social Security and old age and unemployment contributions.

To the net cost shall be added a fixed fee agreed upon, but not to exceed fifteen (15) percent of the net cost, to cover supervision, overhead, bond, and any other general expense, and profit.

Each Change Order shall include in its final form:

- (1) A detailed description of the change in the work.
- (2) The Contractor's Proposal (if any) or a conformed copy thereof.
- (3) A definite statement as to the resulting change in the Contract price and/or time.
- (4) The statement that all work involved in the change shall be performed in accordance with Contract requirements except as modified by the Change Order.

GC.14 CLAIMS FOR EXTRA COST

If the Contractor claims that any instructions by Drawings or otherwise involve extra cost or extension of time, he shall, within ten (10) days after the receipt of such instructions, and in any event before proceeding to execute the work, submit his protest thereto in writing to the Local Public Agency, stating clearly and in detail the basis of his objections. No such claim will be considered unless so made.

Claims for additional compensation for extra work, due to alleged errors in ground elevations, contour lines, or bench marks, will not be recognized unless accompanied by certified survey data made prior to the time the original ground was disturbed, clearly showing that errors exist which resulted or would

result in handling more material, or performing more work, than would be reasonably estimated from the Drawings and maps issued.

Any discrepancies which may be discovered between actual conditions and those represented by the Drawings and maps shall at once be reported to the Local Public Agency, and work shall not proceed except at the Contractor's risk, until written instructions have been received by him from the Local Public Agency.

If, on the basis of the available evidence, the Local Public Agency determines that an adjustment of the Contract Price and/or Time is justifiable, the procedure shall then be as provided in the Section entitled CHANGES IN THE WORK under GENERAL CONDITIONS.

GC.15 OWNER'S RIGHT TO TERMINATE CONTRACT

Termination for Cause

If the Contractor shall be adjudged as bankrupt or shall file a petition for an arrangement or reorganization under the Bankruptcy Act, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should persistently or repeatedly refuse or should fail, except under conditions where extension of time is approved, to supply adequate workmen, equipment and material, or disregard laws, ordinances, or the instructions of the Engineer, or otherwise be guilty of a violation of any provisions of the Contract; provided further that if the Contractor at any time fails to comply with any applicable Federal or State regulation which prevents either the Local Public Agency or the Contractor from fulfilling its obligations under these Contract Documents, then the Owner upon certification of the Engineer that sufficient cause exists to justify such action may, without prejudice to any other right or remedy, and after giving the Contractor ten (10) days' written notice, terminate the employment of the Contractor.

At the expiration of the said ten (10) days, the Owner may immediately serve notice upon the Surety to complete the work.

In the case the Surety fails to comply with the notice within thirty (30) days after service of such notice, the Owner may complete the work and charge the expense of the completion, including labor, materials, tools, implements, machinery, or apparatus, to said Contractor; and the expense so charged shall be deducted and paid by the Owner out of such monies as may be due, or that may thereafter at any time become due to the Contractor under and by virtue of this Contract. And in case such expense is less than the sum which would have been payable under this Contract if the same had been completed by the Contractor, then said Contractor shall be entitled to receive the difference. And in case such expense is greater than the sum which would have been payable under this Contract if the same had been completed by said Contractor, then the Contractor and his Surety shall pay the amount of such excess to the Owner, on demand from said Owner or Engineer of the amount so due.

Termination for Convenience

The City of Jonesboro may, by written notice to the Contractor, terminate this contract without cause. The City must give notice of termination to the Contractor at least ten (10) days prior to the effective date of termination.

Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:

- (1) cease operations as directed by the Owner in the notice;
- (2) take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- (3) except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing Subcontracts and purchase orders and enter into no further Subcontracts and purchase orders.

In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and actual costs incurred directly as a result of such termination, and there will be no compensation for overhead and profit on work not executed.

GC.16 SUSPENSION OF WORK

Should contingencies arise to make such action necessary, the Owner shall have the right to suspend the whole or any part of the work for a period not to exceed sixty (60) days by giving the Contractor notice in writing three (3) days prior to the suspension.

The Contractor after written notice to resume work shall begin within ten (10) days from the date of such notice.

If the work or any part thereof shall be stopped by the Owner's notice and the Owner fails to notify the Contractor to resume work within sixty (60) days, the Contractor may abandon that portion of the work so suspended and the Contractor shall be paid for all work performed on the portion so suspended at unit prices quoted in the Unit Price Schedule for completed work involved, at agreed prices on any extra work involved, and at a fair and equitable price for partially completed work involved.

The Engineer may suspend work pending the settlement of any controversy. The Contractor shall not be entitled to any claim for loss or damage by reason of such delay, nor shall he be entitled to any extension of time; but an extension may be granted by the Owner at his discretion.

GC.17 DELAYS - EXTENSION OF TIME - LIQUIDATED DAMAGES

If the Contractor is delayed at any time in the progress of the work by any act or neglect of the Owner, the Owner's Engineer or employees, or by any separate contractor employed by the Owner, or by

changes ordered in the work, or by strikes, lock-outs, fire, unusual delay in transportation, unavoidable casualty, or any other cause beyond the Contractor's control, then the time of completion shall be extended for such reasonable time as the Owner may decide; provided, however, said time of completion shall be extended upon the following conditions and no other.

- 1) Requests for extension of time shall be in writing. No extension of time shall be granted automatically.
- 2) The Contractor claiming an extension of time because of any of the contingencies hereinabove mentioned, shall, within ten (10) days of the occurrence of the contingency which justifies the delay, notify the Owner in writing of his claim and the reasons therefore.
- 3) In event of a continuing cause of delay, only one claim is necessary.

GC.17.1 Excusable Delays: The right of the Contractor to proceed shall not be terminated nor shall the Contractor be charged with liquidated damages for any delays in the completion of the work due:

- (1) To any acts of the Government, including controls or restrictions upon requisitioning of materials, equipment, tools, or labor by reason of war, National Defense, or any other national emergency;
- (2) To any acts of the Owner;
- (3) To causes not reasonable foreseeable by the parties of this Contract which are beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God or of the public enemy, acts of another Contractor in the performance of some other Contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and weather of unusual severity such as hurricanes, tornadoes, cyclones, and other extreme weather conditions.
- (4) To any delay of any subcontractor occasioned by any of the causes specified in subparagraphs (1), (2), and (3) of this paragraph.

It is acknowledged between the parties to this Contract that the work to be performed by the Contractor will result in a benefit to the Owner and that a delay in completion of the work will be detrimental to the Owner. It is further acknowledged that, while work is in progress, the Owner shall incur an indeterminable amount of expense as a result of necessary supervision of the work and other overhead and administrative expenses.

It is, therefore, agreed that if there is a delay in the completion of the work beyond the period elsewhere herein specified which has not been authorized by the Owner as set forth above, then the Owner may

deduct from the Contract price the amount stated in the Special Conditions, bound herewith, as liquidated damages.

GC.18 DISPUTES

All disputes arising under this Contract or its interpretation, whether involving law or fact or both, or extra work, and all claims for alleged breach of Contract shall within ten (10) days of commencement of the dispute be presented by the Contractor to the Local Public Agency for decision. All papers pertaining to claims shall be filed in quadruplicate. Such notice need not detail the amount of the claim, but shall state the facts surrounding the claim in sufficient detail to identify the claim, together with its character and scope. In the meantime, the Contractor shall proceed with the work as directed. Any claim not presented within the time limit specified within this paragraph shall be deemed to have been waived, except that if the claim is of a continuing character and notice of the claim is not given within ten (10) days of its commencement, the claim will be considered only for a period commencing ten (10) days prior to the receipt by the Local Public Agency of notice thereof.

The Contractor shall submit in detail his claim and his proof thereof. Each decision by the governing body of the Local Public Agency will be in writing and will be mailed to the Contractor by registered mail, with return of receipt requested.

If the Contractor does not agree with any decision of the Local Public Agency, he shall in no case allow the dispute to delay the work, but shall notify the Local Public Agency promptly that he is proceeding with the work under protest, and he may then except the matter in question from the final release.

GC.19 ASSIGNMENT OR NOVATION

The Contractor shall not assign or transfer, whether by an assignment or novation, any of its rights, duties, benefits, obligations, liabilities, or responsibilities under this Contract without the written consent of the local Public Agency; provided, however, that assignments to banks, trust companies, or other financial institutions may be made without the consent of the Local Public Agency. No assignment or novation of this Contract shall be valid unless the assignment or novation expressly provides that the assignment of any of the Contractor's rights or benefits under the Contract is subject to a prior lien for labor performed, services rendered, and materials, tools, and equipment, supplied for the performance of the work under this Contract in favor of all persons, firms, or corporations rendering such labor or services or supplying such materials, tools, or equipment.

GC.20 TECHNICAL SPECIFICATIONS AND DRAWINGS

The Drawings and this Specification are to be considered cooperative. All work necessary for the completion of the facility shown on the Drawings, but not described in this Specification, or described in this Specification but not shown on the Drawings, OR REASONABLY IMPLIED BY EITHER OR BOTH, shall be executed in the best manner, the same as if fully shown and specified. When no figures or memoranda are given, the Drawings shall be accurately followed, according to their scale, but in all cases

of discrepancy in figures or details, the decision of the Engineer shall be obtained before proceeding with the Work. If the Contractor adjusts any such discrepancy without first having obtained the approval of the Engineer, it shall be at his own risk, and he shall bear any extra expense resulting therefrom.

GC.21 SHOP DRAWINGS

Shop Drawings shall be required for all equipment, materials, and as required by the Engineer. All Shop Drawings, Machinery Details, Layout Drawings, etc., shall be submitted to the Engineer in four (4) copies for review (unless otherwise specified) sufficiently in advance of requirements to afford ample time for checking, including time for correcting, resubmitting, and rechecking if necessary. The Contractor may proceed, only at his own risk, with manufacture or installation of any equipment or work covered by said Shop Drawings, etc. until they are reviewed, and approved; and no claim, by the Contractor, for extension of the Contract time will be granted by reason of his failure in this respect.

Any Drawings submitted without the Contractor's stamp of approval will not be considered and will be returned to him for proper resubmission. If any Drawings show variations from the requirements of the Contract because of standard shop practice or other reason, the Contractor shall make specific mention of such variation in his letter of transmittal in order that, if acceptable, suitable action may be taken for proper adjustment of Contract price and/or time; otherwise, the Contractor will not be relieved of the responsibility for executing the work in accordance with the Contract even though the Drawings have been reviewed.

The review of Shop Drawings by the Engineer shall be considered an accommodation to the Contractor to assist him in the execution of the Contract. The Engineer's review of such Drawings shall not relieve the Contractor of his responsibility to perform the work in strict accordance with the Plans and Specifications, and approved changes.

If the Shop Drawing is in accordance with the Contract or involves only a minor adjustment in the interest of the Local Public Agency not involving a change in Contract price or time, the Engineer shall so stamp the Drawing and shall contain in substance the following:

"Corrections or comments made on the shop drawings during this review do not relieve contractor from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades; and performing his work in a safe and satisfactory manner".

GC.22 REQUESTS FOR SUPPLEMENTARY INFORMATION

It shall be the responsibility of the Contractor to make timely requests of the Local Public Agency for any

additional information not already in his possession which should be furnished by the Local Public Agency under the terms of this Contract, and which he will require in the planning and execution of the work. Such requests may be submitted from time to time as the need is approached, but each shall be filed in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay. Each request shall be in writing, and shall list the various items and the latest date by which each will be required by the Contractor. The first list shall be submitted within two (2) weeks after the Contract award and shall be as complete as possible at that time. The Contractor shall, if requested, furnish promptly any assistance and information the Engineer may require in responding to these requests of the Contractor. The Contractor shall be fully responsible for any delay in his work or to others arising from his failure to comply fully with the provisions of this Section.

GC.23 REFERENCE TO MANUFACTURER OR TRADE NAME - "OR EQUAL CLAUSE"

If the Plans, Specifications, or Contract Documents, laws, ordinances or applicable rules and regulations permit the Contractor to furnish or use a substitute that is equal to any material or equipment specified, and if the Contractor wishes to furnish or use a proposed substitute, he shall make written application to the Engineer for approval of such a substitute certifying in writing that the proposed substitute will perform adequately the functions called for in the general design, be similar and of equal substance to that specified, and be suited to the same use and capable of performing the same functions as that specified; the use of such substitute will not require revisions of related work. No substitute shall be ordered or installed without the written approval of the Engineer who will be the judge of equality and may require the Contractor to furnish such other data regarding the proposed substitute as he considers pertinent. No substitute shall be ordered or installed without such performance guarantee and bonds as the Owner may require which shall be furnished at Contractor's expense.

Where such substitutions alter the design or space requirements indicated on the Contract Drawings, detailed drawings shall be prepared and submitted by the Contractor delineating any changes in, or additions to, the work shown on the Contract Drawings, and such drawings and changes or additions to the work shall be made by the Contractor at no additional expense to the City. In all cases, the burden of proof that the material or equipment offered for substitution is equal in construction, efficiency, and service to that named on the Contract Drawings and in these Contract Documents shall rest on the Contractor, and unless the proof is satisfactory to the Engineer, the substitution will not be approved.

GC.24 SAMPLES, CERTIFICATES, AND TESTS

The Contractor shall submit all material, product, or equipment samples, descriptions, certificates, affidavits, etc., as called for in the Contract Documents or required by the Engineer, promptly after award of the Contract and acceptance of the Contractor's bond. No such material or equipment shall be manufactured or delivered to the site, except at the Contractor's own risk, until the required samples or certificates have been approved in writing by the Engineer. Any delay in the work caused by late or improper submission of samples or certificates for approval shall not be considered just cause for an extension of the Contract time. Submit four (4) copies of data for Engineer's review.

Each sample submitted by the Contractor shall carry a label giving the name of the Contractor, the project for which it is intended, and the name of the producer. The accompanying certificate or letter from the Contractor shall state that the sample complies with Contract requirements, shall give the name and brand of the product, its place of origin, the name and address of the producer, and all specifications or other detailed information which will assist the Engineer in passing upon the acceptability of the sample promptly. It shall also include the statement that all materials or equipment furnished for use in the project will comply with the samples and/or certified statements.

Approval of any materials shall be general only and shall not constitute a waiver of the Local Public Agency's right to demand full compliance with Contract requirements. After actual deliveries, the Engineer will have such check tests made as he deems necessary in each instance and may reject materials and equipment and accessories for cause, even though such materials and articles have been given general approval. If materials, equipment or accessories which fail to meet check tests have been incorporated in the work, the Engineer will have the right to cause their removal and replacement by proper materials or to demand and secure such reparation by the Contractor as is equitable, at the Contractor's expense.

Except as otherwise specifically stated in the Contract, the costs of sampling and testing will be divided as follows:

- (1) The Contractor shall furnish without extra cost, including packing and delivery charges, all samples required for testing purposes, except those samples taken on the project by the Engineer;
- (2) The Contractor shall assume all costs of re-testing materials which fail to meet Contract requirements;
- (3) The Contractor shall assume all costs of testing materials offered in substitution for those found deficient; and
- (4) All Construction materials shall be tested in accordance with AHTD Specifications and at the contractor's expense.

GC.25 PERMITS AND CODES

The Contractor shall give all notices required by and comply with all applicable laws, ordinances, and codes of the Local Government. All construction work and/or utility installations shall comply with all applicable ordinances, and codes including all written waivers.

Should the Contractor fail to observe the foregoing provisions and proceed with the construction and/or install any utility at variance with any applicable ordinance or code, including any written waivers, the Contractor shall remove such work without cost to the Local Public Agency.

The Contractor shall at his own expense, secure and pay to the appropriate department of the Local Government the fees or charges for all permits for street pavements, sidewalks, sheds, removal of abandoned water taps, sealing of house connection drains, pavement cuts, building, electrical, plumbing, water, gas, and sewer permits required by the local regulatory body or any of its agencies.

The Contractor shall comply with applicable local laws and ordinances governing the disposal of surplus excavation, materials, debris, and rubbish on or off the site of the work, and commit no trespass on any public or private property in any operation due to or connected with the Improvements embraced in this Contract.

GC.26 CARE OF WORK

The Contractor alone shall be responsible for the safety, efficiency, and adequacy of his plant, appliances, and methods, and for any injury, including death, to any person, and for any damage to property which may result from their failure, or from their improper construction, maintenance, or operation. He shall indemnify and save harmless the Local Public Agency and the Engineer and their employees and agents, against any judgement with costs, which may be obtained as a result of such injury or property damage, because of the alleged liability of the Local Public Agency or of the Engineer.

The Contractor shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance, whether or not the same has been covered in whole or in part by payments made by the Local Public Agency.

The Contractor shall provide sufficient competent watchmen, as required to protect the work both day and night, including Saturdays, Sundays, and holidays, from the time the work is commenced until final completion and acceptance.

In an emergency affecting the safety of life or property, including adjoining property, the Contractor, without special instructions or authorization from the Local Public Agency, is authorized to act at his discretion to prevent such threatened loss or injury, and he shall so act. He shall likewise act if instructed to do so by the Local Public Agency. Any compensation claimed by the Contractor on account of such emergency work will be determined by the Local Public Agency as provided in the Section entitled CHANGES IN THE WORK under GENERAL CONDITIONS.

The Contractor shall avoid damage, as a result of his operations, to existing sidewalks, streets, curbs, pavements, utilities (except those which are to be replaced or removed), adjoining property, etc., and he shall at his own expense completely repair any damage thereto caused by his operations, to the satisfaction of the Owner.

The Contractor shall shore up, brace, underpin, secure, and protect as may be necessary, all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be in any way affected by the excavations or other operations connected with the construction of the Improvements embraced in this Contract. The Contractor shall be responsible for the giving of any and

all required notices to any adjoining or adjacent property owner or other party before the commencement of any work. The Contractor shall indemnify and save harmless the Local Public Agency, and the Engineer, from any damages on account of settlements or the loss of lateral support of adjoining property and from all loss or expense and all damages for which it may be claimed that the Local Public Agency, or the Engineer, is liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.

GC.27 QUALITY OF WORK AND PROPERTY

All property, materials, and equipment shall be new and free of defects upon completion of the Contractor's performance and, unless different standards are specified elsewhere in the Contract Documents, shall be of the best type and quality available for the purpose. All of the Contractor's work shall be performed with the highest degree of skill and completed free of defects and in accordance with the Contract Documents. Any work, property, materials, or equipment not in conformance with these standards shall be considered defective. If any work, property, materials or equipment is discovered to have been defective or not in conformance with the Contract Documents, whether said discovery is made before or after completion of performance, the Contractor, at his expense, after written notice from the Owner or Engineer, shall promptly replace or correct the deficiency and pay any engineering costs and consequential expense or damage incurred by the Owner in connection therewith. If the Contractor fails to promptly correct all deficiencies, the Owner shall have the option of remedying the defects at the Contractor's cost. If the Contractor is required to furnish shop drawings or designs, the above provisions shall apply to such drawings or designs.

Neither the Owner's payment, acceptance, inspection or use of the work, property, materials, or equipment, nor any other provision of the Contract Documents shall constitute acceptance of work, property, materials, or equipment which are defective or not in accordance with the Contract Documents. If the Contractor breaches any provision of the Contract Documents with respect to the quality of the work, property, materials, equipment or performance, whether initial or corrective, his liability to the Owner shall continue until the statute of limitations with respect to such breach of contract has expired following discovery of the defect. All parts of this section are cumulative to any other provisions of the Contract Documents and not in derogation thereof. If it is customary for a warranty to be issued for any of the property to be furnished hereunder, such warranty shall be furnished, but no limitations in any such warranty shall reduce the obligations imposed under the Contractor in the Contract Documents or by Arkansas Law; but if any greater obligations than imposed in this Contract are specified in any such warranty or by Arkansas Law, those greater obligations shall be deemed a part of this Contract and enforceable by the Owner.

GC.28 ACCIDENT PREVENTION

The Contractor shall exercise proper precaution at all times for the protection of persons and property and shall be responsible for all damages to persons or property, either on or off the site, which occur as a result of his prosecution of the work. The safety provisions of applicable laws and building and

construction codes, including applicable parts of the Arkansas Department of Labor Safety Code, shall be observed. The Contractor shall take or cause to be taken such safety and health measures, additional to those herein required, as he may deem necessary or desirable. Machinery, equipment, and all hazards shall be guarded in accordance with the safety provisions of the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, Inc., to the extent that such provisions are not in conflict with applicable local laws.

The Contractor shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under the Contract. The Contractor shall promptly furnish the Local Public Agency with reports concerning these matters.

The Contractor shall indemnify and save harmless the Local Public Agency, and the Engineer, from any claims for damages resulting from personal injury and/or death suffered or alleged to have been suffered by any person as a result of any work conducted under this Contract.

GC.29 SANITARY FACILITIES

The Contractor shall furnish, install, and maintain ample sanitary facilities for the workers. As the needs arise, a sufficient number of enclosed temporary toilets shall be conveniently placed as required by the sanitary codes of the State and Local Government. Drinking water shall be provided from an approved source, so piped or transported as to keep it safe and fresh and served from single service containers or satisfactory types of sanitary drinking stands or fountains. All such facilities and services shall be furnished in strict accordance with existing and governing health regulations.

GC.30 USE OF PREMISES

The Contractor shall confine his equipment, storage of materials, and construction operations to the Rights-of-Way to accommodate the permanent construction furnished by the Local Public Agency, or as may be directed otherwise by the Local Public Agency, and shall not unreasonably encumber the site of other public Rights-of-Way with his materials and construction equipment. In case such Rights-of-Way furnished by the Local Public Agency are not sufficient to accommodate the Contractor's operations, he shall arrange with the Local Government, or with the owner or owners of private property for additional area or areas, and without involving the Local Public Agency in any manner whatsoever.

The Contractor shall comply with all reasonable instructions of the Local Public Agency and the ordinances and codes of the Local Government (including but not limited to those) regarding signs, advertising, traffic, fires, explosives, danger signals, and barricades.

GC.31 REMOVAL OF DEBRIS, CLEANING, ETC.

The Contractor shall periodically or as directed during the progress of the work, remove and legally

dispose of all surplus excavated material and debris, and keep the project site and public Rights-of-Way reasonably clear. Upon completion of the work, he shall remove all temporary construction facilities, debris, and unused materials provided for the work, thoroughly clean all drainage pipes, structures, ditches, and other features, and put the whole site of the work and public Rights-of-Way in a neat and "broom" clean condition. Trash burning on the site of the work will be subject to prior approval of the Jonesboro Fire Department.

GC.32 RETURN OF OWNER'S MATERIALS, EQUIPMENT OR PROPERTY

Any materials, equipment or other property which belongs to the Owner, removed by the Contractor, shall be delivered to the Owner's designated warehouse unless its re-use is specified in the Plans and Specifications. If the Contractor fails to deliver the materials, equipment, or other property, the value, as determined by the Engineer, shall be deducted from amounts due the Contractor.

GC.33 OBSERVATION OF WORK

The Engineer, his authorized representative, and any Federal, State, County, or local authority representative having jurisdiction over any part of the work, or area through which the work is located, shall at all times have access to the work in progress.

The detailed manner and method of performing the work shall be under the direction and control of the Contractor, but all work performed shall at all times be subject to the observation of the Engineer or his authorized representative to ascertain its conformance with the Contract Documents. The Contractor shall furnish all reasonable aid and assistance required by the Engineer for the proper observation and examination of the work and all parts thereof.

The Engineer is not responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction, or safety precautions and programs incident thereto.

Observers may be appointed by the Engineer or Owner. Observers shall have no authority to permit any deviation from the Plans and Specifications except on written order from the Engineer and the Contractor will be liable for any deviation except on such written order. Observers shall have authority, subject to the final decision of the Engineer, to condemn and reject any defective work and to suspend the work when it is not being performed properly.

The observer shall in no case act as superintendent or foreman or perform other duties for the Contractor, nor interfere with the management of the work by the latter. Any advice which the observer may give the Contractor shall in no way be construed as binding to the Engineer in any way or releasing the Contractor from fulfilling all of the terms of the Contract.

Any defective work may be rejected by the Engineer at any time before final acceptance of the work, even though the same may have been previously overlooked and estimated for payment and payment therefore made by the Owner.

The Contractor shall notify the Engineer sufficiently in advance of backfilling or concealing any facilities to permit proper observation. If the facilities are concealed without approval or consent of the Engineer, the Contractor shall uncover for observation and recover such facilities all at his own expense, when so requested by the Engineer.

Should it be considered necessary or advisable by the Engineer at any time before final acceptance of the entire work to make an examination of work already completed, by uncovering the same, the Contractor shall on request promptly furnish all necessary facilities, labor, and material. If such work is found to be defective in any important or essential respect, due to fault of the Contractor or his Subcontractors, he shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the actual cost of labor and material necessarily involved in the examination and replacement, plus fifteen (15) percent of such costs to cover superintendence, general expenses and profit, shall be allowed the Contractor and he shall, in addition, if completion of the work of the entire Contract has been delayed thereby, be granted a suitable extension of time on account of the additional work involved.

Observation of materials and appurtenances to be incorporated in the Improvements embraced in this Contract may be made at the place of production, manufacture or shipment, whenever the quantity justifies it, and such observation and acceptance, unless otherwise stated in the Technical Specifications, shall be final, except as regards (1) latent defects, (2) departures from specific requirements of the Contract, (3) damage or loss in transit, or (4) fraud or such gross mistakes as amount to fraud. Subject to the requirements contained in the preceding sentence, the observation of materials as a whole or in part will be made at the project site.

All condemned or rejected work shall be promptly taken out and replaced by satisfactory work. Should the Contractor fail or refuse to comply with the instructions in this respect, the Owner may, upon certification by the Engineer, withhold payment, proceed to terminate the Contract, or perform work as provided herein.

GC.34 REVIEW BY LOCAL PUBLIC AGENCY OR OWNER

The Local Public Agency, its authorized representatives and agents, shall at all times during work hours have access to and be permitted to observe and review all work, materials, equipment, payrolls, and personnel records pertaining to this Contract, provided, however, that all instructions and approval with respect to the work will be given to the Contractor only by the Local Public Agency through its authorized representatives or agents. Representatives of Federal, State, and local government agencies also have the right of physical inspection of the work during work hours.

GC.35 PROHIBITED INTERESTS

No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept or approve, or to take part in negotiating, making, accepting, or approving any

architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this Contract or in any part thereof. No officer, employee, architect, attorney, engineer, or inspector of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any executive, supervisory, or other similar functions in connection with the construction of the project, shall become directly or indirectly interested personally in this Contract or in any part thereof.

GC.36 FINAL INSPECTION

When the Improvements embraced in this Contract are substantially completed, the Contractor shall notify the Local Public Agency in writing that the work will be ready for final inspection on a definite date which shall be stated in the notice. The notice will be given at least ten (10) days prior to the date stated for final inspection, and bear the signed concurrence of the representative of the Local Public Agency having charge of observation. If the Local Public Agency determines that the status of the Improvements is as represented, it will make the arrangements necessary to have final inspection commenced on the date stated in the notice, or as soon thereafter as practicable. The inspection party will also include the representatives of each Department of the Local Government and any other involved government agencies when such improvements are later to be accepted by the Local Government and/or other government agencies.

GC.37 PATENTS

The Contractor shall hold and save harmless the Local Public Agency, its officers, employees, and the Engineer, from liability of any nature or kind, including costs and expenses, for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the Local Public Agency, unless otherwise specifically stipulated in the Technical Specifications.

GC.38 WARRANTY OF TITLE

No material, supplies, or equipment for the work shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor shall warrant good title to all materials, supplies, and equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances constructed or placed thereon by him to the Local Public Agency free from any claims, liens, or charges. Neither the Contractor nor any person, firm or corporation furnishing any material or labor for any work covered by this Contract, shall have any right to a lien upon any improvement or appurtenance thereon. Nothing contained in this paragraph, however, shall defeat or impair the right of persons furnishing materials or labor to recover under any bond given by the Contractor for their protection or any rights under any law permitting such persons to look to funds due the Contractor in the hands of the Local Public Agency. The provisions of this paragraph shall be inserted in all subcontracts and material Contracts and notice of its provisions shall

be given to all persons furnishing materials for the work when no formal Contract is entered into for such materials.

GC.39 GENERAL GUARANTY

Neither the final certificate of payment nor any provision in the Contract nor partial or entire use of the Improvements embraced in this Contract by the Local Public Agency or the public shall constitute an acceptance of work not done in accordance with the Contract or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall promptly remedy any defects in the work and pay for any damage to other work resulting therefrom which shall appear within a period of twelve (12) months from the agreed upon day of final acceptance of the work. The Local Public Agency will give notice of defective materials and work with reasonable promptness.

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SGC.1 PROGRESS SCHEDULE

The Contractor shall submit a construction contract schedule of the bar graph (or other approved) type seven (7) calendar days prior to the preconstruction conference showing the following information as a minimum:

- (1) Actual date construction is scheduled to start if different from the date of notice to proceed.
- (2) Planned contract completion date.
- (3) Beginning and completion dates for each phase of work.
- (4) Respective dates for submission of shop drawings and the beginning of manufacture, the testing of, and the installation of materials, supplies, and equipment.
- (5) All construction milestone dates.
- (6) A separate graph showing work placement in dollars versus contract time. The schedule shall incorporate contract changes as they occur. The schedule shall be maintained in an up-to-date condition and shall be available for inspection at the construction site at all times.

The construction contract schedule shall be submitted in conjunction with and/or in addition to any other specification requirements concerning schedules.

SGC.2 DRAWINGS

One (1) set of Plans and Specifications shall be furnished to the Contractor, at no charge, for construction purposes. Additional copies may be obtained at cost of reproduction upon request.

The Contractor shall keep one (1) copy of all drawings and Contract Documents in good condition readily accessible at the site of the work available to the Engineer and his authorized representatives.

SGC.3 ADDITIONAL INSURANCE (i.e. Railroad Insurance)

*NOT APPLICABLE FOR THIS PROJECT

SGC.4 RECORD DRAWINGS

Before any work is started, the Contractor shall obtain at his own expense one set of Plans to be used for Record Drawings. The Engineer will supply the Plans at printing cost to the Contractor. Record Drawings will be kept on full-size plan sheets; no half-size sheets will be permitted. The Record Drawings shall be stored and maintained in good condition at all times by the Contractor and shall be made available to the Engineer at the work site immediately at the Engineer's request. All writing, notes,

comments, dimensions, etc. shall be legible. The Record Drawings shall be stored flat and shall not be rolled. The Record Drawings shall be submitted to the Engineer before the project can be accepted.

The Contractor shall accurately identify and document the locations of all underground and/or concealed work that he has performed and/or has been affected by his work. This shall include all equipment, conduits, pipe lines, valves, fittings and other appurtenances and underground structures that are part of the Contractor's work and their proximity to existing underground structures and utilities to the extent known. The Contractor will certify accuracy of the Record Drawings by endorsement.

The Contractor's work shall be documented on the Record Drawings in an on-going manner. Distances, offsets, depths, etc. shall be accurately measured from permanent fixed objects so that the Owner can expose any item of the work in the future with a minimum of effort. All such measurements shall be made before the items of work are covered or backfilled. The Contractor shall be required to expose and recover/backfill the work at his own expense if, in the Engineer's opinion, the measurements need to be verified.

SGC.5 TRENCH AND EXCAVATION SAFETY SYSTEM

This section covers trench and excavation safety system required for constructing improvements that necessitate open excavations on the project. All work under this item shall be in accordance with the current edition of the "Occupational Safety and Health Administration Standard for Excavation and Trenches Safety System, 29 CFR 1926, Subpart P.

The Contractor, prior to beginning any excavation, shall notify the State Department of Labor (Safety Division) that work is commencing on a project with excavations greater than five feet.

The Contractor shall notify all Utility Companies and Owners in accordance with OSHA Administration 29 CFR 1926.651(b) (2) for the purpose of locating utilities and underground installations.

Where the trench or excavation endangers the stability of a building, wall, street, highway, utilities, or other installation, the Contractor shall provide support systems such as shoring, bracing, or underpinning to ensure the stability of such structure or utility.

The Contractor may elect to remove and replace or relocate such structures or utilities with the written approval of the Owner of the structure or utility and the Project Owner.

The work required by this item will not be measured for separate payment, but will be considered subsidiary to other items of the contract. If a Trench and Excavation Safety System is needed, the Contractor shall submit to the Engineer a certification by the Contractor's "competent person" as defined in Subpart "P" 1926.650(b) that the Contractor has complied with the provisions of "Occupational Safety and Health Administration Standard for Excavation and Trenches Safety System", 29 CFR 1926 Subpart P for work for which payment is requested.

X. SPECIAL CONDITIONS

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-	MAINTENANCE BOND

SC.1 GENERAL

The provisions of this section of the Specifications shall govern in the event of any conflict between them and the "General Conditions".

SC.2 LOCATION OF PROJECT

The Project is located within the City of Jonesboro's Craighead Technology Park on the CTP Industrial Lead Railroad from the derail at Sta 2+05± to the EOT at Sta 238+82±. The Project will also include maintenance on the Nestle Lead from Sta 1+25 to Sta 22+90, located off of the CTP Lead at Sta 169+42.60. A map showing the general location and rail layouts is included in the plan sets.

SC.3 SCOPE OF WORK

The work to be performed under this Contract consists of furnishing all materials, labor, supervision, tools and equipment necessary to complete site preparation, placement of a surface lift of ballast for resurfacing, regulating, lining and tamping 26,026 LF of trackage using 2,260 tons of ballast aggregate. The Project also includes the removal of the existing Quality Way concrete grade crossing and reconstruction of the grade crossing with new 7"x9"x10' crossties, aggregate, the salvageable concrete panels, new concrete panels as needed, and associated asphalt milling & paving.

SC.4 TIME ALLOTTED FOR COMPLETION

The time allotted for completion of the work shall be the time as specified in the BID PROPOSAL FOR UNIT PRICES, which time shall begin within ten (10) days of the work order or notice to proceed. After award of the Contract is made and the Contract Documents are completed, the Engineer shall issue a Notice to Proceed, notifying the Contractor to proceed with the construction of the project, subject to the provisions of this paragraph.

SC.5 FORMS, PLANS AND SPECIFICATIONS

Forms of Plans, Specifications, Proposal forms and other contract documents may be examined at City of Jonesboro Engineering Department, 300 South Church Street, Jonesboro, Arkansas 72401 and may be secured at the cost of printing per set from the Jonesboro Blueprint, 222 Madison Street, Jonesboro, Arkansas 72401, ph. (870)932-4349. No partial sets will be issued. No refunds will be made.

SC.6 LIQUIDATED DAMAGES FOR DELAY

The number of calendar days allowed for completion of the project is stipulated in the Proposal and in the Contract and shall be known as the Contract Time.

1. It is understood and agreed by and between the Owner and the Contractor that the time of completion herein set out is a reasonable time. The Contractor shall perform fully, entirely, and in an acceptable manner, the work contracted for within the contract time stated in the

Contract. The contract time shall be counted from ten days after the effective date of the "Notice to Proceed"; and shall include all Sundays, holidays, and non-work days. All calendar days elapsing between the effective dates of any orders of the Engineer for suspension of the prosecution of the work, due to the fault of the Contractor, shall be counted as elapsed contract time, and shall not be considered for an extension of time.

2. Extensions of time for completion, under the condition of 2(a) next below, will be granted; extensions may be granted under other stated conditions:
 - a. If the satisfactory execution and completion of the Contract shall require work or material in greater amounts or quantities than those set forth in the Contract, then the Contract time shall be increased in the same proportion as the additional work bears to the original work contracted for.
 - b. An average or usual number of inclement weather days, when work cannot proceed, is to be anticipated during the construction period and is not to be considered as warranting extension of time. If, however, it appears that the Contractor is delayed by conditions of weather, so unusual as not to be reasonably anticipated, extensions of time may be granted.
 - c. Should the work under the Contract be delayed by other causes which could not have been prevented or contemplated by the Contractor, and which are beyond the Contractor's power to prevent or remedy, an extension of time may be granted. Such causes of delay shall include but not necessarily be limited to the following:
 - (1) Acts of God, acts of the public enemy, acts of the Owner except as provided in these Specifications, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather.
 - (2) Any delays of Subcontractors or suppliers occasioned by any of the causes specified above.
3. The Resident Project Representative or other authorized representative of the City shall keep a written record sufficient for determination as to the inclusion of that day in the computation of Contract time. This record shall be available for examination by the Contractor during normal hours of work as soon as feasible after the first of each construction month. In case of disagreement between the representative of the City and the Contractor, as to the classification of any day, the matter shall be referred to the City whose decision shall be final.
4. The amount of all extensions of time for whatever reason granted shall be determined by the Owner. In general, only actual and not hypothetical days of delay will be considered. The Owner shall have authority to grant additional extensions of time as the Owner may deem justifiable.

The amount of Liquidated Damages to be assessed shall be in accordance with the schedule that follows:

<u>Amount of Contract</u>	<u>Liquidated Damages Per Day</u>
Less than \$25,000.00	\$100.00
Not less than \$ 25,000.00 but less than \$ 50,000.00	\$150.00
Not less than \$ 50,000.00 but less than \$ 100,000.00	\$200.00
Not less than \$100,000.00 but less than \$ 500,000.00	\$250.00
Not less than \$500,000.00 but less than \$1,000,000.00	\$350.00
Over \$1,000,000.00	\$500.00

1. Time is an essential element of the Contract and it is important that the work be pressed vigorously to completion. Loss will accrue to the public due to delayed completion of the facility; and the cost to the Owner of the administration of the Contract, including engineering, inspection and supervision, will be increased as the time occupied in the work is lengthened.
2. Should the Contractor fail to complete the work as set forth in the Specifications and within the time stipulated in the Contract, there shall be deducted the amount shown in the schedule above, for each day of delay, from any monies due or which may thereafter become due him, not as a penalty, but as ascertained and liquidated damages.
3. Should the amount otherwise due the Contractor be less than the amount of such ascertained and liquidated damages, the Contractor and his Surety shall be liable to the Owner for such deficiency.

If the Contractor finds it impossible for reasons beyond his control to complete the work within the Contract time as specified, or as extended in accordance with the provisions of this subsection, he may, at any time prior to the expiration of the Contract time as extended, make a written request to the Engineer for an extension of time setting forth the reasons which he believes will justify the granting of his request. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the Engineer finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, he may recommend to the Owner that the contract time be extended as conditions justify. If the Owner extends the contract, the extended time for completion shall then be in full force and effect, the same as though it were the original time for completion.

SC.7 KNOWLEDGE OF CONDITIONS

The Contractor states that he has examined all the available records and has made a field examination of the site and right-of-way and that he has informed himself about the character, quality, and quantity of surface and subsurface materials and other conditions to be encountered; the quantities in various sections of the work; the character of equipment and facilities needed for the prosecution of the work; the location and suitability of all construction materials; the local labor conditions; and all other matters in connection with the work and services to be performed under this contract.

SC.8 PERMITS AND RIGHTS-OF-WAY

The Owner will secure easements across public or private property permanently required for the pipelines at no cost to the Contractor.

The Contractor shall lease, buy, or otherwise make satisfactory provision, without obligating the Owner in any manner, for any land required outside the land provided by the Owner.

State Highway and Railroad Crossing Permits will be secured by the Owner. All other permits and licenses necessary for the prosecution of the work shall be secured and paid for by the Contractor.

SC.9 REFERENCE SPECIFICATIONS

Where reference is made in these Specifications to the Standard Specifications of the Arkansas State Highway and Transportation Department, such reference is made for expediency and standardization, and such specifications (latest edition thereof) referred to are hereby made a part of these Specifications.

More specifically, if any items or materials required for completion of the work required for this project are not specified in these Contract Documents, such items or materials and requirements for installation shall conform to the latest edition of the Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction.

SC.10 PUBLIC UTILITIES AND OTHER PROPERTY TO BE CHANGED

In case it is necessary to change or move the property of any owner or of a public utility, such property shall not be moved or interfered with until ordered to do so by the Engineer. The right is reserved to the owner of public utilities to enter upon the limits of the project for the purpose of making such changes or repairs of their property that may be made necessary by performance of this Contract.

SC.11 USED MATERIALS

No material which has been used by the Contractor for any temporary purpose whatever is to be incorporated in the permanent structure without written consent of the Engineer.

SC.12 EXISTING STRUCTURES

The Plans show the locations of all known surface and subsurface structures. However, the Owner assumes no responsibility for failure to show any or all of these structures on the Plans, or to show them in their exact location. It is mutually agreed that such failure shall not be considered sufficient basis for claims for additional compensation for extra work or for increasing the pay quantities in any manner whatsoever, unless the obstruction encountered is such as to necessitate changes in the lines or grades, or requires the building of special work, provisions for which are not made in the Plans and Proposal, in which case the provisions in these Specifications for Extra Work shall apply.

The Contractor shall be responsible for protection of all existing structures, and any damage caused by his operations shall be repaired immediately without cost to the Owner. It shall be the responsibility of the prospective Contractor to examine the site completely before submitting his bid.

SC.13 USE OF EXPLOSIVES

Any use of explosives or blasting shall be as outlined in these Specifications.

SC.14 BARRICADES, LIGHTS, AND WATCHMEN

Where the work is performed on or adjacent to any street, alley, or public place, the Contractor shall, at his own expense, furnish and erect such barricades, fences, lights, and danger signals, shall provide such watchmen, and shall provide such other precautionary measures for the protection of persons or property and of the work as are necessary.

Barricades shall be painted in a color that will be visible at night. From sunset to sunrise the Contractor shall furnish and maintain at least one light at each barricade and a sufficient number of barricades shall be erected to keep vehicles from being driven on or into any work under construction. The Contractor shall furnish watchmen in sufficient numbers to protect the work.

The Contractor will be held responsible for all damage to the work due to failure to provide barricades, signs, lights, and watchmen to protect it. Whenever evidence is found of such damage, the Engineer may order the damaged portion immediately removed and replaced by the Contractor at his expense. The Contractor's responsibility for the maintenance of barricades, signs, and lights, and for providing watchmen, shall not cease until the project shall have been accepted by the Owner.

SC.15 FENCES AND DRAINAGE CHANNELS

Boundary fences or other improvements removed to permit the installation of the work shall be replaced in the same location and left in a condition as good, or better than that in which they were found except as indicated on the Drawings.

Where surface drainage channels are disturbed or blocked during construction, they shall be restored to their original condition of grade and cross section after the work of construction is completed.

SC.16 WATER FOR CONSTRUCTION

Water used for the mixing of concrete, testing, or any other purpose incidental to this project, shall be furnished by the Contractor. The Contractor shall make the necessary arrangements for securing and transporting such water and shall take such water in a manner and at such times that will not produce a harmful drain or decrease of pressure in the Owners' water system. No separate payment will be made for water used but the cost thereof shall be included in the Unit Price Schedule.

SC.17 MATERIAL STORAGE

Materials delivered to the site of the work in advance of their use shall be stored so as to cause the least inconvenience and in a manner satisfactory to the Engineer.

SC.18 EXISTING UTILITIES AND SERVICE LINES

The Contractor shall be responsible for the protection of all existing utilities or improvements crossed by or adjacent to his construction operations. Where existing utilities or service lines are cut, broken, or damaged, the Contractor shall replace or repair immediately the utilities or service lines with the same type of original material and construction or better, at his own expense.

SC.19 TESTING, INSPECTION AND CONTROL

Testing and control of all materials used in the work shall be done by an approved commercial laboratory employed and paid directly by the Contractor. The Contractor shall furnish, at his own expense, all necessary specimens for testing of the materials, as required by the Engineer.

Testing and control of all materials used for this project shall be done in accordance with the Standard Specifications and The Arkansas State Highway and Transportation Department Field Sampling manual.

Only Technicians certified by the Center for Training Transportation Professionals, University of Arkansas Department of Civil Engineering, Fayetteville, Arkansas (CTTP) shall perform quality control and acceptance testing on this project. Testing Laboratories shall be CTTP certified also. The Contractor shall furnish, at his own expense, all necessary specimens for testing of the materials, as required by the Engineer.

Materials testing for this project (if required) will be at the Contractor's expense with the exception of verification testing by an independent, approved Testing Laboratory, furnished by the City of Jonesboro. The City of Jonesboro reserves the right to employ a certified lab to perform verification and acceptance testing normally performed by the Arkansas State Highway and Transportation Department. The Contractor shall cooperate fully with the testing firm so employed by the City of Jonesboro

SC.20 BOND

Coincident with the execution of the Contract, the Contractor shall furnish a good and sufficient surety bond, in the full amount of the Contract sum, guaranteeing the faithful performance of all covenants, stipulations, and agreements of the Contract, the payment of all bills and obligations arising from the execution of the Contract, (which bills or obligations might or will in any manner become a claim against the Owner), and guaranteeing the work included in this Contract against faulty materials and/or poor workmanship for one (1) year after the date of completion of Contract.

All provisions of the bond shall be complete and in full accordance with Statutory requirements. The bond shall be executed with the proper sureties through a company licensed and qualified to operate in the state and approved by the Owner. The issuing agent's power of attorney shall be attached to the

bond and the bond shall be signed by an agent resident in the state and date of bond shall be the date of execution of the Contract. If at any time during the continuance of the Contract the surety on the Contractor's bond becomes irresponsible, the Owner shall have the right to require additional and sufficient sureties which the Contractor shall furnish to the satisfaction of the Owner within ten (10) days after notice to do so. In default thereof, the Contract may be suspended and all payments or money due the Contractor withheld.

SC.21 LIGHT AND POWER

The Contractor shall provide, at his own expense, temporary lighting and facilities required for the proper prosecution and inspection of the work. At the time the Owner obtains beneficial occupancy of any of the facilities placed in satisfactory service, charges for power and light for regular operation of those involved facilities will become the responsibility of the Owner.

SC.22 LINES AND GRADES

The Contractor will be furnished baselines and benchmarks to control the work. The Contractor shall be responsible for the additional instrument control necessary to layout and construct the improvements. The Contractor's instrument control of the work shall not be measured for separate payment. ***(NOT APPLICABLE FOR THIS CONTRACT)***

SC.23 LEGAL HOLIDAYS

January 1, Martin Luther King, Jr. Day, President's Day, Memorial Day, July 4, Labor Day, Veteran's Day, Thanksgiving, Day after Thanksgiving, December 24, and December 25 will be considered as being legal holidays; no other days will be so considered. Should any holiday fall on Sunday, the holiday shall be observed on the following Monday. No engineering observation will be furnished on legal holidays or Sundays, except in an emergency. The Contractor shall observe the legal holidays and Sundays, and no work shall be performed on these days except in an emergency. However, these days shall not be excluded from Contract time.

SC.24 SEQUENCE OF CONSTRUCTION

Sequence of all phases of work shall be such as to provide for the least possible inconvenience to the Owner. Scheduling of work which would interfere with normal traffic operation shall be coordinated with the Owner. Material and equipment received on the project prior to time of installation shall be stored at such locations designated by the Owner.

The Contractor shall furnish a proposed work schedule to the Engineer for review and approval as soon as possible after award of the Contract. This schedule shall show anticipated equipment delivery schedules and times of beginning and completing of the several work tasks.

SC.25 TEST BORINGS

The Contractor may rely upon the general accuracy of the test pit or soil boring data contained in reports

or drawings, but such reports and drawings are not Contract Documents. The Contractor may not rely upon or make any claim against Owner, Engineer, or Engineer's Consultants with respect to (1) the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by the Contractor and safety precautions and programs incident thereto, (2) other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings, (3) any Contractor interpretation of or conclusion drawn from any data, interpretations, opinions, or information.

SC.26 TEMPORARY FIELD OFFICE

*NOT APPLICABLE THIS PROJECT

SC.27 RELEASE AND CONTRACTOR'S AFFIDAVIT

At the project's completion, the Contractor shall execute the attached Release and Lien Waiver (see below) to release all claims against the Owner arising under and by virtue of his Contract. The date of the Release shall be that agreed to for the final acceptance of the project with the Owner.

SC.28 MAINTENANCE BOND

The Contractor shall execute the attached Maintenance Bond (see below) guaranteeing the work included in the Contract against faulty materials and/or prior workmanship for one year after completion of the Contract. The date of the Maintenance Bond shall be that agreed to for the final acceptance of the project with the Owner. The Maintenance Bond shall be for 100% of the final contract amount.

At the end of the applicable maintenance period, the Owner and/or the Engineer, with the Contractor, shall make an inspection of the work. The Contractor immediately shall repair and correct any and all defects which have resulted from faulty workmanship, equipment, or materials, following which repair and correction the Local Public Agency will accept full maintenance of the work.

RELEASE

FROM: Contractor's Name _____

Address _____

TO: City of Jonesboro

DATE OF CONTRACT: _____

Upon receipt of the final payment and in consideration of that amount, the undersigned does hereby release the Owner and its agents from any and all claims arising under or by virtue of this Contract or modification thereof occurring from the undersigned's performance in connection with the construction of the **Craighead Technology Park Industrial Lead and Nestle Lead – Maintenance & Grade Crossing Improvements Project** (Bid Number **2024:06**)

Contractor's Signature

Title

Subscribed and sworn to before me this _____ day of _____, 20____.

Notary Public

My Commission Expires:

CONTRACTOR'S AFFIDAVIT

FROM: Contractor's Name _____

Address _____

TO: City of Jonesboro

DATE OF CONTRACT: _____

I hereby certify that all claims for material, labor, and supplies entered into contingent and incident to the construction or used in the course of the performance of the work on the construction of the Craighead Technology Park Industrial Lead and Nestle Lead – Maintenance & Grade Crossing Improvements Project (Bid Number 2024:06) have been fully satisfied.

Contractor's Signature

Title

Subscribed and sworn to before me this ____ day of _____, 20____.

Notary Public

My Commission Expires:

The Surety Company consents to the release of the retained percentage on this project with the understanding that should any unforeseen contingencies arise having a right of action on the bond that the Surety Company will not waive liability through the consent to the release of the retained percentage.

Dated _____

Surety Company

By _____
Resident Agent, State of Arkansas

MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, _____,

as Principal, and _____,

as Surety, are held and firmly bound unto the City of Jonesboro, as Obligee, in the full and just sum of

(\$ _____) DOLLARS, lawful money of the United States of America, to be paid to the said Obligee, its successors or assigns, for the payment of which, well and truly to be made, we and each of us, bind ourselves, our heirs, executors and assigns, themselves, and their successors and assigns, jointly and severally, firmly by these presents.

Dated this _____ day of _____, 20_____.

The conditions of this obligation are such, that whereas, said Principal, has by a certain contract with the City of Jonesboro dated the ___ day of _____, 2024, agreed to construct the **Craighead Technology Park Industrial Lead and Nestle Lead – Maintenance & Grade Crossing Improvements Project** (Bid Number **2024:06**) and to maintain the said Improvement in good condition for a period of one (1) year from the date of acceptance of the improvements.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall indemnify and hold harmless the said Obligee from and against all loss, costs, damages, and expenses whatsoever which it may suffer or be compelled to pay by reason of failure of the said Principal to keep said work in repair for a one year period beginning _____ against any and all defects of faulty workmanship or inferior material, then this obligation shall be void; otherwise to remain in full force and effect.

It is further agreed that if the said Principal or Surety herein shall fail to maintain said improvements in good condition for the said period of 1 year, and at any time repairs shall be necessary, that the cost of making said repairs shall be determined by the Owner, or some person or persons designated by the Owner to ascertain the same, and if, upon thirty (30) days notice, the said amount ascertained shall not be paid by the Principal or Surety herein, or if the necessary repairs are not made, that said amount shall become due upon the expiration of thirty (30) days, and suit may be maintained to recover the amount so determined in any Court of competent jurisdiction; and that the amount so determined shall be conclusive upon the parties as to the amount due on this bond for the repair or repairs included therein; and that the cost of all repairs shall be so determined from time to time during the life of this bond, as the condition of the improvements may require.

Signed, sealed and delivered the day and year first above written.

Principal

ATTEST:

BY: _____

SEAL

Surety

ATTEST:

BY: _____
Attorney in Fact

XI. DIVISION 1 – GENERAL REQUIREMENTS

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TITLE
01150

MEASUREMENT AND PAYMENT

MEASUREMENT AND PAYMENT

1. GENERAL

- 1.01 Measurement of and payment for all new materials, supplies, services, equipment, tools, plant, and labor furnished and all work completed in accordance with these Contract Documents shall be as shown on the drawings and adhere to the Burlington Northern Santa Fe Railroad Technical specifications for Industrial Tracks.
- 1.02 The prices herein agreed to for the performance of the work shown and as specified shall be inclusive, that is, the said prices shall include not only the doing of the work; but also, all costs in connection with the work and payment therefore; including the furnishing of all materials, equipment, supplies, and appurtenances; all construction plant, tools, and other equipment; services; and the performance of all necessary labor, superintendence, and administration required to fully complete the work. No item of work that is required for the proper and successful completion of the work, whether shown or not, shall be paid for outside of or in addition to the prices submitted in the Proposal except as specifically provided for in the Contract Documents.
- 1.03 All incidental work required by the Contract Documents, for which no payment is specifically provided, and any work or materials not therein specified which are required to complete the work, and which may fairly be implied as included in the contract, and which the Engineer shall judge to be so included, shall be done or furnished by the contractor without extra compensation.

2. MEASUREMENTS

- 2.01 Measurement of all quantities shall be by the utilization of conventional methods and the standard units described.

3. PAYMENT

- 3.01 Payment to the Contractor of the prices bid in the Proposal shall be full compensation for the furnishing or the furnishing and installing of all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature necessary to execute, complete and deliver the work.

4. MEASUREMENT AND PAYMENT ITEMS

- 4.01 The items of work for which actual measurement and payment will be made are listed hereinafter by actual Proposal Item Number and general Proposal Item Description. Each item of work for measurement and payment shall define the method of measurement, the method of payment, and the general scope of work to be included.

4.02 CTP IND LEAD & NESTLE IND LEAD – Maintenance & Grade Crossing Improvements

A. Item No. 1 – Surface, Regulate, Line & Tamp Existing Industrial Trackage

This maintenance item will be measured on a lineal foot basis along the existing track centerline. Payment will be made at the unit price per lineal foot as listed in the Proposal. The unit price will include all labor, materials, tools, equipment, and incidentals necessary to install a surfacing lift of ballast, regulate, line & tamp the existing trackage in the locations as shown in the Plans. The areas of maintenance and non-maintenance are delineated on the Plans. The contractor shall furnish the regulator and tamping machines for the Project. The tamper must be equivalent, or better, to a series 6700 tamper. The contractor shall ensure that all tamping activities shall be coordinated with the BNSF Railroad to prevent interference with switching operations to customers. All safety requirements shall be furnished by the Contractor.

B. Item No. 2 – Ballast Aggregate Material

The ballast shall be measured on a per ton basis of in-place material and paid at the unit price as shown in the Proposal. The required sections of tamped ballast material must meet Burlington Northern Santa Fe Standards and be placed per specifications. This unit price shall include all labor, materials, tools, transportation, equipment, and incidentals necessary to furnish, haul, load, place and tamp the ballast aggregate complete to the grade required to maintain a smooth grade along the trackage.

C. Item No. 3 – New 7"x9"x8.5' Crossties (wood)

This item will be measured on a per unit basis. Payment will be made at the unit price per item as listed in the Proposal. The unit price shall include all labor, materials, tools, equipment, and incidentals necessary to furnish and install the new 7"x9"x8.5' crossties into the existing industrial rail line. The unit price also include any tie plates, bolts, anchors, angle bars, spikes, and any other items of work required by Burlington Northern Santa Fe Railroad for the proper installation. Any crossties that are found deficient during the tamping process are to be removed and these new crossties are to be installed. Any crossties knocked loose during the tamping process, but not deficient, shall be plugged and reinstalled. This item shall also include the collection, removal, and offsite disposal of deficient crossties by contractor.

D. Item No. 4 – Quality Way Concrete Grade Crossing Rebuild

This item will be measured on a lump sum basis and paid for at the lump sum price as listed in the Proposal. The lump sum price shall include all labor, material, tools, equipment, and incidentals necessary to remove the existing concrete grade crossing panels, remove & replace the crossties, tamp & dress track, reinstall unbroken panels & install new panels, mill & repave asphalt (25' each side) for crossing to be complete and ready for service. All deficient concrete panels are to be replaced with new concrete panels. Any required screws, spikes, plates, or other incidentals to complete the installation are to be furnished by the Contractor. The new crossties installed shall be 7"x9"x10' wooden crossties. The bid price shall also include all asphalt items and any additional ballast/subballast required to construct

the crossing complete to grade according to BNSF specifications. The Contractor shall also surface, regulate, line & tamp the turnout that serves Frito Lay prior to replacing the concrete grade crossing panels. Contractor shall also be responsible for any additional items damaged during the crossing rebuild process. This item shall also include proper off-site disposal of all of the removed items by the Contractor.

E. Item No. 5 – Surface, Regulate, Line & Tamp Existing Turnouts

The item shall be measured on a per unit basis and paid at the unit price as shown in the Proposal. This unit price shall include all labor, materials, tools, transportation, equipment, and incidentals necessary to furnish, haul, load, place, regulate, tamp the ballast, and line & grade the turnout complete to the grade required to maintain a smooth grade along the trackage. The required sections of tamped ballast material must meet Burlington Northern Santa Fe Standards and be placed per specifications. Each side of the turnout shall be surfaced, regulated, line & tamped from the P.O.S. to the 14' Clear Point. The tamper required shall be equivalent, or better, to a 6700 series tamper. Any items required on the turnout found to be missing shall be added after the tamping is complete (i.e. anchors, cotter key, etc.). The unit price shall also include the ballast walkways as required by BNSF Railroad specs.

The three turnouts to be serviced are:

- | | |
|--------------------------|-----------------------------------|
| - CTP Lead Sta 18+00 | No. 11 Turnout (Anchor Packaging) |
| - CTP Lead Sta 169+42.60 | No. 9 Turnout (Nestle Lead) |
| - CTP Lead Sta 224+79.91 | No. 9 Turnout (Frito Lay) |

F. Item No. 6 – Final Inspection

This item will be measured as a lump sum item and paid for at the lump sum price as listed in the Proposal. The lump sum price shall include the cost of any track elements that need to be addressed after the final inspection before final acceptance is granted. Once the track maintenance is complete, the Contractor shall inspect the complete trackage. All bolts shall be checked for meeting spec, or replaced if missing. Any anchors or spikes, missing or damaged, shall be replaced. All turnout's shall be inspected to ensure that bond wires and other items meet BNSF Railroad specifications for industry trackage.

* * * * *

XII. TECHNICAL SPECIFICATIONS

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TITLE

SP-1	Standard Specifications for Highway Construction Arkansas State Highway and Transportation Department, Latest Edition (including all Errata for the Book of Standard Specifications) if specified
DIV 17	Railroad Roadbed Construction
DIV 18	BNSF Railway – Guidelines for Industry Track Projects

SP-1 - SPECIFICATIONS, ARKANSAS STATE HIGHWAY COMMISSION

General

The standard specifications of the Arkansas State Highway and Transportation are bound in a book titled Standard Specifications for Highway Construction. These specifications are referred to herein as "Standard Specifications." The latest edition shall apply.

A copy of these "Standard Specifications" may be obtained from the Arkansas State Highway and Transportation Department, Little Rock, Arkansas, at their customary charge.

DIVISION 17
RAILROAD ROADBED CONSTRUCTION

1. CLEARING AND GRUBBING

1.01 DESCRIPTION

This item shall consist of clearing and grubbing, including the disposal of materials, for all areas within the limits designated on the plans or as required by the Engineer.

Clearing and grubbing shall consist of clearing the surface of the ground of the designated areas of all trees, stumps, down timber, logs, snags, brush, undergrowth, hedges, heavy growth of weeds, fences, structures, old railroad including ties and rail, debris and rubbish of any nature, natural obstruction or such material which in the opinion of the Engineer is unsuitable for the foundation of strips or other requirements, including the grubbing of stumps, roots, matted roots, foundations and the disposal from the project of all spoil materials resulting from clearing and grubbing by burning.

2. CONSTRUCTIONS METHODS

2.01 GENERAL

The areas denoted on the drawings to be cleared shall be flagged on the ground by the Engineer. The clearing and grubbing shall be done at a satisfactory distance in advance of the removal of top soil operations.

All spoil materials removed by clearing and grubbing shall be disposed of by burning, when permitted by local laws. When burning of material is permitted, it shall be burned under the constant care of competent watchmen so that the surrounding vegetation and other adjacent property will not be jeopardized. Burning shall be done in accordance with all applicable laws, ordinances and regulations. Before starting any burning operations, the Contractor shall notify the agency having jurisdiction and acquire any necessary permits.

As far as practicable, waste concrete and masonry shall be placed on slopes of embankments. When embankments are constructed of such material, this material shall be placed in accordance with requirements for formation of embankments. Any broken concrete or masonry which cannot be used in construction and all other materials not considered suitable for use elsewhere, shall be disposed of by the Contractor. In no case shall any discarded materials be left in windrows or piles adjacent to or within the construction limits. The manner and location of disposal of materials shall be subject to the approval of the Engineer and shall not create an unsightly or objectionable view.

No blasting shall be permitted in the clearing and grubbing operation.

2.02 CLEARING AND GRUBBING

In areas designated to be cleared and grubbed, all stumps, roots, buried lots, brush, weeds and other unsatisfactory shall be removed. Where embankments are to made, all unsatisfactory materials shall be removed.

CLEARING AND GRUBBING
Section 17000, Page 2

Fences shall be removed and disposed of when directed by the Engineer. Fence wire shall be neatly rolled and wire and posts stored on the site and to remain the property of the Owner.

Any building and miscellaneous structures within the cleared and grubbed area shall be demolished or removed, and all materials there from shall be disposed of either by burning or removed from the site. The remaining or existing foundations, wells, cesspools, and all like structures shall be destroyed by breaking out or breaking down of at least 2 feet below the existing surrounding ground. Any broken concrete, blocks or other objectionable material which cannot be used in backfill shall be removed and disposed of. The holes or openings shall be backfilled with acceptable material and properly compacted.

All holes remaining after the grubbing operation in embankment areas shall have the sides broken down to flatten out the slopes and shall be filled with acceptable material, moistened and properly compacted in layers to the density required in Section 17050. The same construction procedure shall be applied to all holes remaining after grubbing in excavation areas where the depth of holes exceeds the depth of the proposed excavation.

* * * * *

1. DESCRIPTION

1.01 GENERAL

This item covers excavation, disposal, placement and compaction of all materials within the limits of the work required to construct railroad roadbed, other areas for drainage or other purposes in accordance with these specifications and in conformity to the dimensions and typical section shown on the drawings.

A. Classification – All material excavated shall be unclassified. The excavation shall be used as a part of the embankment or removed from the site and disposed of at the Contractor's option. The excavation placed in the embankments shall be accomplished only with materials that are suitable and meet the requirements of these specifications.

1.02 STRIPPING

Any material containing vegetable or organic matter, organic silt or sod shall be considered unsuitable for use in embankment construction. A minimum of the top 6 inches of existing ground in both cut and embankment areas shall be stripped. Material, when approved by the Engineer as suitable to support vegetation, may be used on the embankment slopes and seed bed for side slopes.

2. CONSTRUCTION METHODS

2.01 GENERAL

Before beginning excavation, grading and embankment operations in any area, the area shall be completely cleared and grubbed in accordance with Section 17000.

The suitability of material to be placed in embankments shall be subject to approval by the Engineer. All unsuitable material shall be disposed of in waste areas shown on the drawings. All waste areas shall be graded to allow positive drainage of the area and of adjacent areas. The surface elevation of waste areas shall not extend above the surface elevation of adjacent usable areas of the roadbed, unless specified on the drawings or approved by the Engineer.

When the Contractor's excavation operations encounter artifacts of historical or archaeological significance, the operations shall excavate the site in such a manner as to preserve the artifacts encountered and allow for their removal. Such excavation will be paid for as extra work.

Those areas outside of the roadbed areas in which the top layer of soil material has become compacted, by hauling or other activities or the Contractor, shall be scarified and disked to a depth of 4 inches in order to loosen and pulverize the soil. These areas shall then have seeding and fertilization applied.

2.02 EXCAVATION

No excavation shall be started until the work has been staked out by the Contractor, and the Engineer has obtained elevations and measurements of the ground surface. All suitable

excavated material shall be used in the formation of embankment, subgrade or for other purposes shown on the drawings. All unsuitable material shall be disposed of as shown on the drawings.

When the volume of the excavation exceeds that required to construct the embankments to the grades indicated, the excess shall be used to grade the areas of ultimate development or disposed of as directed. When the volume of excavation is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be obtained from off-site borrow pits of materials that are suitable and acceptable to the Engineer.

A. Undercutting – Rock, shale, hardpan, loose rock, boulders or other materials unsatisfactory for the roadbed shall be excavated to a minimum depth of 8 inches, or to the depth specified by the Engineer, below the subgrade. Muck, matted roots or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified. Unsuitable materials shall be disposed of at locations shown on the drawings.

The excavated area shall be refilled with suitable material, obtained from the grading operations or borrow areas and thoroughly compacted by rolling. The necessary refilling will constitute a part of the embankment. Where rock cuts are made and refilled with selected material, any pockets created in the cuts are made and refilled with selected material, any pockets created in the rock surface shall be drained in accordance with the details shown on the drawings. Geo-grid use shall be determined in a case-by-case inspection.

B. Overbreak – Overbreak, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the Engineer. The Engineer shall determine if the displacement of such material was unavoidable and his decisions shall be final. All overbreak shall be graded or removed by the Contractor and disposed of as directed; however, payment will not be made for the removal and disposal of overbreak which the Engineer determines as avoidable. Unavoidable overbreak will be classified as “Unclassified Excavation”.

C. Compaction Requirements – the finished grades shall be compacted to a depth of 6 inches and to a density of not less than 95 percent of the maximum density and determined by ASTM D 1557 (Modified Proctor Test).

No payment will be made for suitable materials removed, manipulated and replaced in order to obtain the required depth of density.

The in-place field density shall be determined in accordance with ASTM D-2922 (Nuclear Method). Stones or rock fragments larger than 4 inches in their greatest dimension will not be permitted in the top 6 inches of the subgrade.

2.03 DRAINAGE EXCAVATION

Drainage excavation shall consist of excavating for drainage ditches along the roadbed, and as shown on the drawings. The work shall be performed in the proper sequence with the other construction. All satisfactory material shall be placed in fills; unsuitable material shall be placed in waste areas or as directed. Intercepting ditches shall be constructed prior to starting

adjacent excavation operations. All necessary work shall be performed to secure a finish true to line, elevation and cross section.

The Contractor shall maintain ditches constructed on the project to the required cross section and shall keep them free of debris or obstructions until the project is accepted.

2.04 SURPLUS EXCAVATION

The material excavated and not required by the construction of the embankments shall be stockpiled separately from the top soil. The surplus matter shall be stockpiled at the locations shown on the drawings. The stockpile shall be such that rain water will not pocket on the surface. The crown of the stockpile shall be sloped to provide drainage.

2.05 PREPARATION OF EMBANKMENT AREA

Where an embankment is to be constructed, all sod and vegetable matter shall be removed from the surface upon which the embankment is to be placed, and the cleared surface shall be completely broken up by plowing or scarifying to a minimum depth of 6 inches. This area shall then be compacted as indicated in paragraph 2.06.

No direct payment shall be made for the work performed under this paragraph.

2.06 FORMATION OF EMBANKMENTS

Embankments shall be formed in successive horizontal layers of not more than 8 inches in loose depth for the full width of the cross section, unless otherwise approved by the Engineer.

The grading operations shall be conducted, and the various soil strata shall be placed, to produce a soil structure as shown on the typical cross section or as directed. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated or buried in the embankment.

Operations on earthwork shall be suspended at any time when satisfactory results cannot be obtained because of rain, freezing or other unsatisfactory conditions of the field. The Contractor shall drag, blade or slope the embankment to provide proper surface drainage.

The material in the layer shall be within ± 2 percent of optimum moisture content before rolling to obtain the prescribed compaction. In order to achieve uniform moisture content throughout the layer, wetting or drying of the material and manipulation shall be required when necessary. Should the material be too wet to permit proper compaction or rolling, all work on all of the affected portions of the embankment shall be delayed until the material has dried to the required moisture content. Sprinkling of dry material to obtain the proper moisture content shall be done with approved equipment that will sufficiently distribute the water. Sufficient equipment to furnish the required water shall be available at all times. Samples of all embankment materials for testing, both before and after placement and compaction, will be taken for each 100 cubic yards. Based on these tests, the Contractor shall make the necessary corrections and adjustments in methods, materials or moisture content in order to achieve the correct embankment density.

Rolling operations shall be continued until the embankment is compacted to not less than 95 percent of maximum density as determined by ASTM D 1557 (Modified Proctor Test).

On all areas outside of the roadbed areas, no compaction will be required on the top 4 inches.

The in-place field density shall be determined in accordance with ASTM D 1556 or ASTM D 2922.

Compaction areas shall be kept separate and no layer shall be covered by another until proper density is obtained.

During construction of the embankment, the Contractor shall route his equipment at all times, both when loaded and when empty, over the layers as they are placed and shall distribute the travel evenly over the entire width of the embankment. The equipment shall be operated in such a manner that hardpan, cemented gravel, clay or other chunky soil material will be broken up into small particles and become incorporated with other materials in the layer.

In the construction of embankments, layer placement shall begin in the deepest portion of the fill; as placement progresses, layers shall be constructed approximately parallel to the finished grade line.

When rock and other embankment material are excavated at approximately the same time, the rock shall be incorporated into the outer portion of the embankment and other material shall be incorporated under the roadbed areas. Stones or fragmentary rock larger than 4 inches in their greatest dimension will not be allowed in the top 6 inches of the subgrade. Rock fill shall be brought up in layers as specified or as directed and every effort shall be exerted to fill the voids with the finer material forming a dense, compact mass. Rock boulders shall not be disposed of outside the excavation or embankment areas, except at places and the manner designated by the Engineer.

When the excavated material consists predominately of rock fragments of such size that the material cannot be placed in layers of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in layers not exceeding 2 feet in thickness. Each layer shall be leveled and smoothed with suitable leveling equipment and by distribution of spalls and finer fragments of rock. These type lifts shall not be constructed above an elevation 4 feet below the finished subgrade. Density requirements will not apply to portions of embankments constructed of materials which cannot be tested in accordance with specified methods.

Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material.

Separate measurement of payment for compacted embankment and all costs incidental to placing in layers, compacting, diskings, watering, mixing, sloping and other necessary operations for construction of embankments will be included in the unit price bid for the compacted embankment.

2.07 FINISHING AND PROTECTION OF SUBGRADE

After the subgrade has been substantially completed, the full width shall be conditioned by removing any soft or other unstable material which will not compact properly. The resulting areas and all other low areas, holes or depressions shall be brought to grade with suitable select material. Scarifying, blading, rolling and other methods shall be performed to provide a thoroughly compacted subgrade shaped to the lines and grades shown on the drawings.

Grading of the subgrade shall be performed so that it will drain readily. The Contractor shall take all precautions necessary to protect the subgrade from damage. He shall limit hauling over the finished subgrade to that which is essential for construction purposes.

All ruts or rough places that develop in a completed subgrade shall be smoothed and recompacted.

No top soil shall be placed on the subgrade side slopes until the subgrade has been accepted by the Engineer.

2.08 HAUL

All hauling will be considered a necessary and incidental part of the work. Its cost shall be considered by the Contractor and included in the contract lump sum price. No payment will be made separately or directly for hauling of any part of the work.

2.09 TOLERANCES

In those areas upon which a top soil is to be placed, the top of the subgrade shall be of such smoothness that when tested with a 16-foot straightedge applied parallel and at right angles to the centerline, it shall not show any deviation in excess of 1 inch, or shall not be more than 0.08-foot from the true grade as established by grade hubs or pins. Any deviation in excess of these amounts shall be corrected by loosening, adding or removing materials; reshaping; and recompacting by sprinkling and rolling.

2.10 TOP SOIL

The top soil shall be salvaged from stripping or other grading operations. The top soil is the surface soil containing grass and organic type materials. At the time of excavation or stripping, the top soil cannot be placed in its proper and final section or finished construction, the materials shall be stockpiled at designated locations. Stockpiles shall not be placed within the improvements area and shall not be placed on areas which subsequently will require any excavation or embankment. If, in the judgment of the Engineer, it is practical to place the salvaged top soil at the time of excavation or stripping, the material shall be placed in its final position without stockpiling or further rehandling. Upon completion of grading operations, stockpiled top soil shall be placed as required on the fore and back slopes of the roadbed.

No direct payment will be made for top soil as such under this Section. The quantity removed and placed directly or stockpiled shall be included in the unit price bid for the "Compacted Embankment".

* * * * *

1. DESCRIPTION

A. General

This item shall consist of reinforced concrete drainage pipe to be located as shown on the drawings. All concrete culverts shall be in accordance with the American Railway Engineering and Maintenance of Way Association (AREMA) specifications chapter I, part 4, Culverts.

B. Materials

a. Pipe – pipe shall be of the type, size, and class as shown on the plans.

b. Reinforced Concrete Culvert Pipe – reinforced concrete culvert pipe shall conform to the requirements of the specifications for reinforced concrete culvert pipe, ASTM C-76. Installation shall be made with circular pipe conforming to the requirements for class III, class IV, class V, R-wall or C-wall of the ASTM C-76 specification. All wall thickness to be used shall meet AREMA specifications.

c. All precast flared end sections shall conform to ASTM C-76. Toe walls required shall conform to AASHTO M-170.

1) All precast Bends, Wyes, and Tees shall comply with ASTM C-76, AASHTO M-170 or Federal Specification SS-P-375.

d. Fine and coarse aggregates for the concrete mixture shall comply with the requirements of ASTM specifications.

1) Cement shall comply with the requirements of ASTM C-150.

2) Steel shall comply with the requirements ASTM C-185.

3) Joint sealing material, plastic type, shall comply with ASTM C-990, AASHTO M-198, or Federal Specification SS-S-210A.

e. D-load design pipe shall conform to ASTM C-655.

f. Preform tape-type plastic compound shall be applied in accordance with the manufacturer's recommendations.

* * * * *

1. DESCRIPTION

GENERAL

This item shall consist of temporary control measured as shown on the drawings or as ordered by the Engineer during the life of a contract to control water pollution, soil erosion, and siltation through the use of berms, dikes, dams, sediment basins, gravel, mulches grasses, slope drains and other erosion control devices or methods.

The temporary erosion control measures contained herein shall be coordinated with the permanent erosion control measured for the Site to the extent practical to assure economical, effective and continuous erosion control throughout the construction period.

Temporary control may include work outside the construction limits such as equipment and material storage sites and waste areas.

The project will require a Construction Storm Water Permit from the Oklahoma Department of Pollution Control and Ecology. The permit will be secured by the Owner. The permit shall include the Contractor's methods of controlling the storm water discharges.

2. MATERIALS

2.01 GRASS

Grass which will not compete with the grasses sown later for permanent cover shall be a quick-growing species such as ryegrass, Italian ryegrass, or cereal grasses suitable to the area providing a temporary cover. The application method shall be by hydro-seeding.

2.02 MULCHES

Mulches may be hay, straw, netting, bark, wood chips or other suitable material reasonable clean and free of noxious weeds and deleterious materials.

2.03 FERTILIZER

Fertilizer shall be a standard commercial grade and shall conform to all Federal and State regulations and to the standards of the Association of Official Agricultural Chemists.

2.04 SLOPE DRAINS

Slope drains may be constructed of pipe, rubble or other materials that will adequately control erosion.

2.05 OTHER

All other materials shall meet commercial grade standards and shall be approved by the Engineer before incorporated into the project.

3. CONSTRUCTION REQUIREMENTS

3.01 GENERAL

In the event of conflict between these requirements and pollution control laws, rules or regulations of other Federal, State or local agencies, the more restrictive laws, rules or regulations shall apply.

The Engineer shall be responsible for assuring compliance to the extent that construction practices, construction operations and construction work are involved.

3.02 SCHEDULE

Prior to start of construction, the Contractor shall submit schedules for accomplishment of temporary and permanent erosion control work, as are applicable for clearing and grubbing; grading; construction; and ditches excavation/ The Contractor shall also submit a proposed method of erosion and dust control on haul roads and a plan for disposal of waste materials. Work shall not be started until the erosion control schedules and methods of operation for the applicable construction have been accepted by the Engineer.

3.03 AUTHORITY OF ENGINEER

The Engineer has the authority to limit the surface area of erodible earth material exposed by clearing and grubbing, to limit the surface area of erodible earth material exposed by excavation and fill operations, and to direct the Contractor to provide immediate permanent or temporary pollution control measures to minimize containment or adjacent streams or other water courses, lakes and ponds.

3.04 CONSTRUCTION DETAILS

The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the accepted schedule. Except where future construction operations will damage slopes, the protection work in stages, as soon as substantial areas of exposed slopes can be made available. Temporary erosion and pollution control measures will be used to correct conditions that develop during construction that are needed prior to installation of permanent control features or that are needed temporarily to control erosion that develops during normal construction practices but are not associated with permanent control features on the project.

Where erosion is likely to be a problem, clearing and grubbing operations should be scheduled and performed so that grading operations and permanent erosion control features can follow immediately thereafter if the project conditions permit; otherwise, temporary erosion control measures may be required between successive construction stages.

The Engineer may limit the area of clearing and grubbing, excavation, borrow and embankment operations in progress, commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding and other such permanent control measures current in

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accordance with the accepted schedule. Should seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified.

In the event that temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness or failure to install permanent controls as a part of the work as scheduled or are ordered by the Engineer, such work shall be performed by the Contractor.

The Engineer may increase or decrease the area of erodible earth material to be exposed at one time as determined by analysis of project conditions.

The erosion control features installed by the Contractor shall be acceptable maintained by the Contractor during the construction period.

Whatever construction equipment must cross water courses at frequent intervals, and such crossings will adversely affect the sediment levels, temporary structures should be provided.

Pollutants such as fuels, lubricants, bitumen, raw sewage, wash water from concrete mixing operations and other harmful materials shall not be discharged into or near rivers, streams and impoundments or into natural or manmade channels leading thereto.

* * * * *

1. INDUSTRY SUB-BALLAST

1.01 DESCRIPTION

Sub-ballast – This item shall consist of a foundation course for a typical railroad roadbed and shall be composed of either caliche, argillaceous limestone, granite, conglomerate, gravel, crushed slag or other granular materials.

1.02 MATERIAL REQUIREMENTS

The materials shall meet the requirements herein after specified. Aggregate retained on a No. 10 sieve shall consist of hard, durable particles or fragments of stone, gravel, sand or slag. Materials that break up when alternately frozen and thawed or soaked and dried shall not be used. Allowable wear, based on the Los Angeles abrasion test, shall not be greater than 50%. A higher or lower percentage of wear may be specified by the Engineer.

1.03 GRADATIONS

It is the intent of this specification that the sub-ballast shall consist of gradation as set forth in the following table:

SIEVE SIZE	2"	1"	¾"	No. 10	No. 40	No. 200
% Pass (optimum)	-100	95	67	38	21	7
% Pass (permitted)	-100	90-100	50-84	26-50	12-30	0-10

1.04 DESIGN REQUIREMENTS

Sub-ballast will be used as indicated by the following charts or as directed by the Engineer. The Contractor will furnish the Engineer with sieve results for the material to be used.

SUB-BALLAST WILL NOT BE REQUIRED WHERE SUBGRADE MATERIAL SIZES ARE NOT SMALLER THAN THE FOLLOWING GRADATIONS.

PERCENT PASSING (BY WEIGHT)	SIEVE SIZE NO. OF MESH PER/IN.	GRAIN SIZE IN MM
0 -----	200 -----	.08
20 -----	100 -----	.16
38 -----	60 -----	.26
64 -----	40 -----	.42
89 -----	20 -----	.85
100 -----	10 -----	1.08

8" OF SUB-BALLAST SHALL BE REQUIRED WHEN SUBGRADE MATERIAL SIZES ARE SMALLER THAN LISTED ABOVE, BUT NO FINER THAN THE GRADATIONS LISTED BELOW.

PERCENT PASSING (BY WEIGHT)	SIEVE SIZE NO. OF MESH PER/IN.	GRAIN SIZE IN MM
19 -----	200 -----	.08
74 -----	100 -----	.16
92 -----	60 -----	.26
100 -----	40 -----	.42

12" OF SUB-BALLAST SHALL BE REQUIRED WHEN SUBGRADE MATERIALS HAVE A GRADATION SMALLER THAN LISTED ABOVE.

1.05 CONSTRUCTION METHODS

A. Preparation of Subgrade – The roadbed shall be shaped in conformity with the typical sections shown on drawings and to the line and grades provided by the Engineer. All unstable or otherwise objectionable material shall be in an acceptable condition to receive sub-ballast material. A minimum of 6" shall be stabilized and compacted prior to placing sub-ballast.

B. Lift Thickness – The sub-ballast shall be constructed in two or more lifts of approximate equal thickness. The maximum compacted thickness of any one lift shall not exceed 6 inches and shall be compacted to not less than 95% of the maximum density and to within ±2% of the optimum moisture content as determined by ASTM D 1557.

C. Compaction – If the material is laid and compacted in more than one lift, the Contractor shall plan and coordinate his work in such a manner that the previously placed and compacted lifts be allowed ample time for curing and development of sufficient stability before vehicles hauling materials for the succeeding lifts or other heavy equipment are permitted on the sub-ballast. Prior to placing the succeeding lifts of materials, the surface of the lower lift shall be sufficiently moist to ensure a strong bond between the lifts. The edges and/or edge slopes of the sub-ballast shall be bladed or otherwise dressed to conform to the lines, grades and dimensions shown on the drawings.

* * * * *

1. DESCRIPTION

1.01 GENERAL

This item shall consist of a woven (or non-woven as required), highly durable construction fabric installed on top of the compacted subgrade for track-bed stabilization, including the functions of separation, confinement, drainage and load distribution for the sub-ballast section.

1.02 MATERIALS

The stabilization fabric shall be a woven (or non-woven as required) fabric consisting only of long chain polymeric filaments such as polypropylene, polyethylene, polyester, polyamide or polyvinylidene-chloride formed into a stable weave such that the filaments retain their relative position to each other. The fabric shall be inert to commonly encountered chemicals in the environment. The fabric shall also be stabilized against sunlight deterioration and protected against raveling by mechanically sealed edges.

A. Fabric Properties – The fabric shall conform to the properties shown below:

<u>Fabric Property</u>	<u>Test Method</u>	<u>Fabric Requirements (Min. Shpt. Avgs.)</u>
I. Resistance to Installation Stresses		
a. Grab Tensile Strength, lbs.	ASTM-D-1682-64	300
b. Grab Tensile Elongation, %	ASTM-D-1682-64	15
c. Burst Strength, psi	ASTM-D-751-68 (Diaphragm Method)	650
d. Trapezoid Tear Strength, lbs.	ASTM-D-2263-68	120
II. Performance Criteria During Service Life		
a. Equivalent Opening Size, U.S. Standard Sieve	CW-02215-77*	30-60
b. Water Permeability, k, cm/sec	H, 20 cm to 10 CM*	0.01
c. Modulus (Load at 10% Elongation), lbs.	ASTM-D-1682-64	150
d. Abrasion Resistance, lbs.	CW-02215-77*	130
e. U.V. Resistance, %	ASTM D4355 @ 500 hrs.	90
*Corps of Engineers Methods		
III. Resistance to Environmental		
a. Mildew, Rot Resistance, % Strength Retention	AATCC-30-74	100
b. Insect, Rodent Resistance, % Strength Retention	AATCC-24-74	100

Geotextile woven fabric shall be CONTECH 300C, MIRAFI 600X, or an approved equal. Non-woven shall be CONTECH C60 or approved equal. Contractor shall supply the Engineer with the appropriate submittals prior to placing final bid. Any material that failed to be received prior acceptance by the Engineer shall not be usable on the project.

2.02 Grid Material

The geo-grid material shall be punched from polypropylene sheets. The pattern shall be such as to create three equilateral directions across the material. The material shall be resistant to chemical degradation, ultra-violet light, and weathering. The apertures shall be triangular.

The geo-grid shall be a Tensar Tri-Ax TX 160 geo-grid or an approved equal.

* * * * *

BNSF RAILWAY COMPANY

GUIDELINES FOR INDUSTRY TRACK PROJECTS



Engineering Services

Track & System Design

2600 Lou Menk Drive, Fort Worth, TX 76131

July 2023



Design Guidelines for Industry Track Projects

July 2023

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1. General Procedure for Industrial Track Projects

The purpose of this chapter is to guide the process for the development of industry tracks and facilities. Buildings and tracks other than industrial need to follow BNSF's Main Line Design Guidelines for Track Projects.

1.1. Industrial Site Types: BNSF Customers should be familiar with the various site location options that are covered by these guidelines.

1.1.1. LOGISTICS PARKS

Warehouse and distribution space located at BNSF intermodal facilities. The BNSF Logistics Park strategy uses an intermodal hub to anchor distribution centers nearby, enabling us to partner with trucking companies and ocean carriers and provide streamlined supply chain solutions that connect manufacturers and retailers to their markets.

1.1.2. LOGISTICS CENTERS

BNSF-owned industrial parks that offer direct rail service. Logistics centers offer direct-rail service in multi-customer, multi-commodity business parks. These sites are rough-graded for commercial viability and ready for the customer to finish grade and construct their facilities.

1.1.3 CERTIFIED SITES

Private parks ready for development along our network and verified by a vigorous review process. BNSF's Site Certification Program identifies optimal rail-served sites and conducts in-depth reviews of ten economic development criteria to determine if the site meets BNSF's stringent readiness standards, which are intended to minimize development risks customers may face.

1.2. Customer will contact BNSF's Economic Development (ED) representative. Contact information can be found at <https://www.bnsf.com/ship-with-bnsf/rail-development/build-rail-served-facility/>.

1.3. After contacting the BNSF ED representative, the customer will be asked to provide a conceptual layout for the project. This layout should include property boundaries, existing buildings and roads, and a general location of where the proposed tracks will be located.

BNSF will consider the feasibility of constructing the project at the desired location along with operating issues related to product origins and destinations. BNSF will prepare a scaled track layout (project schematic) based on the customer's concept to ensure the desired operation meets design standards. The project schematic will identify both BNSF's and the customer's scopes of work, and then be shared with the Customer (see Appendix, page A-12 for an example). After BNSF approval of the opportunity (New Business Review) the customer will be provided a cost estimate for BNSF's track and signal work.

1.4. The Customer may use a designer or contractor of its choice to prepare the track plans. Survey on BNSF right-of-way will require the application of a temporary occupancy permit (see "Requirements for Working on BNSF Right of Way"). The project schematic should be used as a guide for preparing the industrial track plan. Plans should be complete with all the items in the "Final Track Plan Checklist" included. Questions concerning these guidelines should be directed to the BNSF Engineering representative. Customers are encouraged to reference this document, including standard plan drawings, in the construction specifications. BNSF Engineering will review and approve the track design, and if there are significant changes from the original project schematic, the plan may need to be reviewed by other BNSF departments.

1.5. BNSF Engineering will communicate directly with the Customer regarding any plan revisions. Any

revisions will be documented on the prints and communicated in writing to the Customer. BNSF Engineering will notify ED when the industrial track plan has been reviewed and approved.

- 1.6. BNSF Engineering will prepare a cost estimate, chargeable to the Customer, which includes ***BNSF's portion of track and signal construction, as well as an appropriated amount for an Inspector/Coordinator for construction monitoring purposes.*** The cost estimate does not include flagging charges as they can vary significantly based on the approach adopted by the customer's contractor. In general, BNSF will construct from point of switch to the 14-ft clearance point for manual switches, and from the point of switch to just beyond the power derail and the approach signal for powered switches. The Inspector/Coordinator will serve as a BNSF representative related to grading on BNSF R/W, utility drops, turnout installation schedules and customer track construction inspection.
- 1.7. Upon receiving the Firm Bid Cost Estimate, ED will present the formal industrial track package, including all agreements and cost proposal, to the Customer for consideration.
- 1.8. Upon Customer's acceptance of the proposal (check, fully executed agreements, and submittal of the final plans) ED will notify all concerned the project has been approved and funded.
- 1.9. The final plans must be approved by BNSF Engineering prior to the execution of the contractor's right of entry, which limits when work can start on BNSF property. Materials for BNSF's portion of the project are then ordered, work scheduled, and construction completed, which can take up to 27 weeks. Customers should note that turnout construction pads must be completed 6 weeks or more (dependent on territorial restrictions) before the target construction completion timeline to allow time to deliver, assemble, and install the turnout at the designed location.

Following is the timeline for a typical industry track project:

STAGE	ACTIVITY	START	END	TIMELINE
1	New opportunity conceptual layout request	Conceptual layout request received	Conceptual layout delivered to ED Mgr.	1 week
2	New Business Review (internal BNSF assessment)	NBR created	NBR completed	2 weeks
3	Project schematic approval & cost estimate preparation	NBR completed notification	BNSF cost estimates completed	9 weeks
4	Customer acceptance & payment	Proposal letter sent	Check deposited	9 weeks
5	Request for capital	Check deposited / CPAR approved	AFE approved	3 weeks
6	Track & signal materials ordered and delivered	AFE approved	Track and signal material delivered	17 weeks
7	Track & signal construction	Customer agreements & contracts executed	Track and signal construction complete	13 weeks
8	Engineering & Construction complete	Final customer track inspection completed	Actual project in service date entered in ESI	2 week
9	Customer moves cars into facility Project Closeout	Actual project in service date entered in ESI	CDI, CRF & Credit complete	1 week
	Total Engineering and Construction timeline			57 weeks

2. Standards for Industrial Trackage (Carload, or Non-Unit Facilities)

2.1 Roadbed: Roadbed and ballast section for industrial trackage shall conform to the special roadbed section (see Appendix, page A-13), and to the ballast material requirements on page 27.

2.2 Curvature: Usual maximum degree of curve for tracks operated on and/or maintained by BNSF shall not exceed 10° (574.69' radius). All curves are defined using the chord definition. Minimum tangent lengths between reversing curves must meet AREMA Chapter 5, Table 5-3-11. No turnouts (switches) can be placed in a curve.

Curves exceeding 10° will require review and approval from BNSF Engineering. Such curves may require mitigation measures, at BNSF's discretion:

	Carload, or Non-Unit Facilities			
Curvature	< 7°30'	7°30' to <10°	10° to 14°30'	> 14°30'
Mitigation(s) Required	None; premium fasteners preferred	Premium Fasteners	Premium Fasteners	No cars longer than 85'
			Tie integrity: Class 3 tie condition	Premium Fasteners
			Rail size per BNSF EI Table 6-2	Tie integrity: Class 5 tie condition
				Tie plate cutting/rail seat abrasion per BNSF EI 7
				Rail wear per BNSF EI 6 Table 6-1
				Rail size per BNSF EI 6 Table 6-2
				Optional:
				Gage face lubrication Top of rail friction modifier

2.3 Profile Grade: Track profile grades shall be limited to a maximum of 1.5%.

2.4 Vertical Curves: Vertical curves must be provided at break points in profile grade. The rate of change shall not exceed 2.0 in summits or sags. Vertical curves shall not extend into limits of turnout switch ties. See Appendix, pages A-47 and A-48 for BNSF's standard for vertical curves.

2.5 Track: Recommended rail section is 115-lb. or greater. See Page 26 for further information on rail sections. Hardwood ties shall be new 7" X 8" (No. 4) or 7" X 9" (No. 5), 8'-6" long, placed on 21.5" centers with a 6" ballast section. Rail anchorage shall be provided at a minimum rate of 16 anchors per 39' panel. Continuous welded rail (CWR) shall be box-anchored every other tie. Concrete ties can be spaced at 28" center to center with an 8" ballast section. CWR is recommended when using concrete ties. M-8 steel ties (8mm or 5/16" section) can be used in non-unit facility tracks and are spaced at 24" centers with 8" ballast section.

2.6 Turnouts: All main line, controlled siding and passing track turnouts will be a minimum new No. 11-141 lb. and include either a spring-rail frog or a rigid, railbound manganese frog, as specified by BNSF Engineering. For other turnouts maintained by BNSF, the size and weight will be determined dependent upon the transportation commodity, with a No. 11-141 lb. recommended, and a No. 9 - 115 lb. as the minimum (see Appendix, pages A-18 to A-35). Main line turnout switch ties shall be new and hardwood. All mainline, controlled siding and passing track turnouts and trackage are to be placed by BNSF personnel out to the 14' clearance point.

Mainline, controlled siding and passing track turnouts will require the placement of a construction pad alongside the track to allow assembly of the turnout, with no disruption to traffic. After the turnout is assembled, a track window is obtained to remove the trackage and insert the turnout. An example of a construction pad is shown in the Appendix on page A-16. For turnouts placed off of BNSF property and/or maintained by the Customer, and operated by BNSF, the recommended minimum is a No. 9 - 115 lb. All switch stands need to include a "30 Degree" handle (see Appendix, page A-37), and a target with alternating green and yellow colors indicating switch position (page A-38).

Switch heaters are required for mainline turnouts where snow and ice present operational challenges. If a power turnout requires a switch heater, the power derail will require one also. The cost estimate will include installation of the switch heaters when required.

Mainline turnouts must be placed at least 200 feet from the end of a mainline curve. Industry turnouts within the facility must be placed at least 50 feet from the end of any curve.

Minimum tangent lengths from PT of equivalent turnout curve to any curve at the heel end of a turnout shall not be less than AREMA Chapter 5, Table 5-3-11

2.7 Derails: A derail shall be placed on all tracks connecting with a main line, siding, or industrial lead. Derails protecting mainline tracks and controlled sidings shall be double switch point or sliding derail with crowder (see BNSF Standard Plan 2400) and installed so that the derailed car is directed away from BNSF trackage. Use of sliding derails must be approved by the Division GM.

A power derail is required when the mainline turnout is powered, and BNSF will install track and signal from the point of switch to the insulated joints just beyond the power derail. Derails protecting mainline tracks shall be placed a minimum of 100 feet behind the 14' clearance point and placed on tangent track where possible. Derails protecting other-than-mainline tracks shall be placed a minimum of 50 feet behind the 14' clearance point and placed on tangent track where possible. The type of derail and actual location may be determined by BNSF Operating Department requirements. A "Derail" sign needs to be placed next to the derail, BNSF Standard 3028 or otherwise approved.

2.8 Structures: Bridges, drainage structures, track hoppers, retaining walls, etc. shall be designed to carry Cooper E-80 live load with diesel impact. Structures shall be designed per American Railway Engineering and Maintenance of Way Association (AREMA) Manual chapters 1, 7, 8, or 15 as applicable, and designed by a licensed engineer. See AREMA standards for unloading pits (Chapter 15, Section 8.4). All structural plans will need to be reviewed and accepted by BNSF Engineering. Gratings covering open pits must be bolted in place.

If a project creates the need for existing structures (including BNSF's structures) to be modified, the modifications shall be accounted into the customer's scope of work of the project, subjected to BNSF's review and approval. For drainage related structures, additional information is included in "Culverts" section within the "Specifications for Construction of Industry Trackage by Private Contractor" chapter.

2.9 Road Crossings: The standard for a road crossing surface installed and maintained by the BNSF is

concrete plank (for 141-lb. rail) placed on 10-ft. switch ties. Also, ten each 10-ft. switch ties are placed on both ends of the crossing, replacing any standard crossties. For crossings installed and maintained by the Customer, a concrete plank is recommended, with a wood plank surface as acceptable (see Appendix, pages A-41 to A-43).

2.10 Clearances: BNSF will adhere to the "Clearance Requirements by State," BNSF Dwg. No. 2509, Sheet No. 2 (see Appendix, page A-44) for each state. If a state does not have its own clearances, the "BNSF Minimum Clearances Diagram," BNSF Dwg. No. 2509, Sheet No. 1 (see Appendix, page A-45) will apply. Side clearances for curves should have an additional 1-1/2" per degree of curvature. All effort should be made to provide adequate clearances. In the event clearances cannot be provided for as prescribed, warning signs will be installed and they must be illuminated at night (see Appendix, page A-46). Any clearances not meeting State or BNSF requirements must be reviewed and approved by BNSF Engineering.

All loading/unloading equipment that fouls the clearance envelope during operation must positively lock in a non-fouling position when not in use.

All new tracks constructed will maintain a minimum distance of 25 feet for track centers from any main track, controlled siding or passing track. New tracks adjacent to other tracks will maintain a minimum distance of 14 feet for track centers.

At road crossings the set-back distance for storing rail cars on multiple adjacent tracks (track centers less than 25') is 250 feet from the edge of roadway. For single tracks, the setback distance varies for each state and is regulated by the states' appropriate agencies, **but 150 feet from the edge of roadway is the minimum.** However, operating conditions may require greater distances.

2.11 Walkways: Walkways on bridges and adjacent to switches and trackage are governed by the appropriate State Public Service Commission, Railway Commission, or other State and/or Federal agencies. However, the example on page A-11 depicts requirements for most states. Walkway ballast shall be BNSF Class 2 (AREMA Size 5) and no larger than 1" in size (ballast gradation shown on page 24).

2.12 Signals and Utility Service: **Customer shall provide electrical service to BNSF property should the proposed trackwork require power for the signal facilities.** The requirement and locations will be identified by BNSF Engineering and communicated to the customer. If the service will include providing power to one or more switch heaters, a minimum of 200 Amp, Single Phase, 120/240-volt service, with meter socket and service disconnect is required. The service disconnect shall be a minimum of 200 amp, 2 pole breaker by either Cutler Hammer or Square D (QO style), with the meter socket requirement as per the power company specifications. No additional electrical panels are necessary as BNSF will take a feeder from the load side of the 200-amp service disconnect switch. The service may be either overhead or underground. All electrical installations will be made in accordance with the prevailing State/local electrical code(s), or if there is none, the current edition of the National Electrical Code will govern the installation. If an electric switch heater is not involved, 100 Amp service will be sufficient.

Customer shall also provide natural gas service to BNSF property should the proposed trackwork require the installation of one or more switch heaters. The requirement and locations will be identified by the BNSF project representative. The service shall be capable of delivering 600- 900 thousand BTUs per heater per location required. The actual pressure shall be requested from BNSF for each project specifically (typical pressure should be around 6 psi).

2.13 Inspection of Materials and Track: BNSF's Engineering representative should inspect all track materials prior to placement to avoid subsequent removal of sub-standard material. BNSF personnel will inspect the completed track before placing it into service.

2.14 General:

- 2.14.1 Loading and unloading tracks must be designed so that they are completely independent of railroad operating lines and passing tracks such that loading and unloading operations in no way interfere with train operations. Design of trackage must be approved by BNSF Engineering.
- 2.14.2 Utility installations may require a permit. Refer to "BNSF Utility Accommodation Policy" booklet (<https://www.bnsf.com/bnsf-resources/pdf/about-bnsf/utility.pdf>). Pipelines under track are to be encased per BNSF requirements. Wirelines are to be installed per BNSF requirements. Utilities within 50 feet beyond the end of track must be underground and protected as if they were under the track.
- 2.14.3 The effect on sight distance must be considered when planning construction of trackage in the vicinity of any grade crossings. The required sight distance should be determined and preserved when performing and designing for construction near any grade crossing. Less than the required sight distance will be the liability of the Customer.
- 2.14.4 Maintenance of Way Operating Rule No. 6.32.4: "Leave cars, engines, or equipment clear of road crossings and crossing signal circuits. If possible, avoid leaving cars, engines, or equipment standing closer than 250 feet from the road crossing when there is an adjacent track (<25' track centers)."
- 2.14.5 The effect on queuing distance of a crossing must be considered when planning the extension of a track across a grade crossing. The proposed plans shall not cause vehicles to be trapped in between tracks, cause vehicles to have to stop on a track while waiting in queue for a crossing to clear, or to cause excessive highway congestion by reducing the queuing distance of an existing crossing. Adding new public crossings or adding more tracks to an existing public crossing will be reviewed by BNSF Engineering and the appropriate entity with jurisdiction over the crossing (Typically the State's Department of Transportation).
- 2.14.6 An earthen berm (see Appendix, page A-17) or suitable bumping post shall be installed at the end of track. Also, a red retro-reflective marker shall be placed at the end of track.
- 2.14.7 Customer is responsible for all grading including placing all subballast up to BNSF ballast and the placement of a construction pad. BNSF rough site grading is for general commercial viability. Customer understands that they may need to perform additional grading based on customer needs for operation of their location.
- 2.14.8 Customer is to acquire any additional property required to construct grade and drainage. If the proposed trackage or facility will increase runoff onto BNSF property, a detailed drainage plan needs to be submitted for review prior to construction. Drainage should be handled in a manner as not to increase current drainage structures on BNSF property.
- 2.14.9 Contractor must not at any time foul the main line tracks. A BNSF flagman will be required, at the Contractor's expense, when working within 25 feet from centerline of the track, which would include, but not limited to, work that could foul a track, such as with a large crane, excavation activities that could undermine a track, and overhead wire work which could potentially fall onto the track. Billing for the flagman is separate from the cost for BNSF portion of the track work. Current cost for BNSF flagging is approximately

\$1,800 per day with billing based on actual charges.

2.14.10 Appropriate access must be provided for BNSF to drive an SU-40 maintenance truck(See AASHTO’s “A Policy on Geometric Design of Highways and Streets”, a.k.a. the “AASHTO Green Book”) to the proposed installations to be installed and/or maintained by BNSF or other existing BNSF infrastructure. If switch heaters are required at locations where the installation of a natural gas supply is infeasible, the access must be sufficient for refueling trucks to access the switch heater area. Depending on the location and the fuel providers of the region, refueling trucks may exceed the size of a SU-40 vehicle. Additional requirements related to the backing up of vehicles may be active in certain operating regions, which affects turnaround designs. Consult your project representative for additional region-specific requirements.

3. Standards for Unit Train/Loop Facilities

3.1 Roadbed: Roadbed and ballast section for industrial trackage shall conform to the special roadbed section (see Appendix, page A-13), and to the ballast material requirements on page 24.

3.2 Curvature: Maximum degree of curve shall not exceed 7°30' (764.49' radius). All curves are defined using the chord definition method. Minimum tangent lengths between reversing curves must meet AREMA Chapter 5, Table 5-3-11. No turnouts (switches) can be placed in a curve. Curves exceeding 7°30' will require review and approval from BNSF Engineering. Such curves may require one or more of the following mitigation measures, at BNSF's discretion:

Unit Train				
Curvature	< 7°30'	7°30' to < 10°	10° to < 14°30'	≥ 14°30'
Mitigation Required	None; premium fasteners preferred	Premium Fasteners	Premium Fasteners	No cars longer than 85'
			Tie integrity: Class 3 tie condition	Premium Fasteners
			Tie plate cutting/rail seat abrasion per BNSF EI 7	Tie integrity: Class 5 tie condition
			Rail wear per BNSF EI Table 6-1	Tie plate cutting/rail seat abrasion per BNSF EI 7
			Rail size per BNSF EI Table 6-2	Rail wear per BNSF EI Table 6-1
				Rail size per BNSF EI Table 6-2
				Optional:
				Gage face lubrication Top of rail friction modifier

3.3 Profile Grade: Track profile grades shall be limited to a maximum of 1.5%. For loop tracks, the maximum grade will be 0.5%. Other restrictions may be defined for individual projects. A flat grade (0.0%) should be maintained through loading/unloading areas, with a maximum 0.20% grade sloping downwards away from BNSF main or connecting track.

3.4 Vertical Curves: Vertical curves must be provided at break points in profile grade. The rate of change shall not exceed 1.0 in summits or 0.5 in sags. Vertical curves shall not extend into limits of turnout switch ties. See Appendix, pages A-47 and A-48 for BNSF's standard for vertical curves.

3.5 Track: For New Unit Train Facilities minimum rail section is 115-lb and continuous welded rail (CWR) is recommended. Hardwood ties shall be new 7" X 8" (No. 4) or 7" X 9" (No. 5), 8'-6" long, placed on 21.5" centers with a 6" ballast section. Rail anchorage shall be provided at a minimum rate of 16 anchors per 39' panel. Continuous welded rail (CWR) shall be box-anchored every other tie.

Concrete ties can be spaced at 28" center to center with an 8" ballast section. CWR is recommended when using concrete ties. M-10 steel ties (10mm or 13/32" section) can be used in unit facility tracks and are spaced at 24" centers with 8" ballast section.

3.6 Turnouts: All main line, controlled siding and passing track turnouts will be a minimum new No. 11-141 lb. and include either a spring-rail frog or a rigid, railbound manganese frog, as specified by BNSF Engineering. For other turnouts maintained by BNSF, a No. 11-115 lb. is the minimum (see Appendix, pages A-22 to A-33). Main line turnout switch ties shall be new and hardwood. All mainline, controlled siding and passing track turnouts and trackage are to be placed by BNSF personnel out to the 14' clearance point. All joints on the side of turnout receiving majority of traffic will be thermite welded.

Mainline, controlled siding and passing track turnouts will require the placement of a construction pad alongside the track to allow assembly of the turnout, with no disruption to traffic. After the turnout is assembled, a track window is obtained to remove the trackage and insert the turnout. An example of a construction pad is shown (see Appendix, page A-16).

For turnouts placed off of BNSF property and/or maintained by the Customer, and operated by BNSF, a No. 11 - 115 lb. turnout will be the minimum. All switch stands need to include a "30 Degree" handle (see Appendix, page A-37), and a target with alternating green and yellow colors indicating switch position (page A-38).

Switch heaters are required for mainline turnouts where snow and ice present operational challenges. If a power turnout requires a switch heater, the power derail will require one also. The cost estimate will include installation of the switch heaters when required.

Mainline turnouts must be placed at least 200 feet from the end of a mainline curve. Industry turnouts within the facility must be placed at least 100 feet from the end of any curve. Minimum tangent lengths from PT of equivalent turnout curve to any curve at the heel end of a turnout shall not be less than AREMA Chapter 5, Table 5-3-11

3.7 Derails: A derail shall be placed on all tracks connecting with a main line, siding, or industrial lead. Derails protecting mainline tracks and controlled sidings shall be double switch point or sliding derail with crowder (see BNSF Standard Plan 2400) and installed so that the derailed car is directed away from BNSF trackage. Use of sliding derails must be approved by the Division GM.

A power derail is required when the mainline turnout is powered, and BNSF will install track and signal from the point of switch to the insulated joints just beyond the power derail. Derails protecting mainline tracks shall be placed a minimum of 100 feet behind the 14' clearance point and placed on tangent track where possible. Derails protecting other-than-mainline tracks shall be placed a minimum of 50 feet behind the 14' clearance point and placed on tangent track where possible. The type of derail and actual location may be determined by BNSF Operating Department requirements. A "Derail" sign needs to be placed next to the derail, BNSF Standard 3028 or otherwise approved.

3.8 Structures: Bridges, drainage structures, track hoppers, retaining walls, etc. shall be designed to carry Cooper E-80 live load with diesel impact. Structures shall be designed per American Railway Engineering and Maintenance of Way Association (AREMA) Manual chapters 1, 7, 8, or 15 as applicable, and designed by a licensed engineer. See AREMA standards for unloading pits (Chapter 15, Section 8.4). All structural plans will need to be reviewed and accepted by BNSF Engineering. Gratings covering open pits must be bolted in place.

If a project creates the need for existing structures (including BNSF's structures) to be modified, the modifications shall be accounted into the customer's scope of work of the project, subjected to BNSF's review and approval. For drainage related structures, additional information is included in "Culverts" section within the "Specifications for Construction of Industry Trackage by Private Contractor" chapter.

- 3.9 Road Crossings:** The standard for a road crossing surface installed and maintained by the BNSF is concrete plank (for 141-lb. rail) placed on 10-ft. switch ties. Also, ten each 10-ft. switch ties are placed on both ends of the crossing, replacing any standard crossties. For crossings installed and maintained by the Customer, a concrete plank is recommended, with a wood plank surface as acceptable (see Appendix, pages A-41 to A-43).
- 3.10 Clearances:** BNSF will adhere to the "Clearance Requirements by State," BNSF Dwg. No. 2509, Sheet No. 2 (see Appendix, page A-44) for each state. If a state does not have its own clearances, the "BNSF Minimum Clearances Diagram," BNSF Dwg. No. 2509, Sheet No. 1 (see Appendix, page A-45) will apply. Side clearances for curves should have an additional 1-1/2" per degree of curvature. All effort should be made to provide adequate clearances. In the event clearances cannot be provided for as prescribed, warning signs will be installed and they must be illuminated at night (see Appendix, page A-46). Any clearances not meeting State or BNSF requirements must be reviewed and approved by BNSF Engineering.
- All loading/unloading equipment that fouls the clearance envelope during operation must positively lock in a non-fouling position when not in use.
- All new tracks constructed will maintain a minimum distance of 25 feet for track centers from any main track, controlled siding or passing track. New tracks adjacent to other tracks will maintain a minimum distance of 14 feet for track centers.
- At road crossings the set-back distance for storing rail cars on multiple adjacent tracks (track centers less than 25') is 250 feet from the edge of roadway. For single tracks, the setback distance varies for each state and is regulated by the states' appropriate agencies, **but 150 feet from the edge of roadway is the minimum.** However, operating conditions may require greater distances.
- 3.11 Walkways:** Walkways on bridges and adjacent to switches and trackage are governed by the appropriate State Public Service Commission, Railway Commission, or other State and/or Federal agencies. Due to revised FRA Airbrake and Train Handling Rules, outbound trains are required to have an airbrake inspection on both sides of the train. New shuttle projects will be required to have a minimum 13' inspection road on one side and a minimum 8.5' walkway on the other. See Appendix pages A-14 and A-15 for typical sections of roads and walkways. Walkway ballast shall be BNSF Class 2 (AREMA Size 5) and no larger than 1" in size (ballast gradation shown on page 24).
- 3.12 Signals and Utility Service:** **Customer shall provide electrical service to BNSF property should the proposed trackwork require power for the signal facilities.** The requirement and locations will be identified by BNSF Engineering and communicated to the customer. If the service is for an electric switch heater, a 200 Amp, Single Phase, 120/240-volt service, with meter socket and service disconnect is required. The service disconnect shall be a 200 amp, 2 pole breaker by either Cutler Hammer or Square D (QO style), with the meter socket requirement as per the power company specifications. No additional electrical panels are necessary as BNSF will take a feeder from the load side of the 200 amp service disconnect switch. The service may be either overhead or underground. All electrical installations will be made in accordance with the prevailing State/local electrical code(s), or if there is none, the current edition of the National Electrical Code will govern the installation. If an electric switch heater is not involved, 100 Amp service will be sufficient. **Customer shall also provide natural gas service to BNSF property should the proposed trackwork require the installation of one or more switch heaters.** The requirement and locations will be identified by the BNSF project representative. The service shall be capable of delivering 600- 900 thousand BTUs per heater per location required. The actual pressure shall be requested from BNSF for each project specifically (typical pressure should be around 6 psi).
- 3.13 Access Road:** Unless otherwise directed a road will be required that will provide access to inspect

the entire train prior to movement from the facility. Due to revised FRA Airbrake and Train Handling Rules, outbound trains are required to have an airbrake inspection on both sides of the train. New shuttle projects will be required to have a minimum 13' inspection road on one side and a minimum 8.5' walkway on the other. See Appendix pages A-14 and A-15 for typical sections of roads and walkways. A standard section with a 13-ft wide roadway is shown in the Appendix, page A-15. The roadway can be constructed using subballast materials as specified in the Grading & Embankment section of this document, page 20.

3.14 Inspection of Materials and Track: BNSF's Engineering representative should inspect all track materials prior to placement to avoid subsequent removal of sub-standard material. BNSF personnel will inspect the completed track before placing it into service.

3.15 General:

3.15.1 Loading and unloading tracks should be designed so that they are completely independent of railroad operating lines and passing tracks such that loading and unloading operations in no way interfere with train operations. Design of trackage must be approved by BNSF Engineering.

3.15.2 Utility installations may require a permit. Refer to "BNSF Utility Accommodation Policy" booklet (<https://www.bnsf.com/bnsf-resources/pdf/about-bnsf/utility.pdf>). Pipelines under track are to be encased per BNSF requirements. Wirelines are to be installed per BNSF requirements. Utilities within 50 feet beyond the end of track must be underground and protected as if they were under the track.

3.15.3 The effect on sight distance must be considered when planning construction of trackage in the vicinity of any grade crossings. The required sight distance should be determined and preserved when performing and designing for construction near any grade crossing. Less than the required sight distance will be the liability of the Customer.

Maintenance of Way Operating Rule No. 6.32.4:

"Leave cars, engines, or equipment clear of road crossings and crossing signal circuits. If possible, avoid leaving cars, engines, or equipment standing closer than 250 feet from the road crossing when there is an adjacent track (<25' track centers)."

3.15.4 The effect on queuing distance of a crossing must be considered when planning the extension of a track across a grade crossing. The proposed plans shall not cause vehicles to be trapped in between tracks, cause vehicles to have to stop on a track while waiting in queue for a crossing to clear, or to cause excessive highway congestion by reducing the queuing distance of an existing crossing. Adding new public crossings or adding more tracks to an existing public crossing will be reviewed by BNSF Engineering and the appropriate entity with jurisdiction over the crossing (Typically the State's Department of Transportation).

3.15.5 An earthen berm (see Appendix, page A-17) or suitable bumping post shall be installed at the end of track. Also, a red retro-reflective marker shall be placed at the end of track.

3.15.6 Customer is responsible for all grading including placing all subballast up to BNSF ballast and the placement of a construction pad, if required. BNSF rough site grading is for general commercial viability. Customer understands that they may need to perform additional grading based on customer needs for operation of their location.

- 3.15.7** Customer is to acquire any additional property required to construct grade and drainage. If the proposed trackage or facility will increase runoff onto BNSF property, a detailed drainage plan needs to be submitted for review prior to construction. Drainage should be handled in a manner as not to overload current drainage structures on BNSF property.
- 3.15.8** Contractor must not at any time foul the main line tracks. A BNSF flagman will be required, at the Contractor's expense, when working within 25 feet from centerline of the track, which would include, but not limited to, work that could foul a track, such as with a large crane, excavation activities that could undermine a track, and overhead wire work which could potentially fall onto the track. Billing for the flagman is separate from the cost for BNSF portion of the track work. Current cost for BNSF flagging is approximately \$1,800 per day with billing based on actual charges.
- 3.15.9** Adequate lighting must be provided for train crews working at night. Work areas near switches, gates, doors, pits and buildings should be illuminated to prevent walking/tripping hazards and allow crewmen riding rail cars to see without reliance upon a flashlight.
- 3.15.10** A track to set out bad order cars unsuitable for loading or unloading needs to be added to the overall design. Set out track should be long enough to place at least 5 rail cars and be accessible to a repair crew. A locomotive tie-up track may also need to be incorporated into the design. This need will be determined at the on-site meeting.
- 3.15.11** Appropriate access must be provided for BNSF to drive an SU-40 maintenance truck (See AASHTO's "A Policy on Geometric Design of Highways and Streets", a.k.a. the "AASHTO Green Book") to the proposed installations to be installed and/or maintained by BNSF or other existing BNSF infrastructure. If switch heaters are required at locations where the installation of a natural gas supply is infeasible, the access must be sufficient for refueling trucks to access the switch heater area. Depending on the location and the fuel providers of the region, refueling trucks may exceed the size of a SU-40 vehicle. Additional requirements related to the backing up of vehicles may be active in certain operating regions, which affects turnaround designs. Consult your project representative for additional region-specific requirements.

4. Survey and Plan Requirements

4.1 Surveying on BNSF Right of Way: In order to protect BNSF's investment of its Right of Way (ROW) and for the safety of persons coming onto BNSF property, BNSF requires all parties entering or performing work on the right-of-way to secure appropriate agreement and insurance before beginning any type of work. Please consult the BNSF project representative and the section "Requirements for Working on BNSF Right of Way" before proceeding.

4.1.1 Grading and alignment stake out and re-staking is the responsibility of the customer, including the portions to be installed by BNSF forces. **BNSF project stake out shall not include the point of intersection (PI).** All stake out locations shall be documented by photographs. We encourage marking up photographs to demonstrate the stakes' corresponding feature to minimize misunderstanding. They shall be sent to the BNSF project representative (the BNSF inspector coordinator) when completed. The stakeout guidelines listed below illustrate the various responsibilities of the customer relative to the stage of the project:

Project Stage	Pt. of Switch (PSw)	Power Switch Projects Only	
		Pt. of Derail (Derail)	Alignment
Conceptual: Allows for proper visualization of preliminary site visit.	✓		
Pad Completion: Enables crews to unload and assemble the switch at the correct locations.	✓	✓	
Pre-Install Stake Out: These staked items will be communicated to the BNSF during the pre-install meeting.	✓	✓	✓

4.1.1.1 Point of Switch: A one page document has been included in A-50 of the Appendix. This stake out shall include rail markings and center of track markings at a minimum. An offset stake is encouraged after the pad is completed. A flagger will be needed for this stake out due to the need to foul the track.

4.1.1.2 Point of Derail: BNSF will construct and install up to the entering signal for the power switch's control point for projects involving power switches. The power derail shall be marked with both a centerline feather and an offset stake. The stake out shall follow the format included in the point of switch stake out document on A-50 of the Appendix with the only difference being replacing "PSw" by the word "Derail".

4.1.1.3 Alignment: BNSF will construct and install up to the entering signal for the power switch's control point for projects involving power switches. The alignment stake out shall start from the last long tie to the entering signal's location. Stakes should be in intervals of 100' or less and should include centerline feathers and offset stakes at the edge of the pad or a location that will not be easily damaged by construction equipment.

4.2 Plan Requirements: All plans and drawings need to be prepared electronically in a CADD format.

This allows for updates to BNSF's maps and records to be done electronically. All information is to be in English units. Plan submittals should be in Adobe's Acrobat pdf format, with 11" x 17" sheet size. Plan submittals must include completed checklists (see pages 19-22). Upon approval, BNSF Engineering will revise the project schematic, if necessary.

Plan View Scale: 1" = 50'

Profile View Scale: 1" = 50' horizontal and 1" = 5' vertical

Cross Sections Scale: 1"=10' horizontal and vertical

4.2.1 BNSF Engineering Plan Submittals – Definitions

Conceptual – An alignment plan showing existing track and features along with proposed changes, and the official operating plan. This will be used for the New Business Review (NBR).

30% Design – All items from the conceptual submittal plus plan/profile sheets, cross-sections, typical sections, at-grade crossing plans, drainage plans, revisions from changes due to land and utility negotiations, and 30% structure plans. This plan will be used for the walk-thru inspection and schematic approval.

90% Design - All items from the 30% submittal plus revisions from the walk-thru inspection, culvert extensions, at-grade crossing plans, and 60% structure plans (e.g. pit plans, catwalks, and sheds).

Final Track Plan – All items in 30% and 90% with all relevant details and revisions incorporated from previous comments. Specifications and details included.

As-Built Submittal – The plan/profile sheets updated with post-construction locations as surveyed.

4.2.2 Provide an Operating Plan

Prepare a sketch (does not have to be to-scale) showing in-bound and out-bound switching plans and lengths of tracks to be used. Prepare multiple sketches to show the position of cars and locomotives at different stages of switching/loading/unloading together with a narrative describing the movements depicted by the multiple sketches.

In developing track lengths for operating plans, designers shall be aware that:

- Switches cannot be thrown unless the closest on track equipment is at least 50' from the point of switch
- Cars shall not come within 25' of the end of track bumper at any time
- Parked cars shall be at least 50' or more from the clearance point of a turnout if the other side of the turnout is to be safely used by BNSF crews.
- If a power turnout is required, industry switching cannot come within 50' of the proposed entering signal location of the control point
- If a manual turnout and derail is used, industry switching cannot come within 50' of the proposed point of derail location

Customers are encouraged to reference this document, including standard plan drawings, in the construction specifications.

Conceptual Plan Submittal Checklist:

- Furnish Milepost and Line Segment in the Title Block, along with name of Industry and date of plan preparation. Contact information for engineering firm should also be included on plans.
- BNSF Milepost location and BNSF stationing information for switches on proposed on BNSF tracks (Lat/Long information for power switch projects)
- Curvatures not exceeding 7-30 (unit train) or 10-00 (manifest) without BNSF Approval
- Design will conceptually allow grades not exceeding 0.5% on receiving/departure tracks
- Design will conceptually allow grades not exceeding 1.5% on any tracks
- Track centerline distances from BNSF mainline and for inspection roads & ATV inspection paths
- Switch sizes for all switches
- Culverts to be abandoned/extended/replaced for those under BNSF tracks
- Designated unit train receiving/departure tracks and/or manifest tracks
- Added tracks across existing BNSF at grade crossings, or additional crossings proposed across public roadways
- Additional bridges next to existing BNSF infrastructure
- Distances from proposed turnouts to existing critical BNSF infrastructure
 - To abutments of BNSF bridges
 - To the edge of BNSF crossings
 - To the closest start of BNSF curve (i.e. the distance from the spiral to the PSw/last longtie)
- Basic property limits & railroad Right of Way lines
- Graphical operating plan including but not limited to loading and unloading tracks, loop tracks, etc.
- Include a description of work to be performed by BNSF. Example: "Construct 185 track feet including a #11-141 lb. turnout from point of switch to clearance point, raise railroad pole line, adjust signals."
- Include a description of work to be performed by the contractor. Example: "Construct remaining trackage from clearance point to end, place wheel stops, install plank crossing and signs, perform all grading, install all drainage structures, install double switch point derail, provide electrical service to a point opposite the proposed switch locations."
- Include a list of track materials to be used by the contractor. Example: "115-lb continuous welded rail (CWR) on #4 new cross-ties, #11-115lb BNSF standard turnouts, 32-ft full depth timber crossing planks to be placed in new construction.
- Effective track capacities of proposed/modified tracks as measured from clear points and including any necessary setbacks (derails, clearance points such as grade crossings, end-of-track, etc.)
- For hazardous shipments, design follows AAR OT-55, "Recommended Railroad Operating Practices For Transportation of Hazardous Materials"
- Variances requested in writing in order to be approved. Only BNSF-approved variances to be shown on conceptual layout. Submit approved variances with concept plans.

30% Design Drawings Submittal Checklist:

- 30% checklist with conceptual checklist included
- Track Plan alignment included
 - Dimension from proposed BNSF switch locations to an identifiable fix object in the field (For practicality, shall be in the direction of the track)
 - Derail location stationing, left or right hand derail, and derail type
 - Crossing location(s) with stationing and width included
 - PC/PT stationing on all curves included
 - Curvature information on all curves included
 - 14.21' clearance point stationing included
 - Point of switch stationing included (PSw)
 - End of track stationing and structures included
 - Culvert/other pipe crossings included
 - Location of connection structures to existing drainage systems
- Access roadway information called out
 - Turnout pad sizes called out
 - Turnarounds/Access at turnout pad determined
- Track profile plan included
 - Vertical curves included
 - Vertical curves geometry (grade, length, PVC, PVI, PVT, rate of change, etc.)
 - Culvert/other pipe structures included on profile and cover & depth noted
 - Cover information on culvert/other pipe structures to top of subgrade & base of rail
- BNSF construction coordination sheet for power turnout projects (One page blow up sheet of pad size, signal house locations, key asset locations such as the derail and the signal locations)
- Cross section drawings with typical sections, rail and ballast gradation(s) included
- Grading limits plan
- Survey monuments/control point locations
- Utility relocates on the BNSF right-of-way with owner information
- Utility relocates off of BNSF right-of-way with owner information
- Separate sheet for each public crossing proposed / modified including information
 - Distance from turnouts to nearest crossings
 - Crossbucks locations / Lights & gates locations
 - Access roadway locations
 - Signal house locations (if applicable)

- Distance between multiple track crossings (if applicable)
- DOT # (if crossing is existing)
- Queuing distance from adjacent roadways (if applicable)
- Contour information of surrounding terrain (use light gray lines for contours)
 - At least 300' on each side parallel to the direction of the track
 - At least 100' on each side parallel to the direction of the roadway
- City, county, and governing roadway authority information

90% Design Drawings Submittal Checklist:

- 90% checklist with 30% checklist included
- Clearance submittal for all structures coming within 15' of the centerline of the closest track
- Clearance submittal for all structures crossing above any track in the facility
- Finalized drainage plan
 - Culvert extensions finalized
 - Culvert locations finalized with cover information requested in 30%
 - Line drawings for all pipe crossings/drainage structures under existing or proposed tracks that will be impacted by the project
 - Pre-project drainage pattern with pre-project terrain contours
 - Post-project drainage pattern with (if available, include post-project terrain contours)
- Finalized access roadway plan
 - Final turnout pad access routes
 - Final crossing locations internal to facility
- Structure locations included (i.e. building sheds, catwalks, etc.)
- H&H studies included in submittal (if required)
- 100% signed and sealed plans for structures included (Only structures that affects track stability or track clearance will require reviews. E.g. pit plans, shed plans, catwalks, etc.)
- Details for transitions between track sections (concrete, steel, industry, mainline)

Final Track Plan / 100% Design Plan Submittal Checklist:

- 100% checklist with 90% checklist included
 - Signage plans included
 - Sign locations included
 - Lighting plan included
 - Details included
 - Switch geometry details
 - Stand details
 - Crossing details
 - Bumper details
 - Rail weights and tie specifications
 - Reference to the specifications within the BNSF design guidelines and applicable AREMA guidelines
 - Culvert specifications
-

As-Built Record Drawing Submittal Checklist:

- Lat/Lon of actual installed BNSF switch location
- Actual installed location from an identifiable permanent structure in the field
- Alignment deviations of actual installed track
- Actual lengths of tracks and effective lengths of tracks

5. Specifications for Construction of Industrial Trackage by Private Contractor

5.1 Contractor's Responsibility: By acceptance of the contract the contractor assumes complete responsibility for construction of the work. The Contractor should understand that any work not specifically mentioned in the written specifications, but which is necessary, either directly or indirectly, for the proper carrying out of the intent thereof, shall be required and applied, and will perform all such work just as though it were particularly delineated or described. Contractor should also understand that final approval of the track for service is the prerogative of BNSF and close contact with BNSF's Engineering Representative is required. No work is to be performed on BNSF's right-of-way, or in such proximity as to interfere with BNSF's tracks or roadbed, without advance permission by BNSF, including insurance and if necessary, flagging protection.

5.2 Insurance Requirements: Contained within the Contract for Industrial Track Agreement to be executed prior to construction.

5.3 Grading & Embankment: The work covered by this section of the specifications consists of furnishing all plant, labor, material and equipment and performing all operations in connection with construction of track roadbed, including clearing and grubbing, excavation, construction of embankments and incidental items, all in accordance with the contract drawings and specifications.

The Contractor shall load, haul, spread, place and compact suitable materials in embankments and shall finish the embankments to the grade, slope and alignment as shown in the plans. Suitable materials shall consist of mineral soils free from organics, debris, and frozen materials. Embankment slopes shall be compacted and dressed to provide a uniform and dense slope. Embankments shall be built with approved materials from excavation of cuts or from borrow unless otherwise shown on the plans.

If materials unsuitable for embankments (organics, debris, brush and trees, etc.) are encountered within the areas to be excavated, or material existing below the designated subgrade in cuts or within areas on which embankments are to be placed are of such nature that stability of the roadbed will be impaired, such materials shall be removed and wasted or stockpiled for other use. Topsoil removed from embankment areas shall be spread uniformly over the embankment slopes.

Unsuitable material removed from embankment foundations or below subgrade elevation in excavation areas shall be replaced to grade with suitable material compacted as specified for embankments in these specifications.

Wherever an embankment is to be placed on or against an existing slope steeper than four horizontal to one vertical (4:1 slope), such slope shall be cut into steps as the construction of the new embankment progresses. Such steps shall each have a horizontal dimension of not less than three feet and a vertical rise of one foot.

At all times, the Contractor shall operate sufficient equipment to compact the embankment at the rate at which it is being placed. Compaction shall be accomplished by sheep's foot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment. Use construction procedures and drainage design that will provide a stable roadbed.

Each layer in embankments made up primarily of materials other than rock shall not exceed 6" in loose depth and shall be compacted to the dry density as specified hereinafter before additional layers are placed. All embankments shall be compacted to a density of not less than 95% of the maximum standard laboratory density, and not more than +4 percentage points above the optimum moisture content, unless otherwise specified on the drawings. The standard laboratory density and optimum moisture content shall be the maximum density and optimum moisture as determined in accordance with ASTM Designation: D 698 (Standard Proctor Test). Copies of soil test results shall be furnished to owner.

On top of the embankment fill, the Contractor shall place a minimum of 6 inches of granular sub-ballast which meets the above criteria and contains no material larger than that which will pass through a (3) inch square sieve. Sub-ballast shall be crushed gravel or crushed stone with a minimum 75% of the material having two fractured faces. Sub-ballast must meet the quality requirements of ASTM Designation: D 1241 and be approved by the Engineer. Additional sub-ballast may be required as determined from an engineering soil analysis.

5.4 Culverts: The minimum diameter for all culverts installed under main tracks or tracks maintained by BNSF is 36 inches. This is to accommodate regular inspection and cleaning. Culverts maintained by the Customer should be 24 inches or larger. Impacts to existing culverts shall be included in the customer's scope of the project.

Culvert extensions with a change in direction or a change in pipe section (including size) is generally not permitted. If the project involves removing/abandoning existing culverts under BNSF tracks, adding additional culverts under BNSF tracks or extending an existing culvert under BNSF tracks, a hydraulic study shall be provided to demonstrate that the post project condition will meet or exceed the existing hydraulic capacity. Projects adjacent to BNSF right-of-way with potential hydraulic impacts to BNSF will also require a hydraulic study. The hydraulic study can be waived if the project area is less than 1.0 Ac and does not have any hydraulic impact to an existing BNSF bridge/drainage structure.

Existing pipes that have to be extended will become the responsibility of the customer in installation, ownership and maintenance. If it is determined by BNSF Structures that an existing pipe cannot be extended in an acceptable manner, the cost of installing an acceptable replacement pipe shall be the responsibility of the customer. Additional guidelines related to pipe installations can be requested from your BNSF engineering project representative.

5.5 Corrugated Metal Culverts: These instructions cover the selection, installation, and fabrication of circular type zinc coated (galvanized) corrugated steel culverts for nominal diameters of 36-inch to 96-inch, inclusive. Additional protective coatings may be specified or allowed by BNSF Engineering.

Galvanized corrugated steel pipe shall be manufactured in accordance with AASHTO Specifications M 36 and M 218. All areas of surface rust on re-corrugated ends or lock seams shall be painted using the hot-dip or metallizing process.

Design, installation, and fabrication shall be in accordance with current American Railway Engineering and Maintenance of Way Association (AREMA) Specifications Chapter 1, Part 4, Culverts. Additionally, all culvert pipes shall meet the requirements shown in Table 1.

TABLE 1

<u>Nominal Diameter (Inches)</u>	<u>Nominal* Corrugation (Inches)</u>	<u>Minimum** Width of Lap (Inches)</u>	<u>Nominal Thickness (Inches)</u>	<u>Thickness U.S. Std. Gage</u>	<u>Rivet** Diameter (Inches)</u>	<u>Max. Cover</u>	<u>Min. Cover</u>
36	2-2/3 x 1/2	2	0.109	12	3/8	40'	***
42	2-2/3 X 1/2	3	0.138	10	3/8	70'	***
42	3 x 1 & 5 x 1	3	0.109	12	7/16	70'	***
48	2-2/3 x 1/2	3	0.138	10	3/8	65'	***
48	3 x 1 & 5 x 1	3	0.109	12	7/16	70'	***
54	2-2/3 x 1/2	3	0.168	8	3/8	60'	***
54	3 x 1 & 5 x 1	3	0.138	10	7/16	75'	***
60	2-2/3 x 1/2	3	0.168	8	3/8	55'	***
60	3 x 1 & 5 x 1	3	0.138	10	7/16	70'	***
66	3 X 1 & 5 X 1	3	0.138	10	7/16	60'	***
72	3 X 1 & 5 X 1	3	0.168	10	7/16	65'	***
84	3 X 1 & 5 X 1	3	0.168	8	7/16	55'	***
96	3 X 1 & 5 X 1	3	0.168	8	7/16	45'	***

* Where two types of corrugation are acceptable, the use of standard 2-2/3" x 1/2" material is preferred, if available. 5 x 1 corrugations to be used only on helical pipe.

** For riveted pipe.

Pipes 48 inches or greater in diameter shall be shop-elongated 5 percent of their diameter in a vertical direction and have lifting lugs.

*** Minimum cover to be one-half diameter of culvert pipe from top of subgrade to top of pipe.

Due to settlement of culvert pipes, cambering longitudinally is recommended to improve the flow line profile after settlement. This is accomplished by laying the upstream half of the pipe on a flatter grade than the downstream half. Riveted pipe shall be placed with the inside circumferential laps pointing downstream and with the longitudinal laps at the side. Pipes shall be installed with a camber suitable to the height of the cover over the pipe and bearing capacity of the supporting soil.

Firm support must be provided to obtain a satisfactory installation. The filling material adjacent to pipes shall be loose granular material, free from large stones, frozen lumps, cinders, or rubbish. The filling shall be deposited alternately on opposite sides of the pipe in layers not exceeding 6 inches in depth, and each layer shall be thoroughly tamped before placing the next layer. Special care shall be taken in tamping under the lower part of the pipe. For a trench installation, the backfill shall be tamped the entire width of the trench, and for surface installation it shall be tamped not less than one half the pipe diameter out from the sides of the pipe. The density of the backfill after tamping must be at least 95% of its maximum density, as determined by ASTM D 698.

Any other type or size drainage structure shall have approval of BNSF Engineering prior to installation under track locations.

5.6 Utility Crossings: Utility crossings and relocations shall conform to BNSF standards as outlined in the "BNSF Utility Accommodation Policy" (<https://www.bnsf.com/bnsf-resources/pdf/about-bnsf/utility.pdf>). Applications for utility crossings and relocations are handled by Jones, Lang, LaSalle (JLL), phone number 1- 866-498-6647. Any questions regarding utilities can be directed to the BNSF Engineering representative.

5.7 Curvature and Grades: Tracks will be staked by the customer's surveyor (under flag protection if necessary) and constructed as shown on the approved plans. Any changes to the approved design need to be reviewed by BNSF Engineering or appointed representative.

5.8 Clearances: BNSF will adhere to the "Clearance Requirements By State," BNSF Dwg. No. 2509, Sheet No. 2 (see Appendix, page A-44) for each state. If a state does not have its own clearances, the "BNSF Minimum Clearances Diagram," BNSF Dwg. No. 2509, Sheet No. 1 (see Appendix, page A-45) will apply. Side clearances for curves should have an additional 1-1/2" per degree of curvature. Warning signs will be installed for all close clearances less than standard (see Appendix, page A-46). All loading/unloading equipment that fouls the clearance envelope during operation must positively lock in a non-fouling position when not in use.

5.9 Material: BNSF's Division Engineer representative should inspect all track materials prior to placement to avoid removal of sub-standard material. BNSF personnel will also inspect the track before placing it into service.

5.9.1 Rail: For trackage maintained by the Customer the minimum acceptable rail shall be 112# section (5-1/2" base) and shall be compatible with BNSF standard rail section. For locations where trackage will be maintained by BNSF rail and fastenings shall conform to the BNSF standard rail section in use in that area. Contractor shall contact BNSF Engineering for approved section. Transition rails or compromise joints at the BNSF-Customer interface are the responsibility of the customer. Minimum length shall not be less than 39 feet except in turnouts and shall be free from defects. Rail should be minimum full ball relay rail, not exceeding 3/16-inch wear on any surface. Continuous welded rail (CWR) will need to be de-stressed as soon as possible after laying (see "Procedures for the Installation, Adjustment, Maintenance, and Inspection of CWR in Industry Tracks" Appendix, page A-1 thru A-11). CWR is recommended when using concrete ties. Thermite and flash-butt welds must be placed in crib area between ties. An abrasive rail saw will be used to cut rail—no torch-cutting.

5.9.2 Anchors: Rail anchors shall be new or reconditioned, sized to fit the rail section, and shall be provided per industrial track design criteria on pages 3 and 6. High traffic volumes or unusual grade or alignment problems may require additional anchors as determined by BNSF Engineering. Turnouts shall also be anchored.

5.9.3 Ties: Hardwood ties shall be new 7" X 8" (AREMA No. 4) or 7" X 9" (No. 5), 8'-6" long, placed on 21.5" centers. Switch ties shall have a minimum cross section of 7" x 9" and minimum lengths shall conform to applicable BNSF Standard plans. Concrete ties shall be pre-stressed, measure 11" wide at the bottom and 9" high with a length of 8' 3" and weight of 630 pounds. Concrete ties can be placed on 28" centers provided there is a minimum ballast section of 8" below the tie. Second-hand, or "3/4" concrete ties can be used after inspection and approval from the BNSF Roadmaster. When placing 3/4 ties, the damaged shoulders should be alternated from left to right sides so that they are not on the same side. Steel ties are spaced at 24" centers with 8" ballast section and can be used with timber or concrete ties. Steel ties should not be used within 200 feet of a signal circuit identified by insulated joints.

5.9.4 Turnouts (Switches, Frogs & Guardrails): For Customer installed, owned and maintained turnouts, all parts shall be new or good secondhand, with secondhand parts being free of injurious defects.

- 5.9.5 Tie Plates:** Tie plates may be new or secondhand, free of injurious defects and foreign material, conforming to AREMA Specifications, and shall fit rail being used. For rail 110# section and greater, all plates will be double-shouldered.
- 5.9.6 Joints:** New or secondhand joints, free of foreign material and without injurious defects, and with 4 or 6 bolt holes, conforming to AREMA requirements, may be furnished to fit rail section for which they are designed. Bolt holes must be drilled with proper equipment. Torch-cutting of bolt holes is not allowed. New or secondhand compromise joints of manufactured type (welded or homemade are not acceptable), free of foreign material and without injurious defects, shall be furnished and used where rail section (weight or design) changes. Rail section by weight shall not be compromised where difference in weight is in excess of 25 lbs. When this becomes necessary, a rail of some weight between the two different rail sections, in excess of 25 lbs., shall be used and the compromise made in two steps. The length of the medium-weight rail should be 39 feet where practical.
- 5.9.7 Spikes:** 5/8" x 6" cut track spikes shall be installed. All spikes shall conform to AREMA requirements.
- 5.9.8 Track Bolts & Nuts:** Track bolts and nuts shall be installed conforming to AREMA Specifications. Bolts will be correct size and length to fit rail.
- 5.9.9 Lock Washers:** One lock washer conforming to AREMA Specifications shall be installed on each track bolt.
- 5.9.10 Ballast:** Track ballast shall be BNSF Class 2 (AREMA Size 5) (1" - 3/8") unless a variance request is reviewed and approved by BNSF Engineering. For steel ties, AREMA Class 4A ballast may be used under the tie where required by the tie manufacturer. Ballast shall be free from loam, dust, and other foreign particles and shall not have less than 75% crushed particles with two or more fractured faces, unless otherwise approved by BNSF. Processed ballast shall be hard, dense, of angular particle structure, providing sharp corners and cubicle fragments and free of deleterious materials. Ballast materials shall provide high resistance to temperature changes, chemical attack, have high electrical resistance, low absorption properties and free of cementing characteristics. Materials shall have sufficient unit weight (measured in pounds per cubic foot) and have a limited amount of flat and elongated particles. Unless it meets or exceeds BNSF requirements, slag is not an approved ballast material. Walkway ballast shall be BNSF Class 2 (AREMA Size 5) (1" - 3/8").

SIZE NO.	SQ. OPENING	PERCENT PASSING									
		2 ½"	2"	1 ¾"	1 ½"	1 ¼"	1"	¾"	½"	¾"	No. 4
BNSF Class 2 (AREMA Size 5)	1" - 3/8"				100		90-100	40-75	15-35	0-15	0-5

- 5.9.11 Bumping Post:** An earthen berm (see Appendix, page A-17) or suitable bumping post, approved by the Railroad, shall be installed at the ends of tracks. Also, a red retro-reflective marker shall be placed at the end of track. Cars shall not be parked or spotted closer than 25 feet to the end of the track.
- 5.9.12 Derails:** A derail shall be placed on all tracks connecting with a main line, siding, or industrial lead. Derails protecting mainline tracks and controlled sidings shall be double switch point

or sliding derail with crowder (see BNSF Standard Plans 2400 and 2405) and installed so that the derailed car is directed away from BNSF trackage. Use of sliding derails must be approved by the Division GM. A power derail is required when the mainline turnout is powered, and BNSF will install track and signal from the point of switch to the insulated joints just beyond the power derail. Derails protecting mainline tracks shall be placed a minimum of 100 feet behind the 14' clearance point and placed on tangent track where possible. Derails protecting other-than-mainline tracks shall be placed a minimum of 50 feet behind the 14' clearance point and placed on tangent track where possible. The type of derail and actual location may be determined by BNSF Operating Department requirements. A "Derail" sign needs to be placed next to the derail. Timber ties are recommended within 50 feet of a derail.

A second derail may be required where BNSF locomotives are parked during unit train loading operations. BNSF's Operating department will determine the necessity and type. If required, placement will be 275 feet from first derail. A "Derail" sign needs to be placed next to the derail.

5.9.13 Highway Crossings: All crossings shall be approved by BNSF Engineering and local governments as to type and design, in advance of placing order. Effect on sight distance of crossings must be considered when planning construction of trackage in vicinity of public grade crossings not equipped with automatic signals.

5.9.14 Under Track Hoppers or Pits: Plans shall be approved by BNSF Engineering or authorized representative. Specifications for unloading pits are covered in the "AREMA Manual for Railway Engineering," (Chapter 15, Section 8.4). Gratings covering open pits must be bolted in place.

5.10 Track Construction

5.10.1 General: All work shall be of good quality in materials, equipment and workmanship and shall conform in every respect with the specifications and instructions.

5.10.2 Ties: Ties will be unloaded and handled in such a manner as not to damage ties, using approved handling equipment. Ties to be placed at design spacing of 21.5-inch center to center (22 ties/39 feet) for wood, and 28-inch centers for concrete, on the finished subgrade, perpendicular to center line of track with the right-hand ends of ties being parallel. Exception: On curves, align the ties to the inside of the curve. All joints are to be suspended between ties. Top surface of ties shall be clean and smooth to provide full bearing for tie plates. Lay wood ties with heartwood face down, and if not possible to determine position of the heartwood, lay the widest surface of the tie down. If spikes are pulled from any tie, hole shall be filled by driving in a treated wood tie plug the full depth of the hole. Boring or adzing of ties shall be kept to a minimum.

5.10.3 Tie Plates: Double-shouldered tie plates will be used on all ties and set in position with cant surface sloping inward, making sure they are firmly seated and have full bearing. After rails are in place, shoulder of plates shall be in full contact with outside edge of rail base.

5.10.4 Rails: Assemble joints before fastening rails to ties, using joint bars with full number of track bolts and spring washer for each bolt, first removing loose mill scale and rust from contact surfaces or joint bars and rails. In laying secondhand rail, care must be taken to rail end mismatch at the joints. Under no circumstances must rail be struck in web with tool or any metal object. The right-hand rail facing in direction of increasing construction shall be spiked

to ties, and the opposite rail shall be brought to gage of 4' 8-1/2", measured at right angles between the rails, in a place 5/8" below top of rail. A track gauge manufactured for the purpose of measuring gage should be used rather than a tape measure. Gage is to be checked at every third tie. Do not strike rail directly with a maul, either on top when driving spikes, or on side to obtain track gage. Rail shall be laid with staggered joints. Joints shall be located as nearly as possible to the middle of the opposite rails with the following variation: (a) except through turnouts, the staggering of the joints on one side shall not vary more than 6' in either direction from the center of the opposite rail.

Continuous welded rail (CWR) will need to be de-stressed as soon as possible after laying (see "Procedures for the Installation, Adjustment, Maintenance, and Inspection of CWR in Industry Tracks" Appendix, pages A-1 thru A-11). The completed "Record of Neutral Temperature of Welded Rail as Laid" form will be completed and presented to the BNSF Engineering representative at time of final track inspection.

5.10.5 Joints: If necessary to force joint bar into position, strike lower edge of bar lightly with 4-lb. maul. Do not drive bolts in place. Tighten bolts in sequence, beginning at joint center and working out to ends. Bolts are to be tightened to a range of 20,000 to 30,000 ft.-lbs. tension. If a bolt tightening machine is not used, a standard track wrench with a 42" long handle may be used. At the time of installation, rail expansion shims of softwood not over 1" width shall be placed between the ends of adjacent rails to ensure proper space allowance for expansion required by the rail temperatures in the following table, and shall be left in place:

39-ft Rail

Temperature Deg. F	Expansion
Over 85	None
66 to 85	1/16
46 to 65	1/8
26 to 45	3/16
6 to 25	1/4
Below 6	5/16

5.10.6 Bending Stock Rails: Use approved rail bending equipment. Make bends uniform and accurate for all stock rails.

5.10.7 Spiking to Wood Ties: Rails shall be spiked to every tie, using not less than 2 spikes for each rail at each tie. Drive spikes through tie plate holes into ties, located diagonally opposite each other but not less than 2" from edge of tie. Start and drive spikes vertically and square with rail. Take care to avoid slanting, bending, or causing sideways movement of spike. Each rail will be spiked with two spikes per tie plate on tangent track staggered with inside spikes to the east or north and outside spikes to the west or south. On curves a third spike is required on the gage side of the rail. Spikes should not be placed in the slots on skirted joint bars when such practice can be avoided by providing other plates with a hole pattern that will clear the skirts. When spikes are driven by machine, work shall be closely supervised to see that they are driven with hammer centered exactly over each spike head and drive spike vertically. Set stop bolt on the machine to prevent over-driving. Withdraw spikes that are incorrectly driven and fill hole by driving a tie plug to full depth of hole. Locate replacement spike at another hole in tie plate and tie.

5.10.8 Ballast and Surfacing: Raise track by means of jacks placed close enough together to prevent excessive bending of rails or strain on joint. Lift both rails simultaneously and as

uniformly as possible. Power jack may also be used. Each track raise shall not exceed 4" with ties tamped prior to additional raise.

5.10.9 Unloading and Tamping Ballast: Unload and level down ballast by most practical means, taking care not to disturb grade stakes. Perform tamping, using power tamping machines wherever possible, or manually, using approved AREMA tamping tools appropriate for type of ballast being placed. Tamp each layer of ballast from a line 15" inside each rail, on both sides of and to the ends of ties. Center area between these limits shall be filled lightly with ballast but not tamped. At turnouts and crossovers, tamp ballast uniformly for full length of ties. Tamping shall proceed simultaneously at both ends of same tie, making sure ballast is forced directly under the ties and against sides and ends of ties.

5.10.10 Finishing and Dressing: Dress ballast in conformance with dimensions shown on drawings, placing additional ballast material as necessary. When placing pavement up to the track and flush with top of rail it is important to make sure water drains away from the track. This will prevent pooling and freezing which create hazardous walking conditions. Lines should be painted 10 feet parallel to the centerline of track on both sides to serve as visual reminder of the track's foul zone. Crushed rock or fabric should be placed over the ties to keep the pavement from adhering to them. Flangeways need to be kept clean to allow wheels to contact top of rail at all times.

5.10.11 Final Inspection: After ballasting and surfacing are completed, inspect track to see that joints are tight and rail attachments to ties are secure. Customer will notify the BNSF Engineering Representative that the track work is complete and ready for inspection. The BNSF Engineering Representative will inspect the finished track work and complete the Project Closeout Checklist (not included in this document). Civil and Track items to be inspected are included in a list in the next section. The Contractor will provide a copy of the "Record of Neutral Temp of Welded Rail as Laid" form to the BNSF Engineering Representative prior to or during inspection. After the BNSF Engineering Representative's approval, the track will be placed in service by the Division's General Manager and can then accept rail cars. Rail cars delivered to site before the track is in service will be stored at another location at an additional cost to the customer or returned to origination point.

5.11 Miscellaneous

5.11.1 Fencing and Gates: Gates and fences must be grounded in accordance with National Electric Safety Code requirements to prevent an injury resulting from an electrical charge. Gates crossing tracks must have the ability to lock in the open position during train operations. If a fence parallel to a track has an angled piece at the top with security wire it must not foul the clearance envelope of the track.

5.11.2 Signage: All BNSF-required signage must be shown on the plans and installed during construction.

6. Acceptance

CIVIL
All slopes meet design plans
Drainage ditches drain properly
All access roads and Inspection Paths completed
All drainage devices (Culverts, Catch Basins, etc.) Installed as per the plans
All abandoned culverts properly sealed, filled, and communicated to Structures and RIS
Gates/fences installed per plans and are appropriately locked
Paving and grading for disturbed crossings completed per plan
Grade crossing roadway markings established per crossing agreement
Temporary road crossings removed, and proper drainage established
Temporary traffic controls removed
All structures placed according to the design plans
All clearances meet the design plans
Full and proper seeding completed

TRACK
All rail joints identified as part of the project scope are welded
Record of target neutral temperature recorded for CWR as laid
Destressing completed
Site cleaned and scrap rail and ties stockpiled
Track surfaced to design plans
Placed ballast meets design standards
Switch stands dressed properly with walkway ballast
All turnouts installed as per the plans
Targets installed and properly oriented
Derails installed in proper locations and positions with appropriate locks
Insulated Joints installed per plan (with 10ft ties and correct plates installed)
All retired insulated joints identified by project scope have been removed (OS, Intermediates, and Turnouts)
All crossings installed according to plans
Crossing approaches paved/graded to provide a smooth transition (if performed by track)
All signage has been installed per plan (Track, road crossings, etc.)
All track work completed to plan

7. Requirements for Working on BNSF Right of Way

In order to protect BNSF's investment in its right-of-way and for the safety of persons coming onto BNSF property, BNSF has established certain requirements. The following constitute minimum requirements for Contractors, Consultants and Surveyors coming on or near BNSF right-of-way. Contractors are encouraged to develop their own safety rules that meet or exceed the following requirements. A web site has been set up to assist in preparation of a safety plan <http://www.bnsfcontractor.com/> (or contractororientation.com). Registering on the web site and completing the course is a requirement prior to occupying or working on BNSF right-of-way.

The orientation does not relieve the contractor from the need to secure appropriate flagging protection when working close to BNSF tracks. Flaggers are required whenever there is a potential for men, structures, materials or equipment to enter within 25' of BNSF tracks. See the list below for additional guidance. If in doubt, take the safe course and request a flagger.

It shall be noted that these requirements are complementary to the contractor's right of entry agreement to be executed by the contractor prior to starting work on BNSF right-of-way and is not intended to waive any terms within the right of entry agreement. The permission to work and enter the BNSF right-of-way can be taken away at any time if BNSF deems the contractor's behavior not meeting or exceeding the safety vision of how BNSF intends to have work performed on its right-of-way.

- 7.1** All permits and agreements must be in effect, required payments made, and insurance certificates received and approved prior to Contractor entering BNSF right-of-way. All of these documents are included in the packet containing the cost proposal. Prior to performing the preliminary survey, the consultant/surveyor will obtain a "Temporary Occupancy Permit". To obtain a permit contact Jones, Lang, LaSalle (JLL), phone number 1-866-498-6647, or follow the relevant instructions online (<http://bnsf.railpermitting.com>). The permit requires a preparation fee and some lead time. Copies of all documents should be kept on the job site.
- 7.2** Flagging requests shall be made at least 30 days prior to the start of flagging.
- 7.3** Flagging requests cancelled less than 2 days in advance may still be charged to the customer.
- 7.4** Any de-watering utilizing drains or ditches on BNSF property must be approved by BNSF Engineering.
- 7.5** Contractor must have BNSF-approved "Final Construction Plans" prior to commencing work on a project or will be proceeding work at their own risk. No change will be made to "Final Construction Plans" without approval by all parties involved. Approved revised plan will be furnished to all parties prior to implementation of changes.
- 7.6** Road Authority or Contractor will be responsible for all costs for track work, including flagging, etc., made necessary due to their construction operation.
- 7.7** Pursuant to BNSF safety rules, flagging protection is always required when equipment crosses or is working within 25 feet of center of any track. When deemed necessary by BNSF, a flagman may be required at all times while working on BNSF right-of-way.
- 7.8** Crossing of any railroad tracks must be done at approved locations and must be over full depth timbers, rubber, etc. Any equipment with steel wheels, lugs, or tracks must not cross steel rails

without aid of rubber tires or other approved protection and proper flagging will be required.

- 7.9** All temporary construction crossings must be covered by a "Private Roadway & Crossing Agreement," and must be barricaded when not in use.
- 7.10** Contractor must furnish details on how work will be performed that may affect existing drainage and/or possible fouling of track ballast as well as removal of overhead bridges/structures. (Structures and bridge spans over tracks must be removed intact.)
- 7.11** Absolutely no piling of construction materials or any other material, including dirt, sand, etc., within 25 feet of any track or on property of BNSF not covered by construction easement, permit, lease or agreement.
- 7.12** Storage of materials, temporary structures, equipment and etc. shall not be within 250 feet of a public grade crossing. If material haul routes involve crossing a BNSF crossing or traversing a considerable distance parallel to a BNSF track, a trucking coordinator provided by the contractor will be required. Contractors shall supply a radio for communications between the railroad flagger and the roadway flagger/coordinator to ensure activities such as dumping/unloading/other activities that can foul the main will stop until the train has completely passed.
- 7.13** A 10-foot clear area on both sides of a main track must remain unobstructed at all times to allow for stopped train inspection.
- 7.14** No construction will be allowed within 25 feet of center of any track unless authorized by BNSF and as shown on Final Plan approved by the Railroad. This includes any excavation, slope encroachment and driving of sheet piles.
- 7.15** No vehicles or machines should remain unattended within 25 feet of any track. All machines will be disabled with as much potential energy released as practicable and locked out when not in use to prevent unauthorized operation. (e.g. A mobile crane that has to be left on the BNSF right-of-way will have to be boomed down, with outriggers disengaged.)
- 7.16** IMPORTANT: Non-compliance to any of these items and requirements within the right-of-entry agreement could result in the job being shut down. The contractor/consultant/surveyor will then be prohibited from working on BNSF right-of-way while the infraction is investigated. Based on findings of the investigation, BNSF will determine whether the non-compliant entity/entities will be allowed to continue its work on BNSF rights-of-way in the future.
- 7.17** Contractor safety rules, including rules regarding Personal Safety Equipment, must not conflict with BNSF safety policies. Contractor's personnel will complete BNSF's safety orientation prior to entering BNSF property. A job safety briefing will be held prior to beginning work each day and any time work conditions change. All personnel will wear proper personal protective equipment (PPE) while on BNSF property. Any person working on BNSF property may be subjected to a safety audit by BNSF personnel and is required to comply with the audit. The results of the audit will be presented to the contractor's supervisor immediately upon completion. Any questions regarding safety should be directed to the BNSF project representative.

APPENDIX



Procedures for the Installation, Adjustment, Maintenance, and Inspection of CWR as Required by CFR 213.118 Effective Date March 4, 2021

Materials contained within this document are excerpts from BNSF's Engineering Instructions, and the EI chapter numbers and references are retained. Sections unrelated to construction of industry tracks have been removed.

This document details the Railroad's policy on installing, adjusting, maintaining, and inspecting Continuous Welded Rail (CWR) track. Each chapter details how the Railroad applies its standards and procedures to comply with FRA standards. The procedures listed in this document apply to CWR on all main tracks, sidings, and other tracks over which trains operate at speeds above Class 1.

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Procedures for the Installation, Adjustment, Maintenance, and Inspection of CWR as Required by 49 CFR 213.118

This document details the BNSF Railway's policy on installing, adjusting, maintaining, and inspecting Continuous Welded Rail (CWR) track. Each chapter details how the Railroad applies its standards and procedures to comply with FRA standards. The procedures listed in this document apply to CWR on all main tracks, sidings, and other tracks over which trains operate.

Chapter 1 CWR Installation Procedures

Rail length that exceeds 400 feet is considered CWR. Rail installed as CWR remains CWR, regardless of whether a joint or plug is installed into the rail at a later time. Temperature variations affect rail length. Rail expands (lengthens) when heated and contracts (shortens) when cooled.

1.1 Neutral Temperature

The neutral temperature is the temperature at which a rail is neither in tension nor compression. Target Neutral Temperatures (TNTs) have been established to provide a specific desired neutral temperature to prevent track buckling. When laying or adjusting CWR, use Figure 1.1 *Target Rail Laying Temperatures*. Within tunnels greater than 800 feet in length rail shall be installed and maintained at tunnel ambient temperature instead.

1.2 Temperature Differential

The difference between the Target Neutral Temperature and the actual rail temperature taken at the time of installation is called the temperature differential. CWR laying and adjusting procedures have been established to compensate for this temperature difference.

1.3 Installing CWR

Follow these general requirements when laying CWR:

- Install rail with a neutral temperature within the safe zone defined as Target Neutral Temperature (TNT) $\pm 20^{\circ}\text{F}$ for that location. Refer to Target Rail Laying Temperatures (Chapter 1.1) for the target rail laying temperature for your location.
- Establish one or more measurement stations no greater than 400 feet apart. Take the initial rail temperature and calculate the expansion required at each station before making adjustment.
- Use rail heaters or rail expanders to adjust the rail to the correct length when the actual rail temperature is less than the Target Neutral Temperature. Heat the rail evenly and uniformly so that the rail expansion occurs evenly and uniformly throughout its length.

- For each measurement station record the initial rail temperature, the final adjusted rail neutral temperature, location, and date.
- If rail is not installed within the safe zone, be guided by section 3.1 of these CWR procedures for protection and future adjustment.

Exception: if actual rail temperature results in rail being installed at a neutral temperature above the safe zone, the rail does not need to be subsequently adjusted unless evaluation of location identifies conditions significantly reducing lateral strength or longitudinal restraint – record a work order for subsequent readjustment if such conditions are identified.

- When tight rail conditions exist, be governed by Chapter 7.1 of these procedures.

Chapter 2 Rail Anchoring Requirements

Where the anchoring function is otherwise provided by elastic fasteners, rail anchors may be omitted. Anchors should not be applied where they will interfere with signal or other track appliances, where they are inaccessible for adjustment or inspection, or on rail opposite a joint. Anchor pattern may be varied as reasonable to avoid placing anchors against deteriorated ties.

Installation

The following anchoring requirements apply to CWR installations on all main tracks, sidings, and other tracks over which trains operate.

2.1 Standard Box Pattern

When installing CWR, box anchor every other tie except as outlined in Chapter 2.2 of these CWR procedures.

2.2 Solid Box Pattern

When installing CWR, box anchor every sound (effective) tie at specific locations listed in the table below to provide additional restraint against rail movement.

Condition	Action
Turnouts*, Crossing Frogs, Open-Deck Bridges, and where CWR abuts bolted rail	Anchor every tie for 195 feet in each direction.
Bolted joint created during CWR installation/construction	Within 60 days from date of creation: Weld joint, OR Install joint with 6 bolts, OR Anchor every tie for 195' in both directions.

*For turnouts connected to Class 1 yard or back tracks, it is only necessary to anchor every tie to the first transition rails/joints of the diverging route.

2.3 Bridge Pattern

When installing CWR, follow these bridge anchoring requirements:

1. Ballast deck bridges should be anchored with the same pattern as in Chapter 2.1 and 2.2 of these CWR Procedures.
2. Open-deck bridge spans should be anchored as follows:
 - On open-deck timber bridges, apply anchors to all ties fastened to the stringers.
 - On open-deck steel spans 150 feet long or less, apply anchors to all ties fastened to the steelstructure.
 - On all other structures, apply anchors as directed by the Director Bridge Engineering

Maintenance or Rail Repair

2.4 Legacy Patterns

On CWR installations completed before September 21, 1998, existing anchoring may remain if rail is restrained to prevent track buckles. Rail must be adjusted (by increasing or decreasing the length of rail or by lining curves) or anchors added to rail, if restraint is not sufficient.

2.5 Anchor Requirements After Rail Repair

When rail repairs result in a joint added to CWR, the anchor pattern shall match the existing pattern in track. Box anchor at least every other tie for a distance of 195 feet in each direction, unless anchoring is otherwise provided. When making repairs to a stripped joint or failed joint bar, adjust or add anchors as prescribed in the following table.

Condition	Action
Bolted joint in CWR experiencing service failure (stripped joint) or failed bar(s) with gap* present. *gap exists if it cannot be closed by drift pin.	<ol style="list-style-type: none"> 1. Weld joint, OR 2. Remediate joint conditions (per Chapter 6.5 CWR) and replace bolts (new, in-kind or stronger), and weld joint within 30 days, OR 3. Replace failed bar(s), install 2 additional bolts, and adjust anchors OR 4. Replace bars, bolts (if failed or missing) and anchor every tie for 195' in both directions OR 5. Add rail (documenting provisions for later adjustments, if applicable) and reapply anchors.

Chapter 3 Preventive Maintenance on Existing CWR Track

Performing track buckling preventive maintenance procedures to properly maintain the RNT reduces the risk of buckles in hot weather as well as pull-a parts and broken rails in cold weather. When tight rail conditions exist, be governed by Chapter 7.1 of these CWR Procedures.

3.1 Maintaining Desired Rail Installation Temperature Range

A record of rail neutral temperature will be maintained where rail has pulled apart, broken, or been cut.

Rail that has pulled apart, broken, or has been cut must be adjusted into a safe zone defined as the Target Neutral Temperature (TNT) $\pm 20^{\circ}$ F for that location. Refer to Target Rail Laying Temperatures (Chapter 1.1 above) for the TNT for your location.

Exception: if actual rail temperature results in a rail neutral temperature above the safe zone, the rail does not need to be subsequently adjusted unless evaluation of location identifies conditions significantly reducing lateral strength or longitudinal restraint – record a work order for subsequent readjustment if such conditions are identified.

If the rail has not been readjusted prior to the rail temperature exceeding the values in the table below, a speed restriction not to exceed 25 MPH will be placed. A speed restriction of 40 MPH can be placed in lieu of the 25 MPH, but the track must be inspected daily during the heat of the day. As you can see from the table below, if the rail temperature at the time of break or pull-apart exceeded 60° F, no slow order is necessary.

Rail Temperature Recorded at Time of Break or Pull-Apart ($^{\circ}$ F)	Readjust or Place Slow Order Before Rail Temperature Reaches ($^{\circ}$ F)
60	135
50	130
40	125
30	120
20	115
10	110
0	105
-10	100
-20	95
-30	90
-40	85

Note: If both rails are cut (e.g., installing a short track panel), the above table will not apply. The adjustments, slow orders, and inspections described above will instead apply at a rail temperature 70° F above lowest rail temperature at time of separations.

Effective January 1, 2010, locations where the neutral temperature has been lowered below the safe zone must be adjusted to TNT minus 20° F or higher within 365 days or restrict to a speed not exceeding 15 mph and when rail temperatures exceed TNT- 20° F inspect weekly.

The Electronic Task Reporting System (ETRS) will automatically monitor all reported CWR attributes to ensure a location is restored to within its safe zone. If an area is not restored, a CWR Adjustment order will be generated.

If a CWR Adjustment order does not exist for a location, the pull chart or CWR calculator

may be used to determine the amount of rail to remove. If a CWR Adjustment order exists for a location, either remove the required amount shown or destress the location.

Use match marks to determine GAP and Pull values to report in ETRS for each CWR adjustment work activity. Use existing match marks vs creating new ones whenever possible. Match marks should be:

- Made outside of the rail section to be repaired or removed.
- On the field side of the rail using a ball-point paint marker
- A sufficient distance from any planned cuts or drilled holes in the rail to allow room for rail joint and weld documentation
- A whole number of feet apart
- If placing the original match marks, write the original distance between the match marks on the web of the rail next to both match marks. The markings should not be between the match marks.
 - If the rail is not broken/cut, simply measure the distance between the two match marks before cutting the rail
 - If the rail is broken, measure a whole foot distance from each rail end and place the match mark. Double that distance when writing the original match mark distance on the rail.

Follow these steps to determine GAP and PULL.

1. Prior to any work occurring, measure the starting distance between the match marks
2. Determine rail end movement and rail temp at time of repair as follows:
 - a. Amount rail moves apart at cut/break = + Gap
 - b. Amount rail grows together on its own at cut/break = - GAP
 - c. Amount rail pulls together as result of work (puller, rail consumption for weld, etc) = PULL
 - d. Rail temp is taken at the time of the initial cut or when the repairs are made for a broken rail
3. If the repair includes a weld(s), trim the necessary amount of rail so that no rail is added as a result of the welds. Since the match marks do not move (example: trim 1" and add back in 1" of rail with the weld), this is not recorded as a GAP or a PULL.

Document on the field side of the rail using ball-point paint marker - Rail Temperature, Gap, Pull, Date

Record in ETRS Rail Temperature, Date, Location, Gap, Pull. If work not performed under an existing CWR Adjustment Order also record Tie and anchor or fastener method, Track Strength.

3.2 Destressing Rail

Rail can be destressed by cutting rail out. When cutting rail out, use this procedure:

1. Cut rail to be destressed.
2. Remove or reposition anchors or clips for a minimum of 200 feet in both directions from the cut

or up to a restriction that prevents rail movement.

3. Wait until the rails stop moving. The rail ends may need to be trimmed more than one time to allow for expansion.
4. Make match marks on either side of the cut after the unrestrained rail is relaxed.
5. Take the rail temperature (far enough away from the cut so that the reading is not affected by the cutting procedure).
6. Use Table 6-3 in the Appendix of these CWR Procedures to compare the rail temperature with the Target Neutral Temperature (TNT) for the territory. The difference between the two is known as the temperature differential.
7. If the actual rail temperature is lower than the TNT for the territory, use Table 6-3, in the Appendix to determine the rail length to be removed based on the total distance the anchors or clips have been removed.
8. If the rail temperature is at or above the TNT, no additional adjustments are needed. When destressing rail near fixed objects, destress each rail to a temperature that is 10 degrees higher than the TNT.
9. Weld the joint or apply joint bars.
10. Replace the rail anchors or clips.
11. Document on the rail match marks, employee name, date work performed, rail temperature at time of adjustment, amount of rail added or removed (PULL) per Table 6-3 (see Page 11), and feet of rail adjusted.

Chapter 9 Recordkeeping

9.1 Report of CWR Installations

The initial rail temperature, final adjusted rail neutral temperature, location, and date of CWR installations must be recorded and must be retained for at least one year after installation.

9.2 Report Maintenance Work in CWR

Because track maintenance can disturb the lateral and longitudinal resistance of the track, records of the following must be kept for at least one year after corrections or adjustments are made:

- Record of each designated cut or break location using the adjustment methodology of Chapter 3.1, including location, rail temperature, date, rail adjustments, and final Rail Neutral Temperature.
- Record of each designated cut or break location using Destressing Rail in Chapter 3.2, including the rail temperature of the final RNT.
- Where a curve has been staked and has shifted inward more than a maximum of 2 inches.
- CWR installation or maintenance work that does not conform to these written procedures.

The Division Engineer and Roadmaster must monitor these records to ensure that necessary corrections and adjustments are made.

Appendix

Table 6-3. Change in Length of Welded Rail to Change Neutral Temperature.

Temp. Diff. (°F)	Length of Unrestrained Rail							
	200'	400'	600'	800'	1,000'	1,200'	1,400'	1,600'
5°	1/8"	1/4"	1/4"	1/4"	1/2"	1/2"	1/2"	1/2"
10°	1/8"	1/4"	1/2"	1/2"	3/4"	1"	1"	1-1/4"
15°	1/4"	1/2"	3/4"	1"	1-1/4"	1-1/2"	1-3/4"	1-3/4"
20°	1/4"	1/2"	1"	1-1/4"	1-1/2"	1-3/4"	2-1/4"	2-1/2"
25°	3/8"	3/4"	1-1/4"	1-1/2"	2"	2-1/4"	2-3/4"	3"
30°	1/2"	1"	1-1/2"	1-3/4"	2-1/4"	2-3/4"	3-1/4"	3-3/4"
35°	1/2"	1"	1-3/4"	2-1/4"	2-3/4"	3-1/4"	3-3/4"	4-1/4"
40°	5/8"	1-1/4"	1-3/4"	2-1/2"	3"	3-3/4"	4-1/4"	5"
45°	3/4"	1-1/2"	2"	2-3/4"	3-1/2"	4-1/4"	5"	5-1/2"
50°	3/4"	1-1/2"	2-1/4"	3"	4"	4-3/4"	5-1/2"	6-1/4"
55°	7/8"	1-3/4"	2-1/2"	3-1/2"	4-1/4"	5-1/4"	6"	6-3/4"
60°	7/8"	1-3/4"	2-3/4"	3-3/4"	4-3/4"	5-1/2"	6-1/2"	7-1/2"
65°	1"	2"	3"	4"	5"	6"	7"	8"
70°	1-1/8"	2-1/4"	3-1/4"	4-1/4"	5-1/2"	6-1/2"	7-3/4"	8-3/4"
75°	1-1/8"	2-1/4"	3-1/2"	4-3/4"	5-3/4"	7"	8-1/4"	9-1/4"
80°	1-1/4"	2-1/2"	3-3/4"	5"	6-1/4"	7-1/2"	8-3/4"	10"
85°	1-3/8"	2-3/4"	4"	5-1/4"	6-3/4"	8"	9-1/4"	10-1/2"
90°	1-3/8"	2-3/4"	4-1/4"	5-1/2"	7"	8-1/2"	9-3/4"	11-1/4"
95°	1-1/2"	3"	4-1/2"	6"	7-1/2"	9"	10-1/4"	11-3/4"
100°	1-1/2"	3"	4-3/4"	6-1/4"	7-3/4"	9-1/4"	11"	12-1/2"

Note: The above amounts do not allow for rail added during thermite welding nor rail removed in upset during flash-butt welding.

LEGEND:

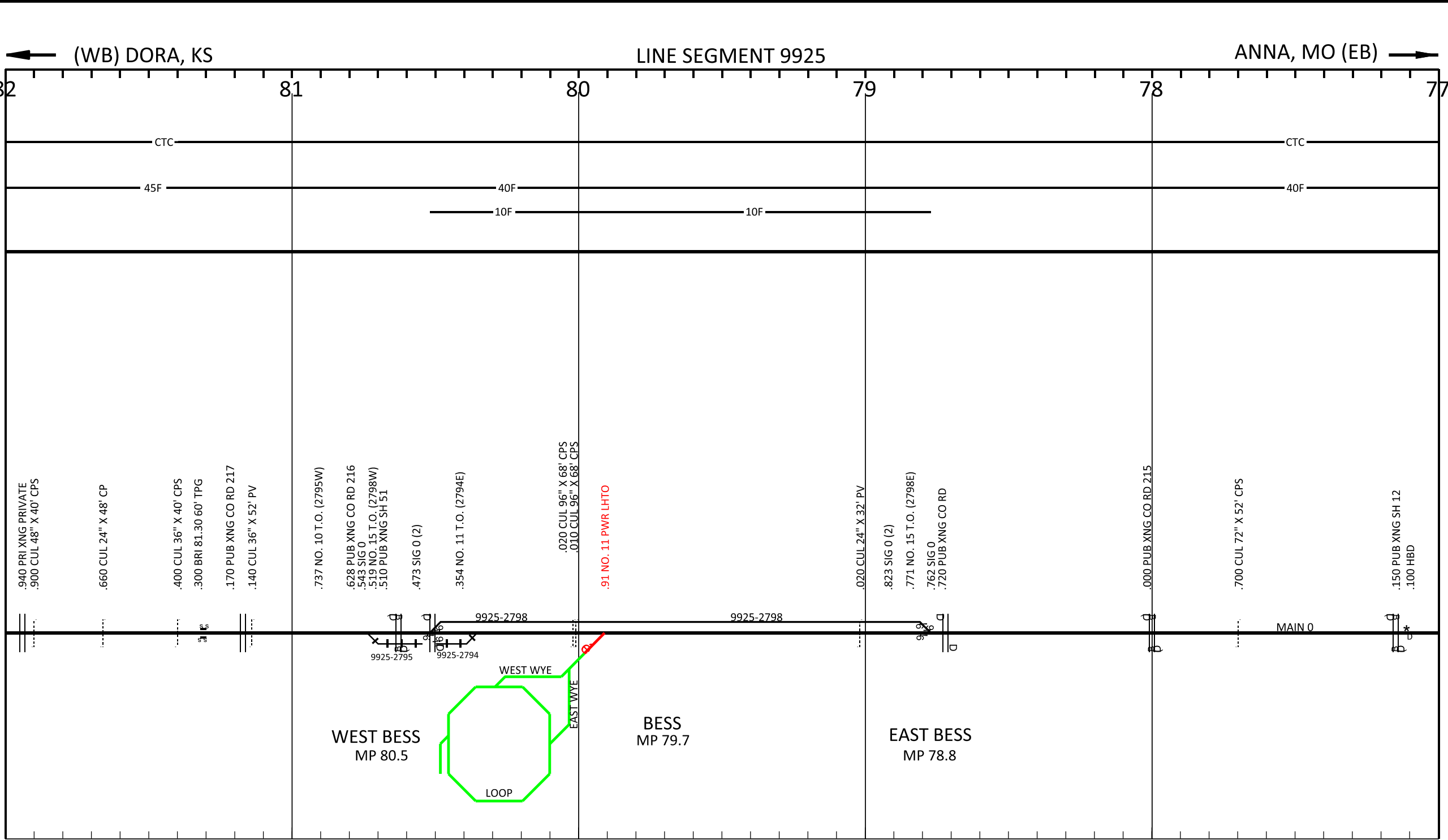
- EXISTING TRACK
- CONSTRUCT - BNSF
- CONSTRUCT - INDUSTRY
- REMOVE
- UPGRADE TRACK
- FOREIGN RAILROAD
- NEW ACCESS ROAD
- POTENTIAL ADDITIONAL ROW
- SOLD ROW
- CTC REVISED OPERATION
- P79 F50 REVISED SPEED

CUSTOMER WORK:
 INSTALL 2 NO. 11 RHTO
 INSTALL 2 NO. 11 LHTO
 CONSTRUCT 10,919 TF

BNSF WORK:
 INSTALL 1 NO. 11 PWR LHTO
 INSTALL 1 PWR DSPD
 CONSTRUCT 285 TF

CLEAR LENGTHS:
 WEST WYE TRACK - 1,490'
 EAST WYE TRACK - 1,197'
 LOOP TRACK - 6,002'
 BAD ORDER TRACK - 300'

CONCEPTUAL DRAWING ONLY!
 THIS LAYOUT HAS NOT BEEN
 ENGINEERED AND NEEDS TO BE
 VERIFIED BY FIELD SURVEY



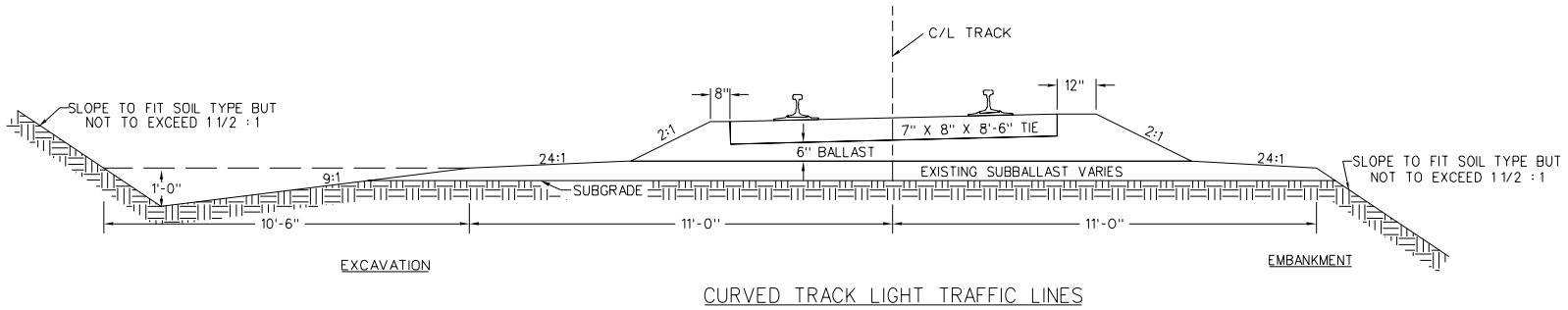
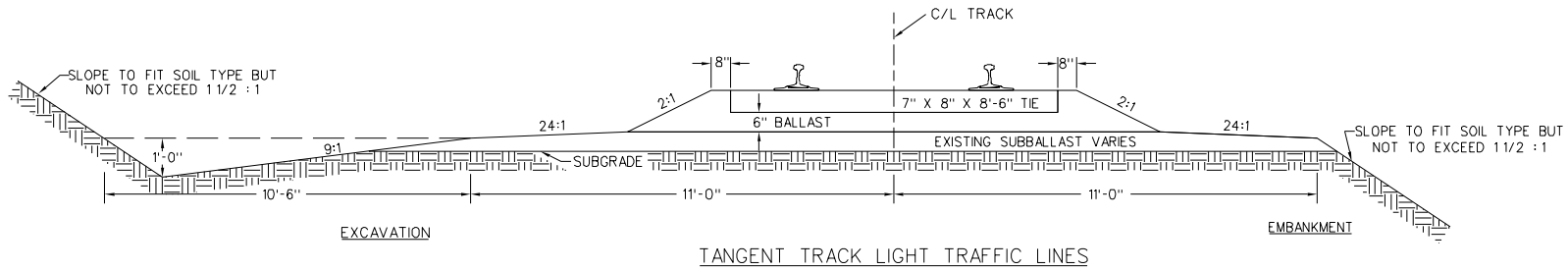
APPROVALS - (NAME - TITLE)	DATE	APPROVALS - (NAME - TITLE)	DATE

DRAWN	CHECKED	BNSF RAILWAY COMPANY - ENGINEERING SERVICES	SF NO.	CS NO.	STATUS <i>PRELIMINARY</i>
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CENTRAL DIVISION SAMPLE SUBDIVISION LINE SEGMENT 9925			
REVISIONS			
NO.	DESCRIPTION	DATE	BY

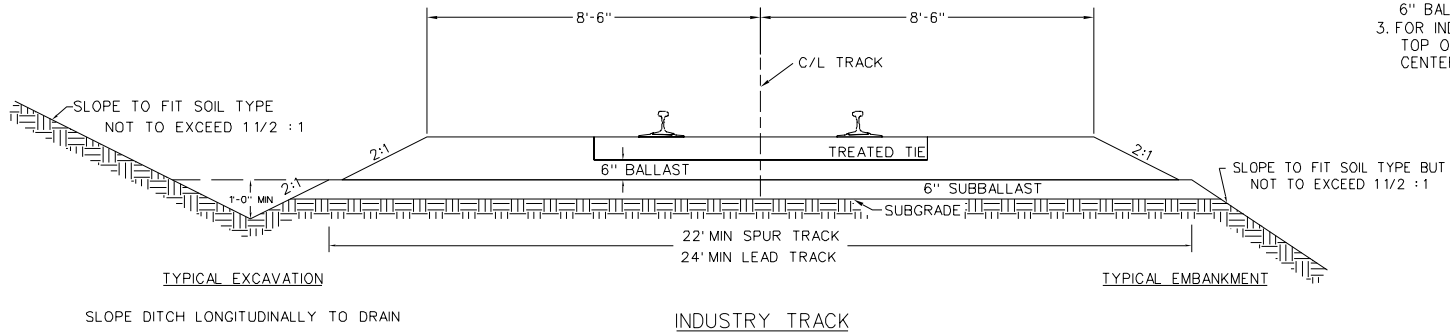
**NEW AG LOOP FACILITY
BESS, KS**

FILE:	SHEET 1 OF 1	DATE: 4/04/2017
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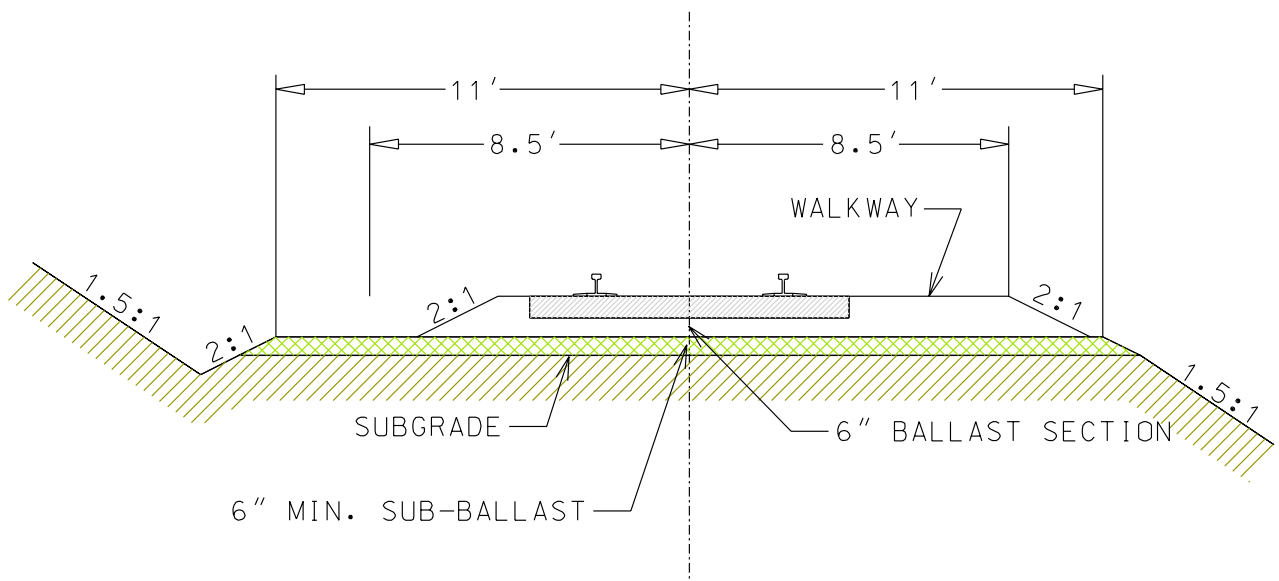
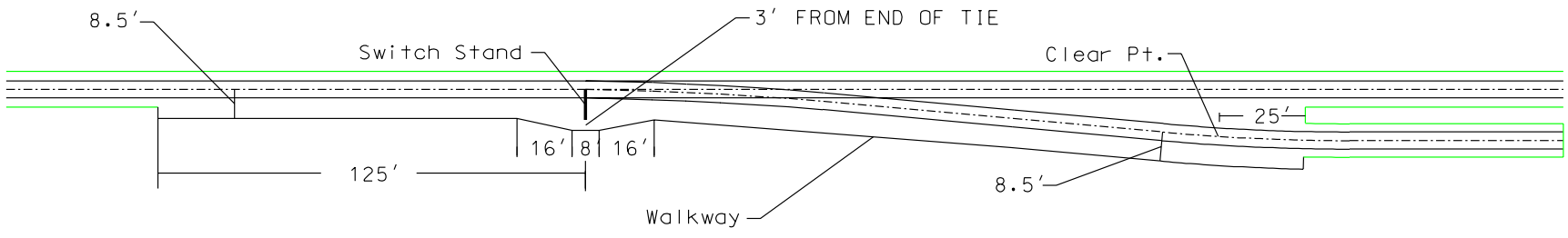
NOTE:

1. 6" MIN. GRANULAR SUBBALLAST OR AS REQUIRED PER LOCAL SUBGRADE CONDITION.
2. BALLAST PER MILE OF TRACK:
6" BALLAST 2,435 CU. YARDS TANGENT
3. FOR INDUSTRY TRACK BALLAST SECTION TO BE LEVEL WITH TOP OF TIE WHERE WALKING REQUIRED, 8'-6" MIN FROM CENTER LINE.



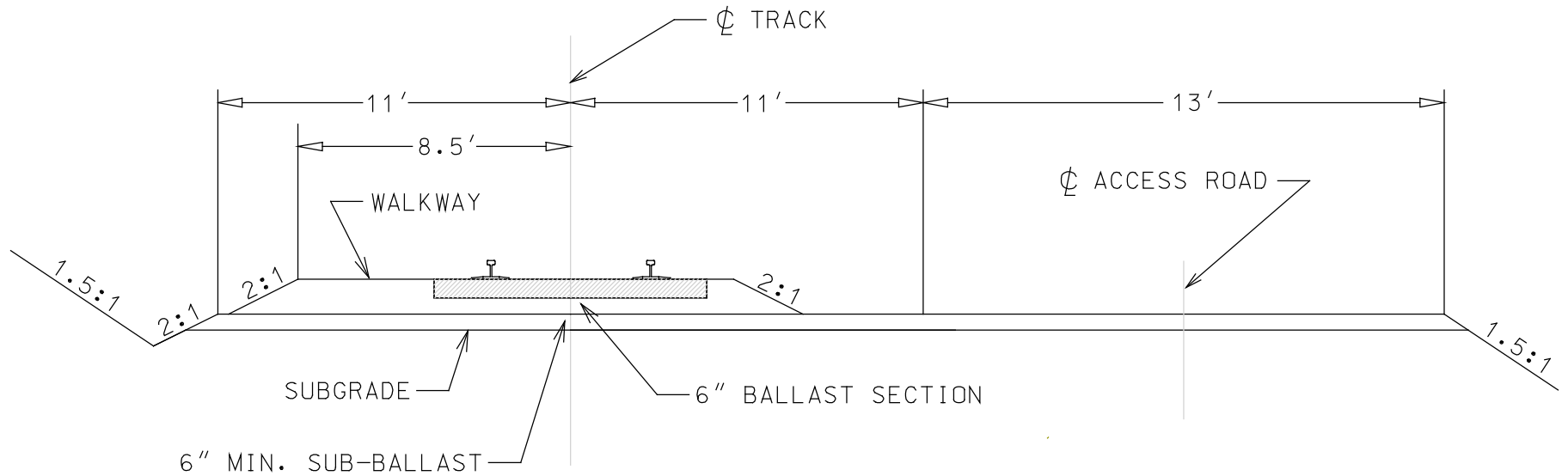
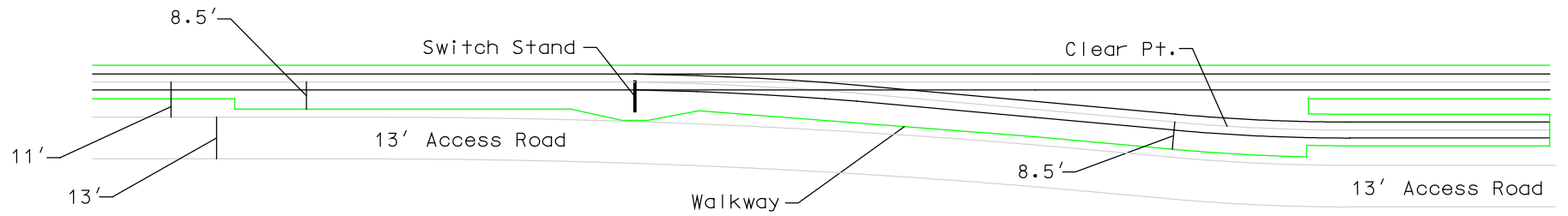
SLOPE DITCH LONGITUDINALLY TO DRAIN

BURLINGTON NORTHERN SANTA FE STANDARD PLAN <small>ENGINEERING DEPT., FORT WORTH, TEXAS</small>		
LIGHT TRAFFIC LINES AND INDUSTRY TRACK		
RAIL:		
DATE: 10/29/97	SCALE: NONE	
DWG. NO. 1000	SHEET NO. 03	REV. NO. 0
		150
<small>USE OF THIS DRAWING IS LIMITED TO BURLINGTON NORTHERN SANTA FE AS DESIGNATED ON THE ATTACHED EXHIBIT "A". USE MAY NOT BE MADE BY ANY THIRD PARTY WITHOUT THE WRITTEN CONSENT OF BURLINGTON NORTHERN SANTA FE.</small>		



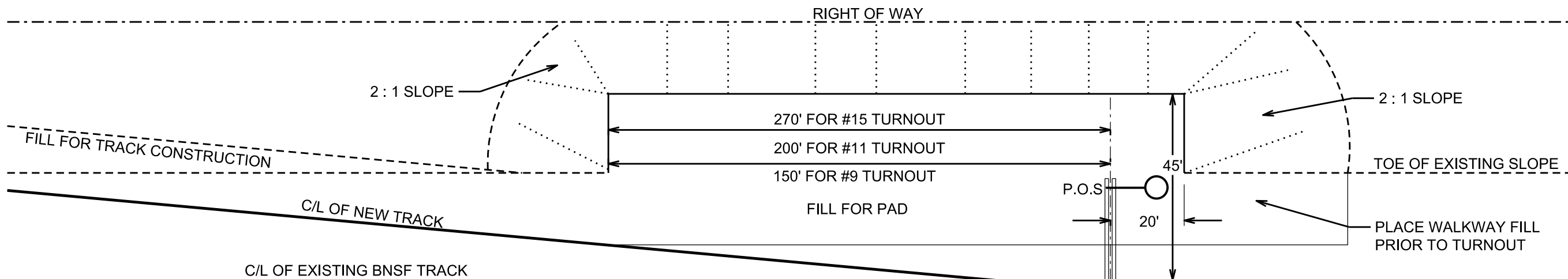
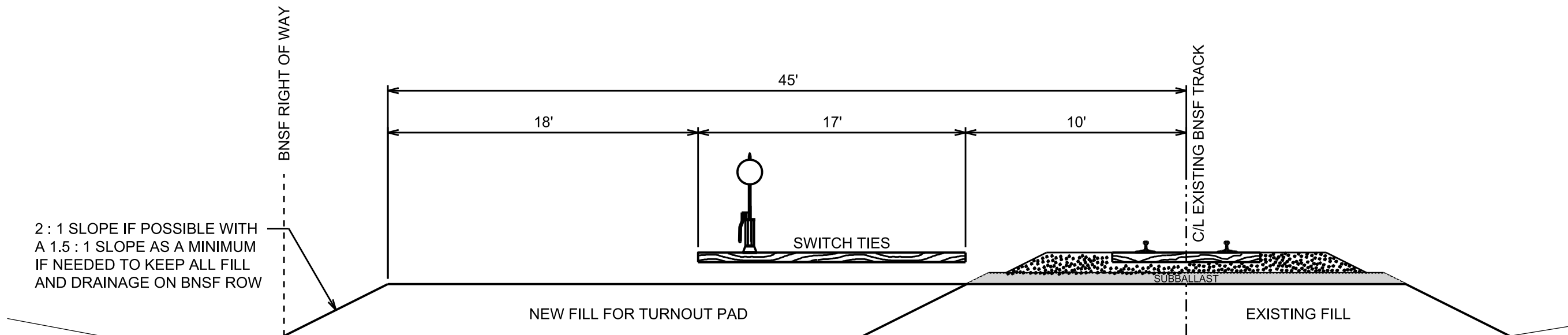
INDUSTRY TRACK STD SECTION
WITH 8.5' WALKWAY

BNSF ENG SVCS - 10/12/01



INDUSTRY TRACK STD SECTION
WITH 13' ACCESS ROAD

BNSF ENG SVCS - 04/02/04



NOTE: CONSTRUCTION OF INDUSTRY TURNOUT PAD IS FOR THE PLACEMENT OF THE PROPOSED PACKAGE TURNOUT FOR ASSEMBLY AND INSTALLATION. TURNOUT PAD IS ALSO TO PROVIDE FOUNDATION FOR ANY REQUIRED SIGNAL EQUIPMENT

TURNOUT PAD FILL MATERIAL SHALL BE PLACED BY THE INDUSTRY AS PART OF THE GRADING FOR THE NEW INDUSTRY SPUR. PAD IS TO BE CONSTRUCTED USING STANDARD COMPACTION AND FILL PLACEMENT PROCESSES AS PER THE BNSF INDUSTRY TRACK GUIDELINES. TOP OF PAD IS TO BE 2' BELOW THE EXISTING TOP OF RAIL.

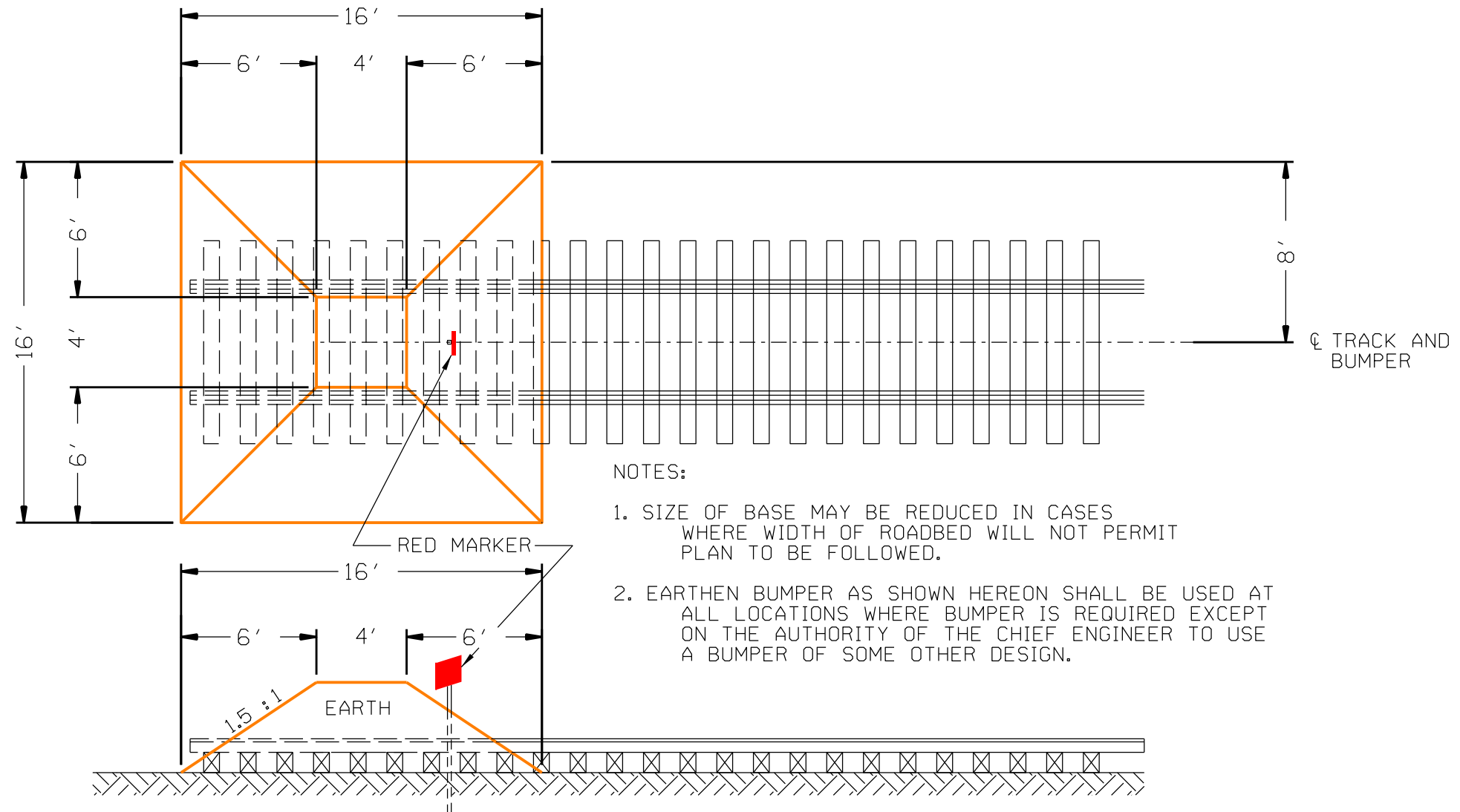
CONTRACTOR SHALL COORDINATE WITH THE ROADMASTER AND ASSOCIATED PROJECT ENGINEER FOR ANY DEVIATION OF FILL AND FOR FLAGMAN PROTECTION.

APPROVALS - (NAME - TITLE)	DATE	APPROVALS - (NAME - TITLE)	DATE


REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	Rev'd pad dimensions to match ML Trk Stds	4/4/17	JRG

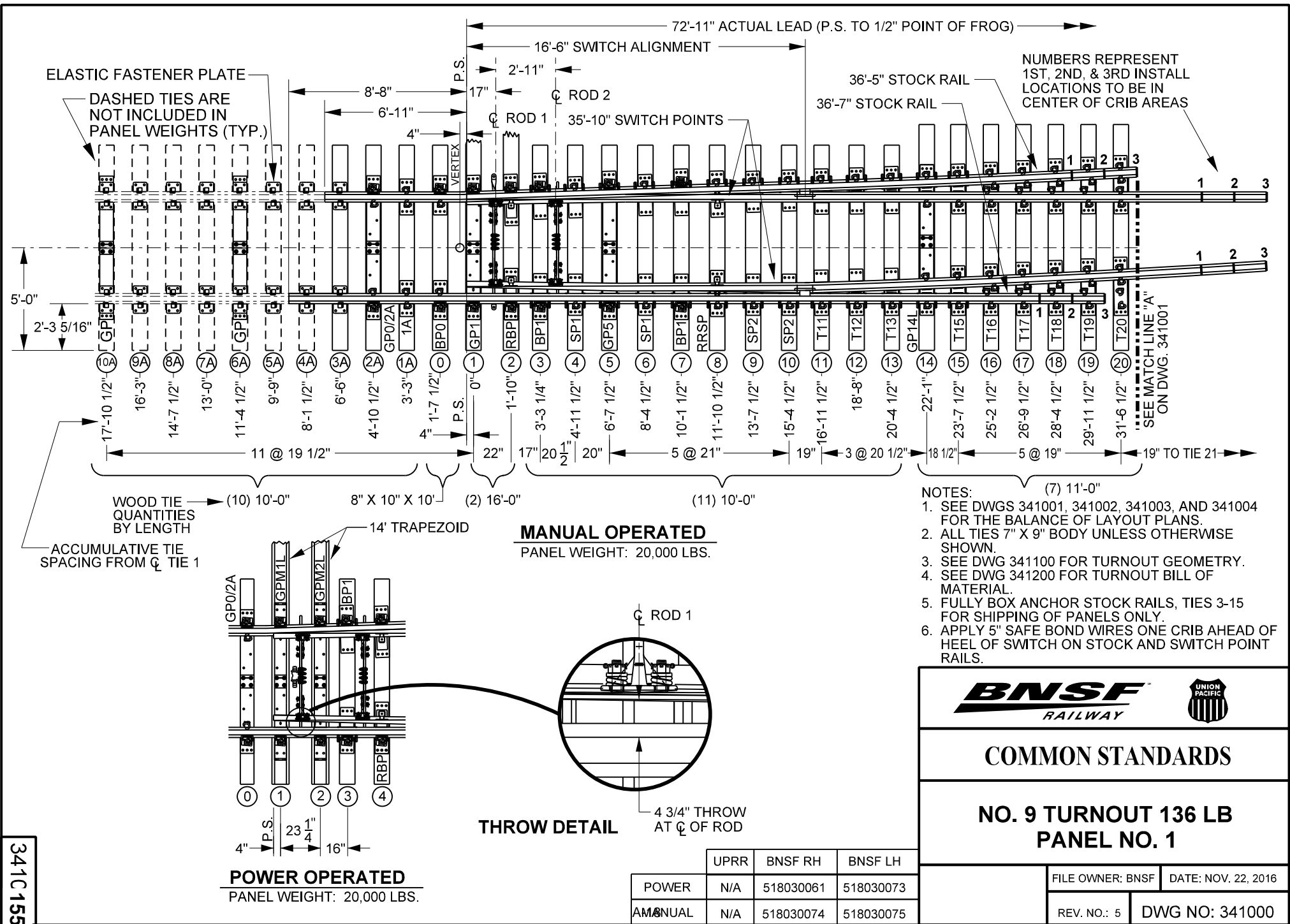


BNSF STANDARD TURNOUT PAD
FOR INDUSTRY TRACKS
NOT TO SCALE



TYPICAL PLAN & SECTION FOR
EARTHEN BUMPER FOR END OF TRACK
SCALE: N.T.S.

APPROVALS - (NAME - TITLE)		DATE	APPROVALS - (NAME - TITLE)		DATE																												
										<table border="1"> <thead> <tr> <th colspan="4">REVISIONS</th> </tr> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>				REVISIONS				NO.	DESCRIPTION	DATE	BY												
REVISIONS																																	
NO.	DESCRIPTION	DATE	BY																														
<small>DRAWN</small> 154 <small>CHECKED</small>	BNSF RAILWAY COMPANY - ENGINEERING SERVICES			<small>PROJECT SEQ NO</small> A-17	<small>STATUS</small> A-17	<small>FILE:</small> earthen bumper.dgn		<small>DATE:</small> 04/05/2017																									

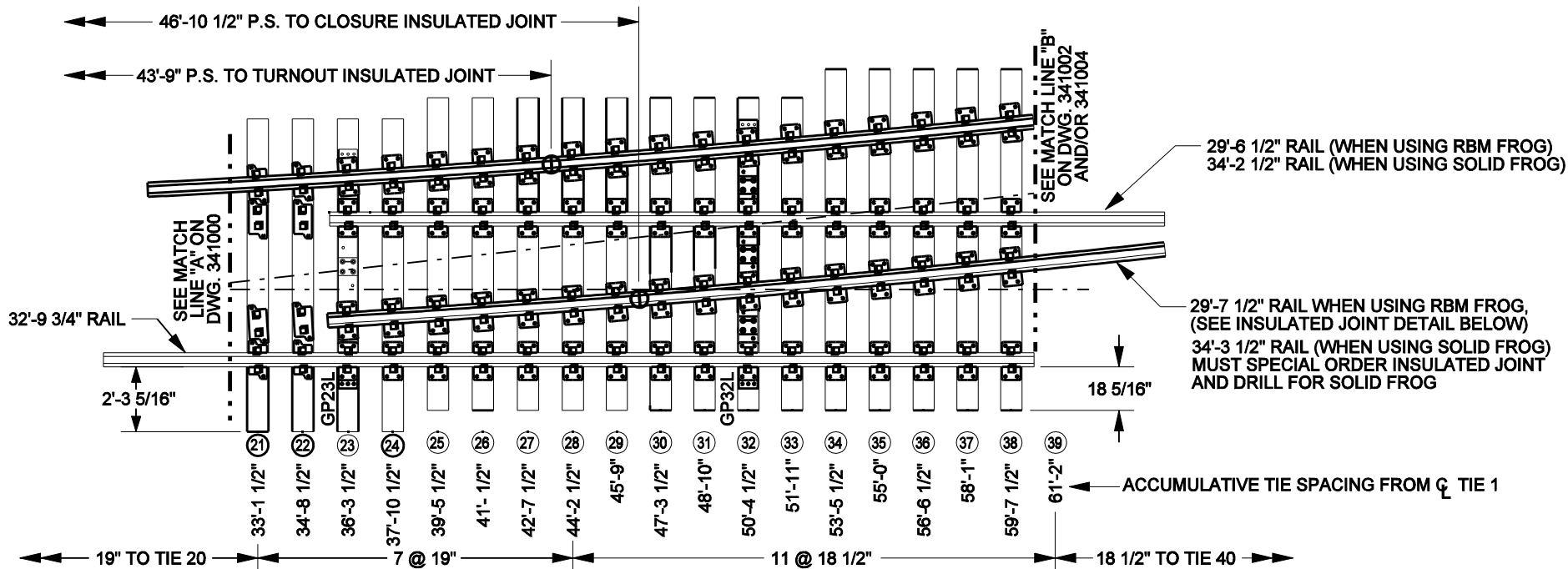


COMMON STANDARDS

**NO. 9 TURNOUT 136 LB
PANEL NO. 1**

	UPRR	BNSF RH	BNSF LH
POWER	N/A	518030061	518030073
MANUAL	N/A	518030074	518030075

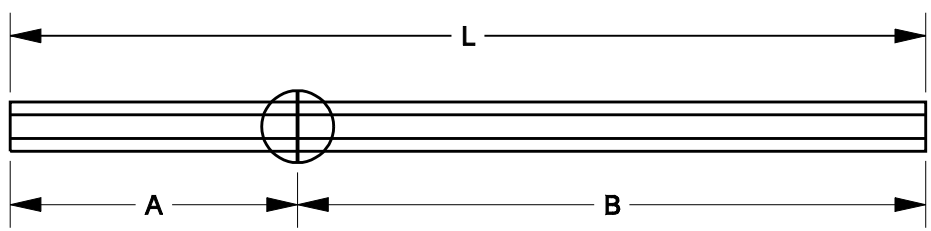
FILE OWNER: BNSF	DATE: NOV. 22, 2016
REV. NO.: 5	DWG NO: 341000



WOOD TIE QUANTITIES BY LENGTH

(13) 11'-0"

(6) 12'-0"



	A	B	L	BNSF ITEM NO.
TURNOUT INSULATED JOINT RAIL	14'-3 1/4"	17'-0 3/4"	31'-4"	524400027
CLOSURE INSULATED JOINT RAIL	11'-0 1/2"	18'-7"	29'-7 1/2"	524400030

INSULATED JOINT DETAIL
(FOR USE WITH RBM FROG ONLY)

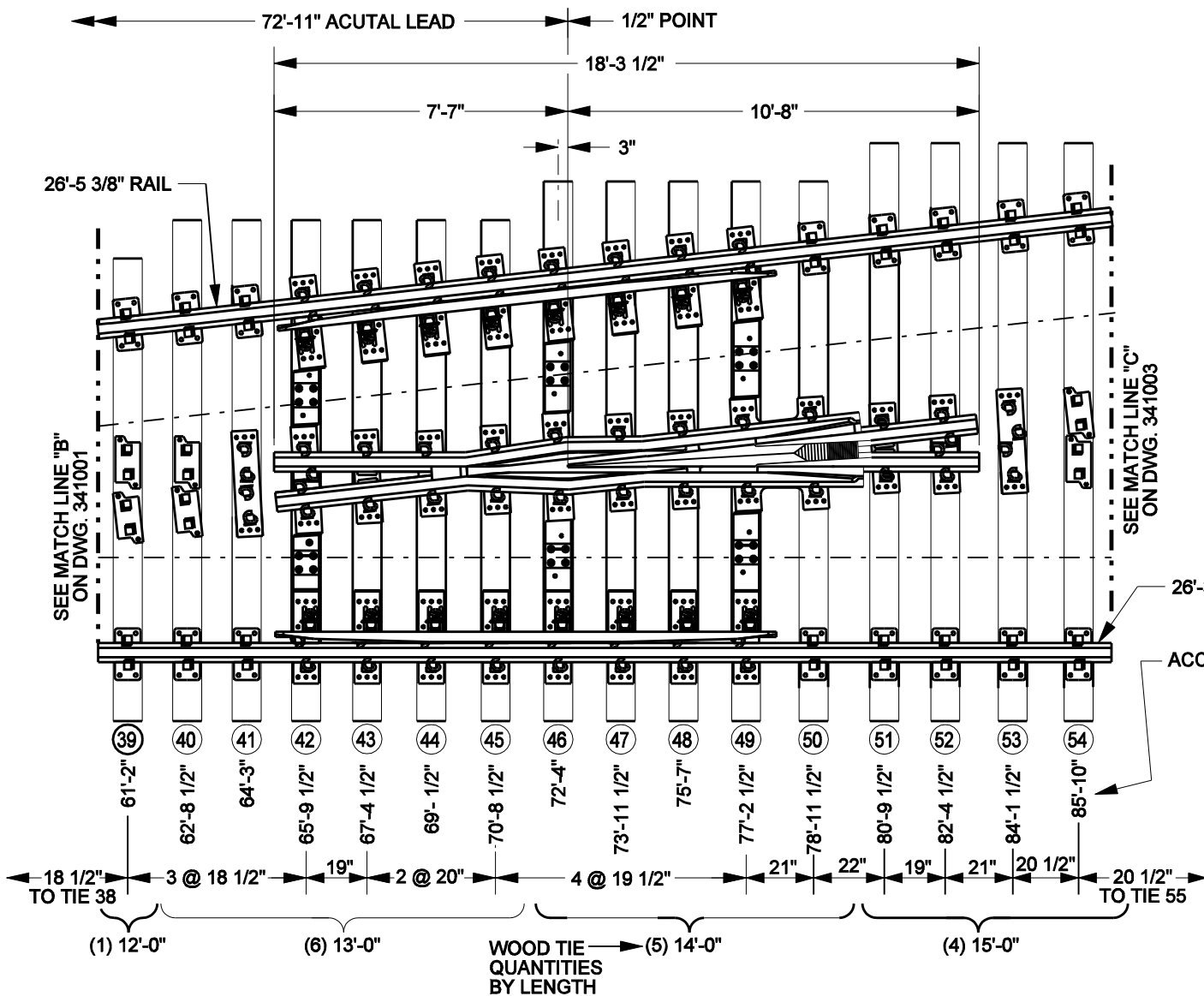
- NOTES:
1. WHEN INSULATED JOINTS ARE REQUIRED, THE LOCATION OF THE JOINTS SHOULD BE STAGGERED NO CLOSER THAN 6" AND NOT MORE THAN 4'-6" APART, MEASURED ALONG THE TURNOUT.
 2. SEE DWGS 341000, 341002, 341003, AND 341004 FOR THE BALANCE OF LAYOUT PLANS.
 3. ALL TIES 7" X 9" BODY UNLESS OTHERWISE SHOWN.
 4. SEE DWG 341100 FOR TURNOUT GEOMETRY.
 5. SEE DWG 341200 FOR TURNOUT BILL OF MATERIAL.
 6. PANEL WEIGHT = 14,500 LBS.



COMMON STANDARDS

NO. 9 TURNOUT 136 LB. PANEL NO. 2

FILE OWNER: BNSF	DATE: MAR. 1, 2007
REV. NO.: 4	DWG NO: 341001



- NOTES:
1. SEE DWGS 341000, 341001, 341003, AND 341004 FOR THE BALANCE OF LAYOUT PLANS.
 2. ALL TIES 7" X 9" BODY UNLESS OTHERWISE SHOWN.
 3. SEE DWG 341100 FOR TURNOUT GEOMETRY.
 4. SEE DWG 341200 FOR TURNOUT BILL OF MATERIAL.
 5. PANEL WEIGHT = 18,000 LBS.
 6. SEE DWG 3413004 FOR SOLID MANGANESE FROG PANEL.



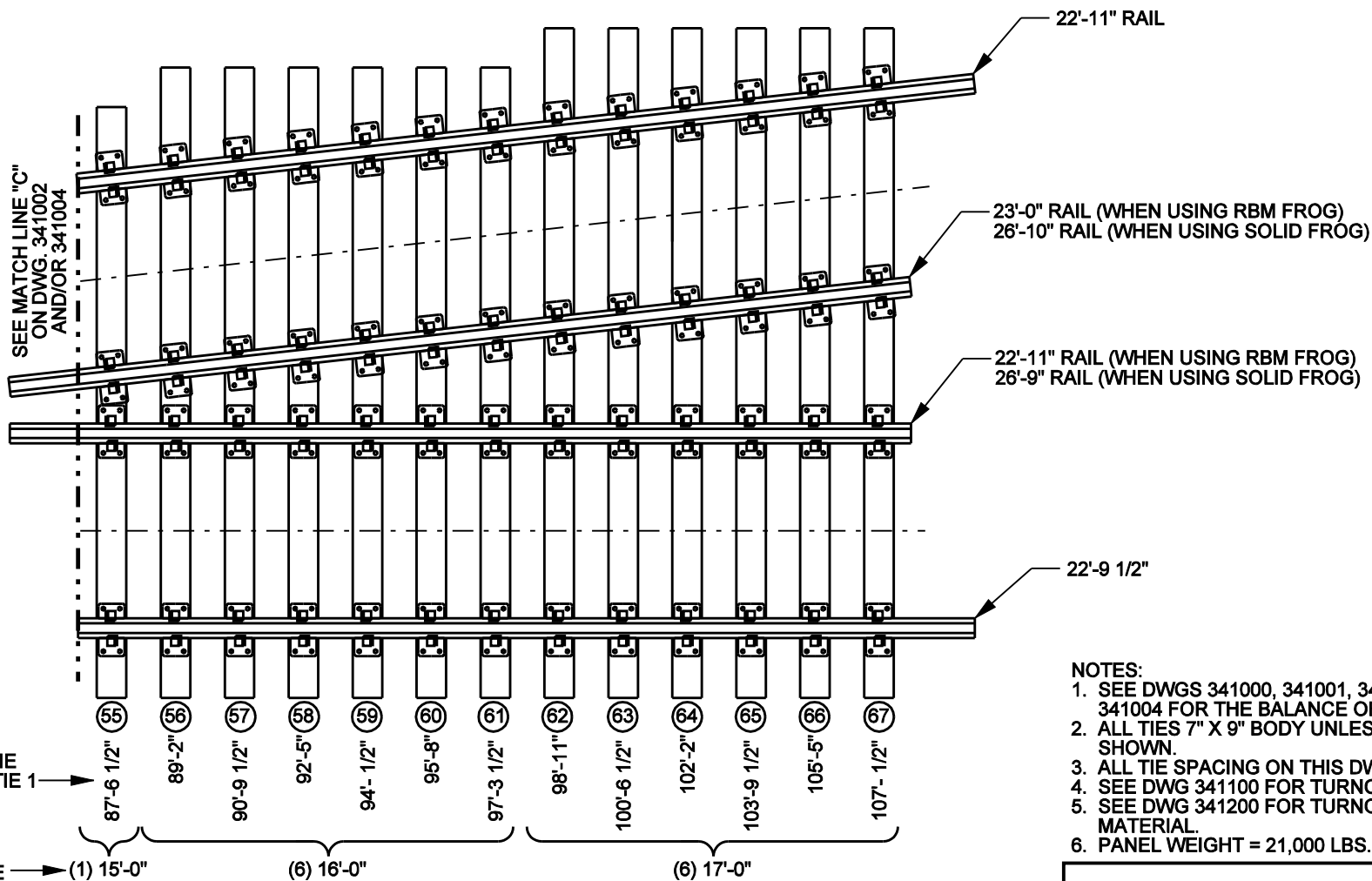
COMMON STANDARDS

NO. 9 TURNOUT 136 LB. PANEL NO. 3 WITH OPTIONAL RBM FROG

	UPRR	BNSF RH	BNSF LH
RBM	N/A	513450048	513450049
SOLID	N/A	513450050	513450051

FILE OWNER: BNSF	DATE: MAY 19, 2008
REV. NO.: 5	DWG NO: 341003

22-3



NOTES:

1. SEE DWGS 341000, 341001, 341002, AND 341004 FOR THE BALANCE OF LAYOUT PLANS.
2. ALL TIES 7" X 9" BODY UNLESS OTHERWISE SHOWN.
3. ALL TIE SPACING ON THIS DWG IS 19 1/2".
4. SEE DWG 341100 FOR TURNOUT GEOMETRY.
5. SEE DWG 341200 FOR TURNOUT BILL OF MATERIAL.
6. PANEL WEIGHT = 21,000 LBS.

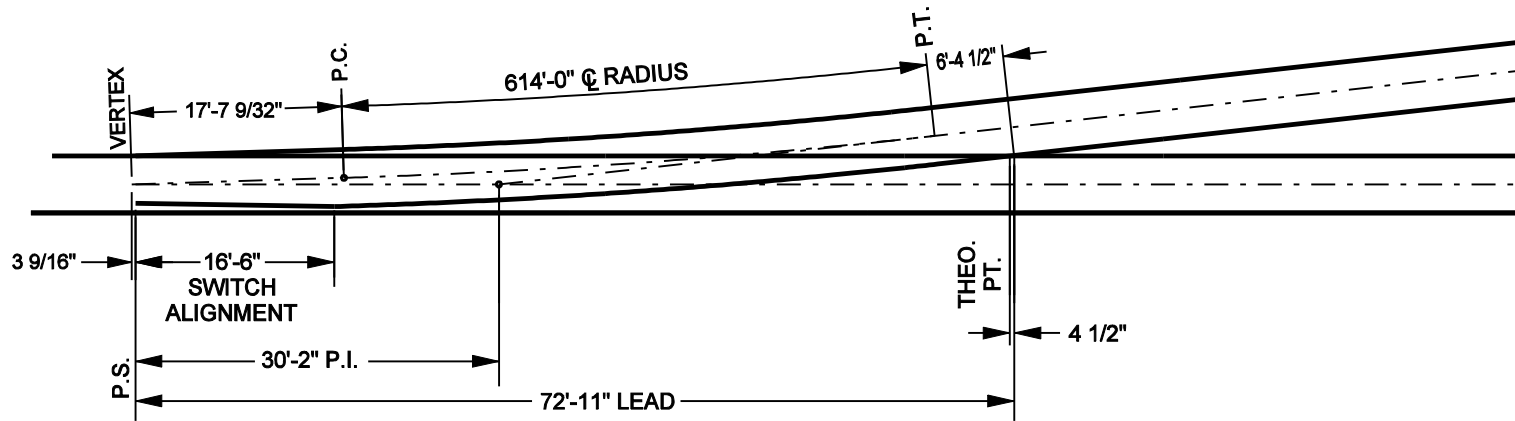


COMMON STANDARDS

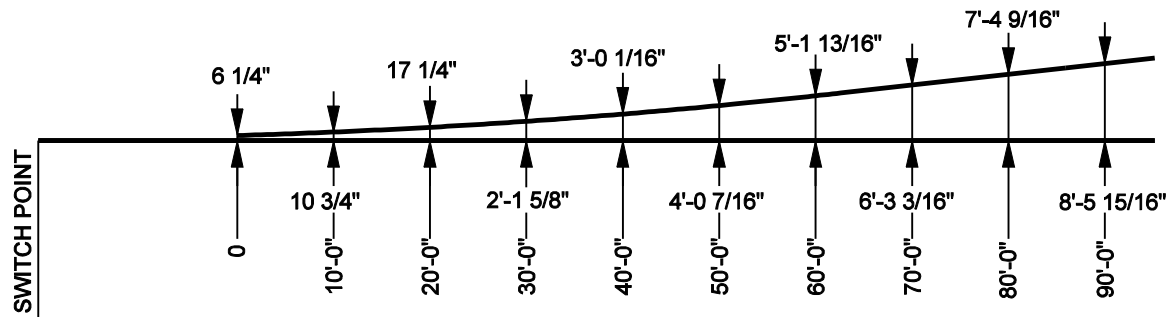
**NO. 9 TURNOUT 136 LB.
PANEL NO. 4**

FILE OWNER: BNSF DATE: FEB 28, 2007

REV. NO.: 2 DWG NO: 341002



GENERAL LAYOUT



SPREAD LAYOUT

SWITCH DATA	
SWITCH LENGTH	16'-6"
HEEL SPREAD	6 1/4"
HEEL ANGLE	1°-46'-22"
SWITCH ANGLE	1°-46'-22"
THROW AT ROD #1	4 3/4"
THICKNESS AT POINT	0"
RADIUS (CLOSURE CURVE)	616.3542'
VERTEX DISTANCE	7 1/16"

FROG DATA	
ANGLE	6°-21'-35"
LENGTH	VARIES

TURNOUT DATA	
RADIUS OF CENTER LINE	614'
T =	24.59'
CENTRAL ANGLE - CLOSURE CURVE	4°35'13"
DEGREE OF CURVE	9°20'31"

A-22



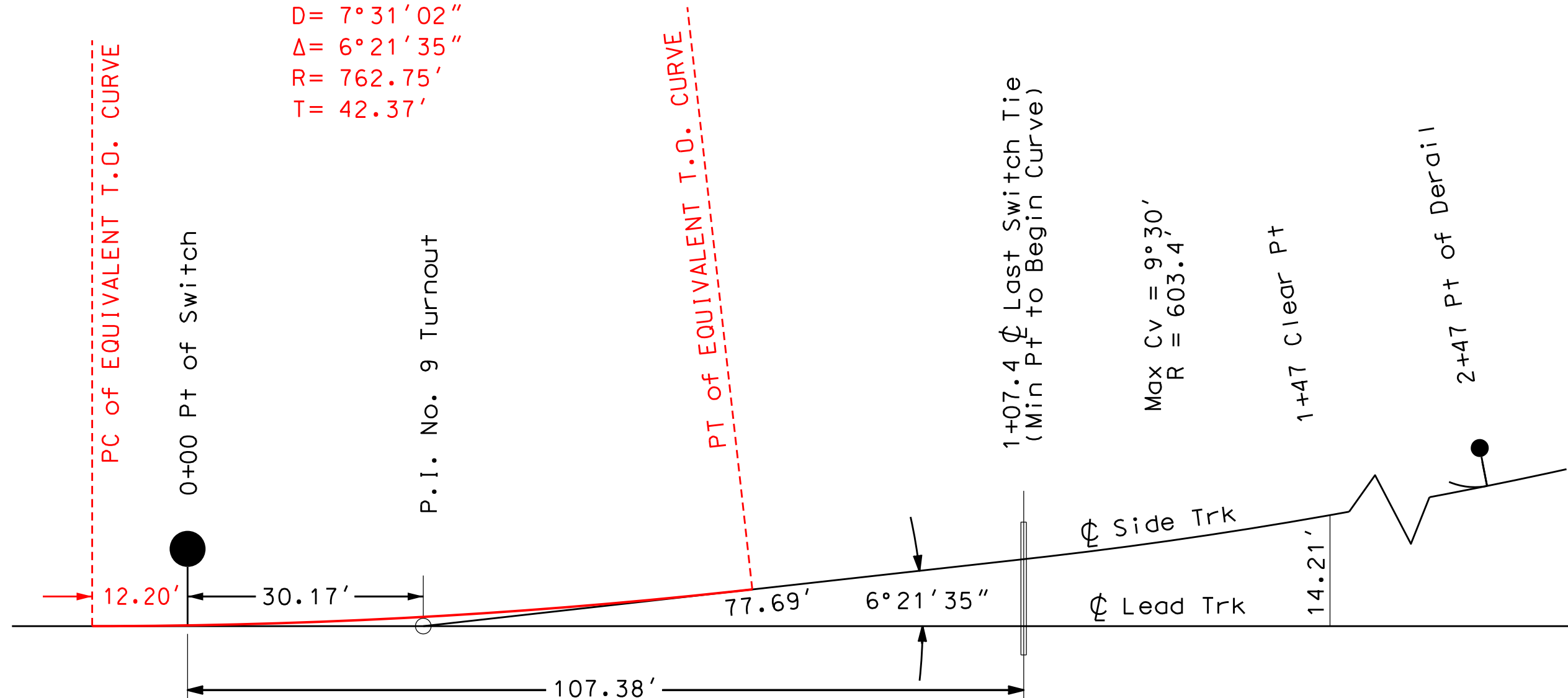
COMMON STANDARDS

NO. 9 TURNOUT 16-6" STRAIGHT SWITCH TURNOUT GEOMETRY

FILE OWNER: BNSF	DATE: JAN 159
REV. NO.: 0	DWG NO: 341100

EQUIVALENT
TURNOUT CURVE

D= 7° 31' 02"
 Δ= 6° 21' 35"
 R= 762.75'
 T= 42.37'

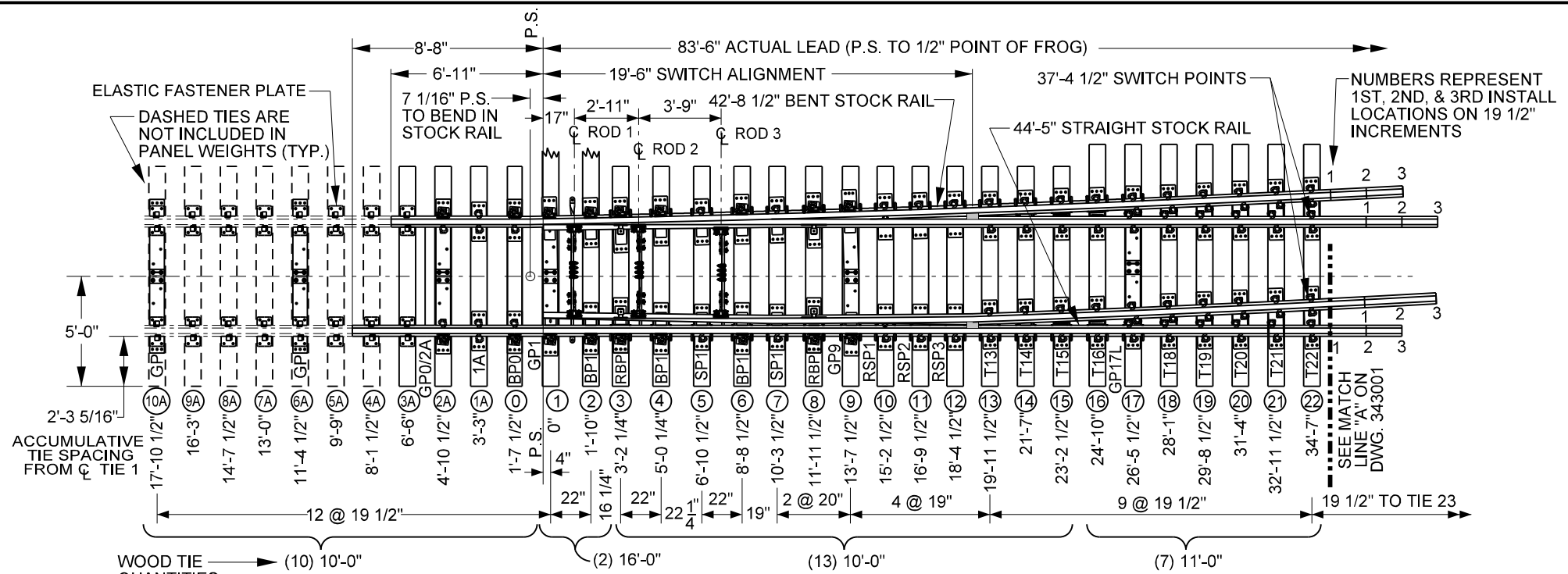


APPROVALS - (NAME - TITLE)	DATE	APPROVALS - (NAME - TITLE)	DATE



NUMBER 9 TURNOUT
 TRACK ALIGNMENT GEOMETRY

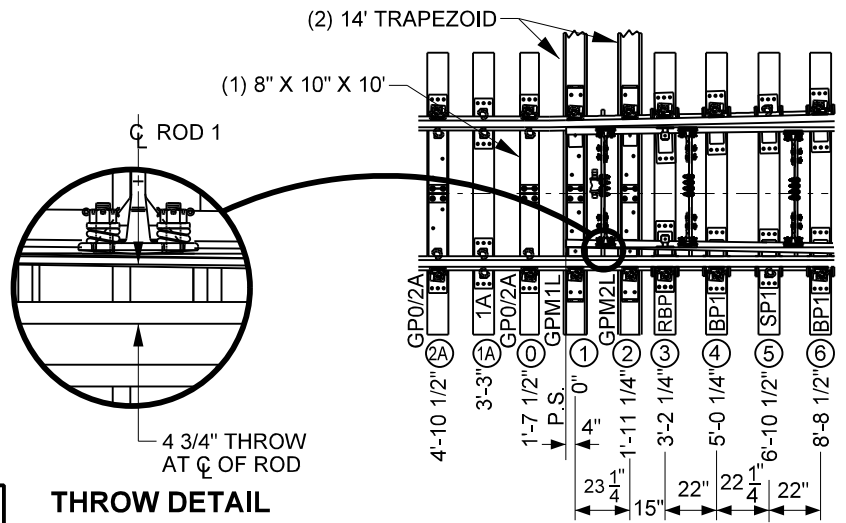
REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	Added CP and Derail info	4/5/17	JRG



WOOD TIE QUANTITIES BY LENGTH



MANUAL OPERATED
PANEL WEIGHT: 20,000 LBS.

- NOTES:
1. SEE DWGS 343001 THRU 343005 FOR THE BALANCE OF LAYOUT PLANS.
 2. ALL TIES 7" X 9" BODY UNLESS OTHERWISE SHOWN.
 3. SEE DWG 343100 FOR TURNOUT GEOMETRY.
 4. SEE DWG 343200 FOR TURNOUT BILL OF MATERIAL.
 5. FULLY BOX ANCHOR STOCK RAILS, TIES 3-15 FOR SHIPPING OF PANELS ONLY.
 6. APPLY 5" SAFE BOND WIRES ONE CRIB AHEAD OF HEEL OF SWITCH ON STOCK AND SWITCH POINT RAILS.
 7. ALL SWITCH POINT AND STOCKRAIL DIMENSIONS ARE TO FIRST INSTALL, SEE PLAN 241500 FOR FULL LENGTH.



POWER OPERATED
PANEL WEIGHT: 20,000 LBS.

	UPRR	BNSF RH	BNSF LH
136LB. POWER	N/A	004734653	004734810
136LB. MANUAL	N/A	004734828	004734836
136LB. MAN. SPR. SW.	N/A	004734869	004734877
141LB. POWER	N/A	005253505	005253497
141LB. MANUAL	N/A	005253521	005253513
141LB. MAN. SPR. SW.	N/A	005253547	005253539

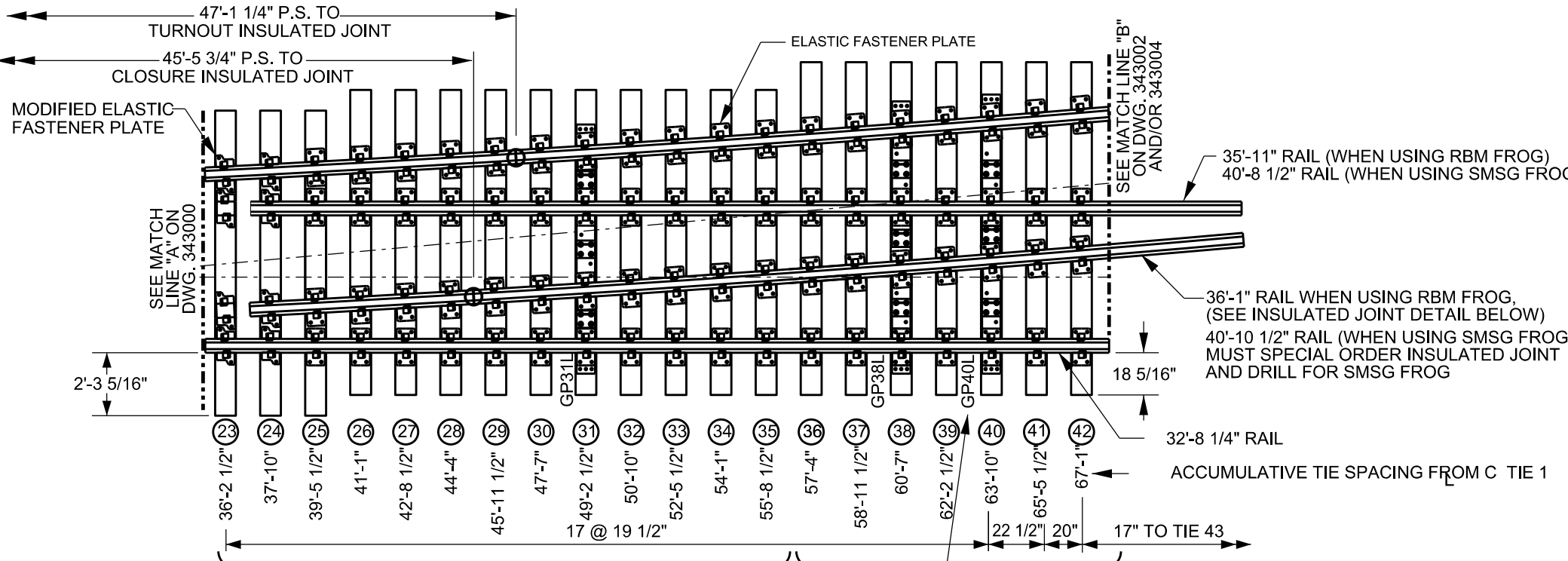



COMMON STANDARDS

NO. 11 TURNOUT 136/141 LB. PANEL NO. 1

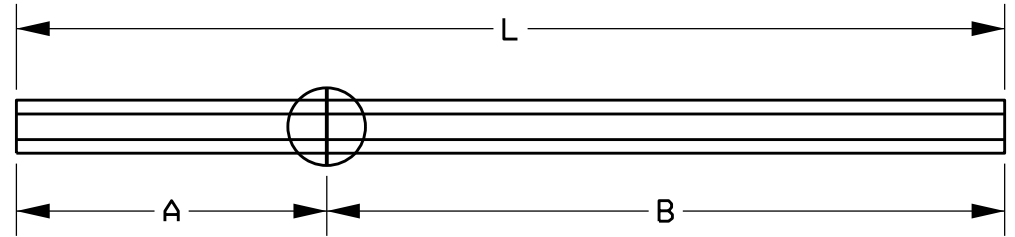
FILE OWNER: BNSF	DATE: NOV. 22, 2016
REV. NO.: 7	DWG NO: 343000

343C 161



WOOD TIE QUANTITIES BY LENGTH
 (13) 11'-0"

USE GP40 FOR BNSF LIFT FROG TURNOUTS ONLY. USE GP38 FOR ALL UP TURNOUTS AND BNSF RBM/SPRING/SSG TURNOUTS



INSULATED JOINT DETAIL
 (FOR USE WITH RBM FROG ONLY)

- NOTES:
1. WHEN INSULATED JOINTS ARE REQUIRED, THE LOCATION OF THE JOINTS SHOULD BE STAGGERED NO CLOSER THAN 6" AND NOT MORE THAN 4'-6" APART, MEASURED ALONG THE TURNOUT.
 2. SEE DWGS 343000, 343002, 343003, 343004, AND 343005 FOR THE BALANCE OF LAYOUT PLANS.
 3. ALL TIES 7" X 9" BODY UNLESS OTHERWISE SHOWN.
 4. SEE DWG 343100 FOR TURNOUT GEOMETRY.
 5. SEE DWG 343200 FOR TURNOUT BILL OF MATERIAL.
 6. PANEL WEIGHT = 17,000 LBS.



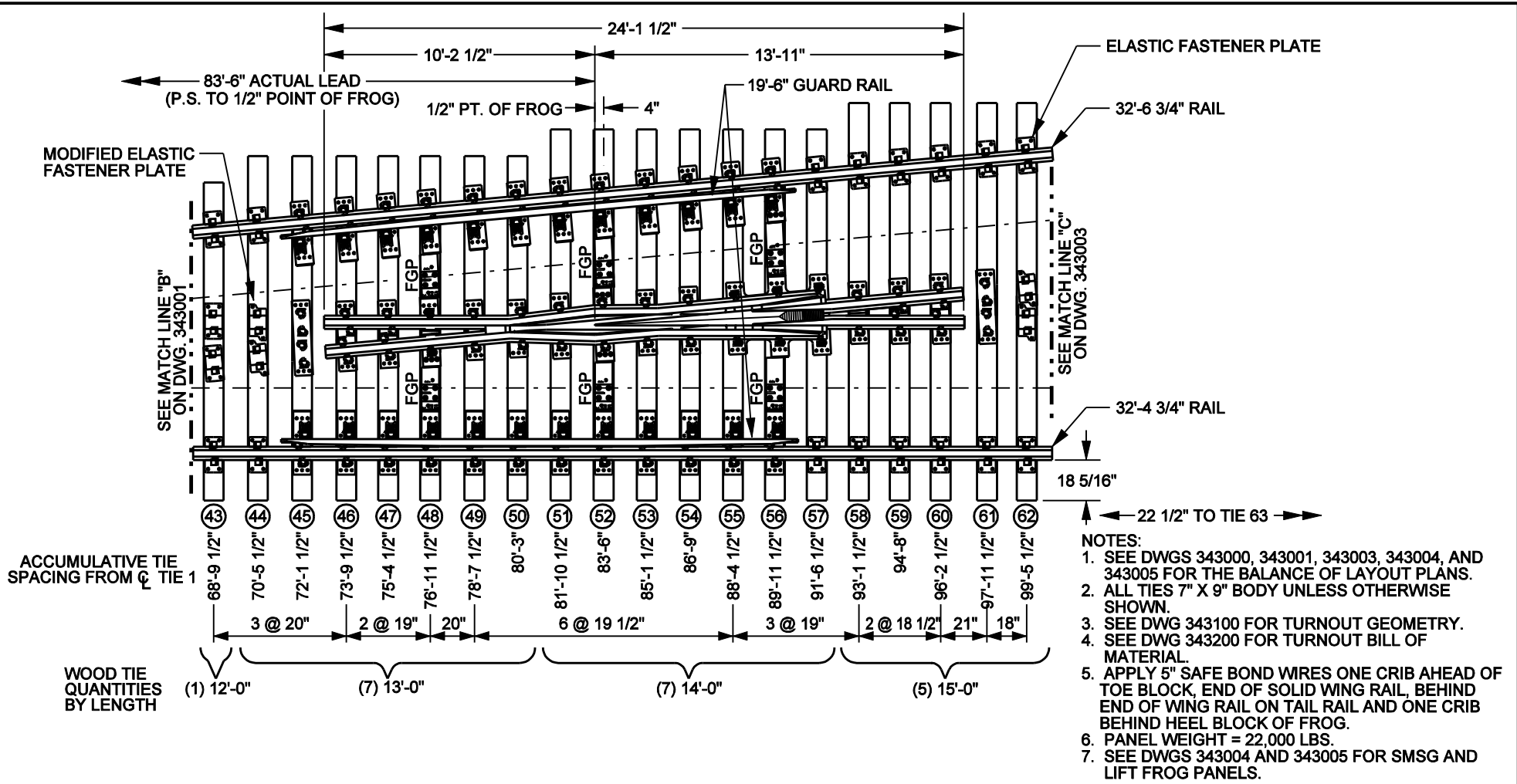
COMMON STANDARDS

NO. 11 TURNOUT 136/141 LB. PANEL NO. 2

	A	B	L
TURNOUT INSULATED JOINT RAIL	11'-4"	21'-5"	32'-9"
CLOSURE INSULATED JOINT RAIL	8'-2"	27'-11"	36'-1"

	BNSF STOCK CODE	
	136LB.	141LB.
LH TURNOUT INSULATED JOINT RAIL	005253760	005253554
LH CLOSURE INSULATED JOINT RAIL	005253778	005253562
RH TURNOUT INSULATED JOINT RAIL	005253786	005253570
RH CLOSURE INSULATED JOINT RAIL	005253794	005253588

FILE OWNER: BNSF	DATE: MAY 6, 2011
REV. NO.: 7	DWG NO: 343002 162



- NOTES:
1. SEE DWGS 343000, 343001, 343003, 343004, AND 343005 FOR THE BALANCE OF LAYOUT PLANS.
 2. ALL TIES 7" X 9" BODY UNLESS OTHERWISE SHOWN.
 3. SEE DWG 343100 FOR TURNOUT GEOMETRY.
 4. SEE DWG 343200 FOR TURNOUT BILL OF MATERIAL.
 5. APPLY 5" SAFE BOND WIRES ONE CRIB AHEAD OF TOE BLOCK, END OF SOLID WING RAIL, BEHIND END OF WING RAIL ON TAIL RAIL AND ONE CRIB BEHIND HEEL BLOCK OF FROG.
 6. PANEL WEIGHT = 22,000 LBS.
 7. SEE DWGS 343004 AND 343005 FOR SMSG AND LIFT FROG PANELS.



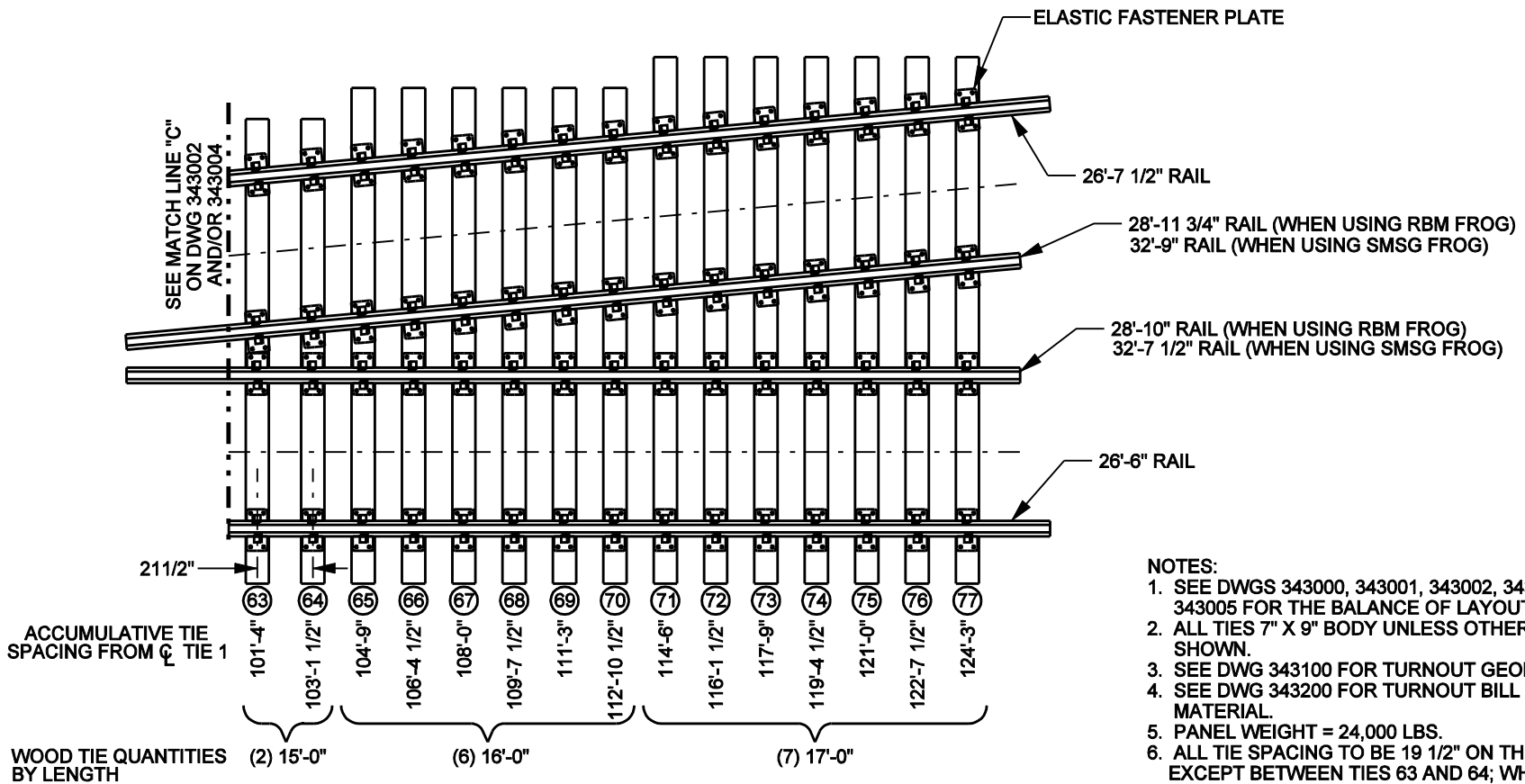
COMMON STANDARDS

	UPRR	BNSF RH	BNSF LH
136LB. RBM	N/A	004710299	004710307
136LB. SPR	N/A	004710315	004710323
136LB. SOLID	N/A	004710331	004710349
141LB. RBM	N/A	005252739	005252721
141LB. SPR	N/A	005252754	005252747
141LB. SOLID	N/A	N/A	N/A

NO. 11 TURNOUT 136/141 LB. PANEL NO. 3 WITH OPTIONAL RBM FROG

FILE OWNER: BNSF	DATE: AUG. 26, 2009
REV. NO.: 5	DWG NO: 34300?

22-9



NOTES:

1. SEE DWGS 343000, 343001, 343002, 343004, AND 343005 FOR THE BALANCE OF LAYOUT PLANS.
2. ALL TIES 7" X 9" BODY UNLESS OTHERWISE SHOWN.
3. SEE DWG 343100 FOR TURNOUT GEOMETRY.
4. SEE DWG 343200 FOR TURNOUT BILL OF MATERIAL.
5. PANEL WEIGHT = 24,000 LBS.
6. ALL TIE SPACING TO BE 19 1/2" ON THIS DWG. EXCEPT BETWEEN TIES 63 AND 64; WHICH ARE SHOWN AT 21 1/2".

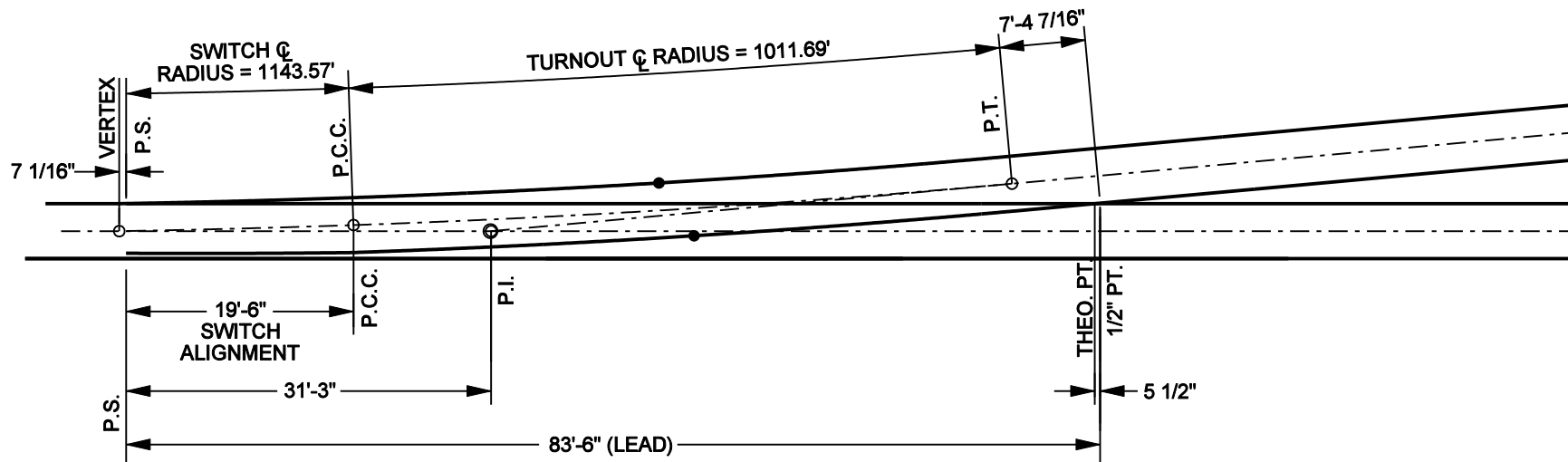


COMMON STANDARDS

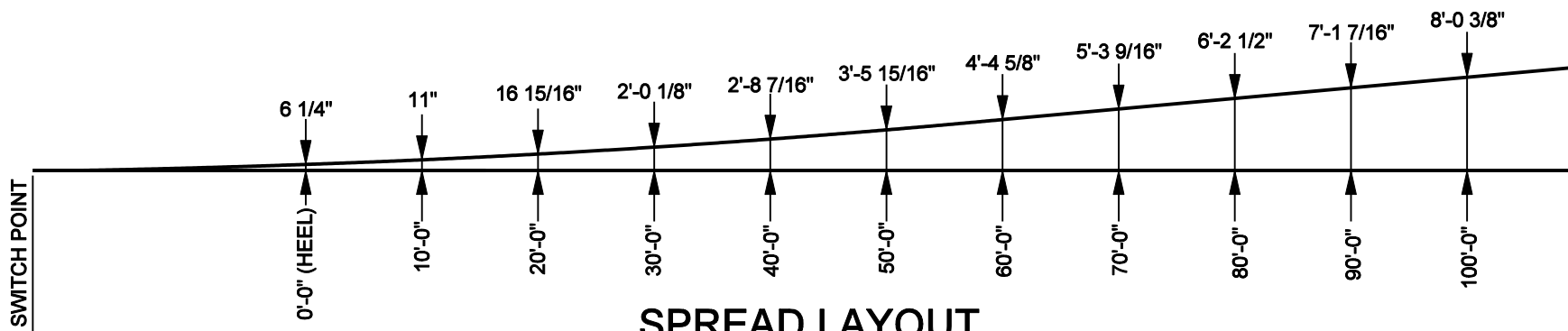
NO. 11 TURNOUT 136/141 LB.
PANEL NO. 4

FILE OWNER: BNSF DATE: AUG. 26, 2009

REV. NO.: 3 DWG NO: 343002



GENERAL LAYOUT



SPREAD LAYOUT

SWITCH DATA	
SWITCH LENGTH	19'-6"
HEEL SPREAD	6 1/4"
HEEL ANGLE	1°-59'-16"
SWITCH ANGLE	1°-00'-40"
THROW AT ROD #1	4 3/4"
RADIUS (CENTER LINE)	1143.57'
T =	9.69'
CENTRAL ANGLE - CLOSURE CURVE	0°58'16"
DEGREE OF CURVE	5°00'06"
THICKNESS AT POINT	1/8"
RADIUS (CLOSURE CURVE)	1145.92'
VERTEX DISTANCE	7 1/16"

FROG DATA	
ANGLE	5°-12'-18"
LENGTH	VARIES

TURNOUT DATA	
RADIUS OF CENTER LINE	1011.69'
T =	28.35'
CENTRAL ANGLE - CLOSURE CURVE	3°13'02"
DEGREE OF CURVE	5°40'44"

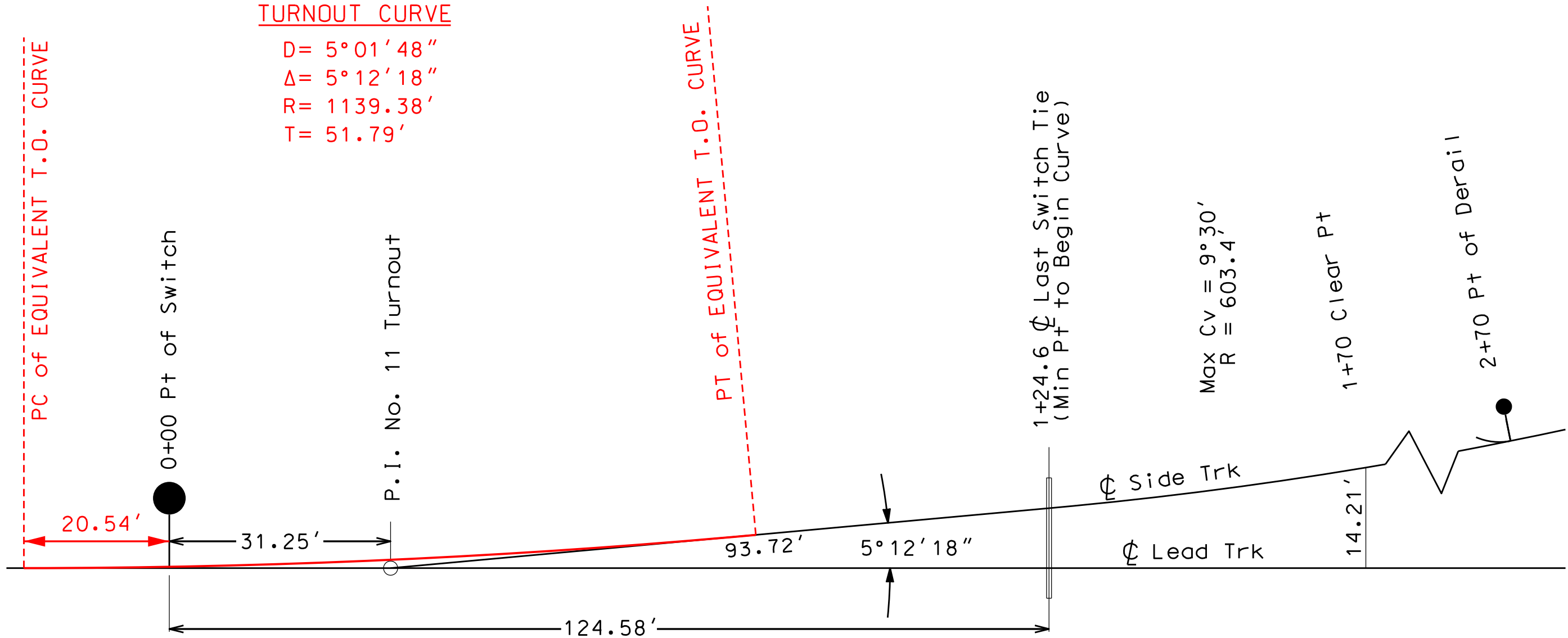
NOTES:

	NO. 11 TURNOUT 19'-6" CURVED SWITCH TURNOUT GEOMETRY	
FILE OWNER: BNSF	DATE: JAN. 9, 2003	
REV. NO.: 0	DWG NO: 343100	

22-11
165

EQUIVALENT
TURNOUT CURVE

D= 5° 01' 48"
 Δ= 5° 12' 18"
 R= 1139.38'
 T= 51.79'

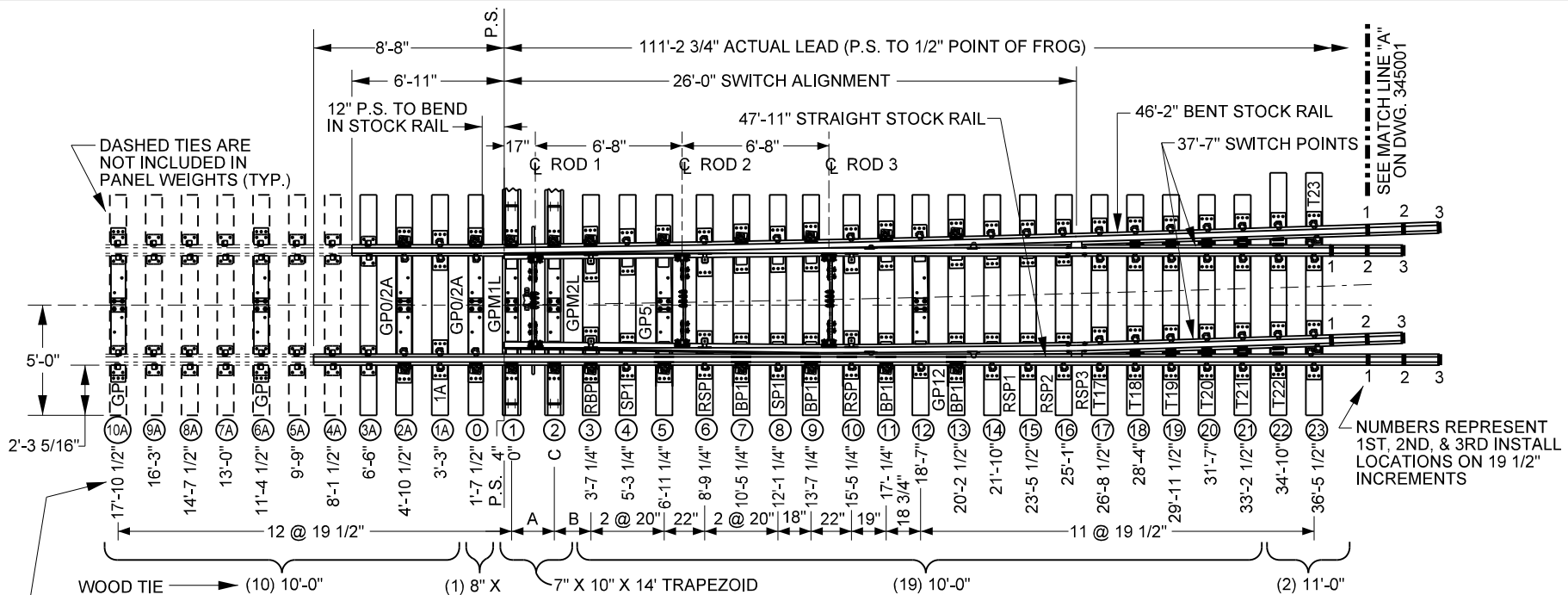


APPROVALS - (NAME - TITLE)	DATE	APPROVALS - (NAME - TITLE)	DATE



NUMBER 11 TURNOUT
 TRACK ALIGNMENT GEOMETRY

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	Added CP and Derail info	4/5/17	JRG



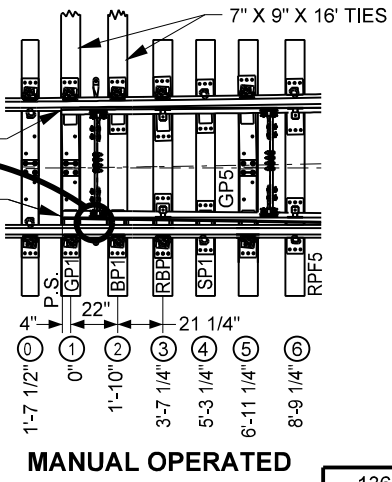
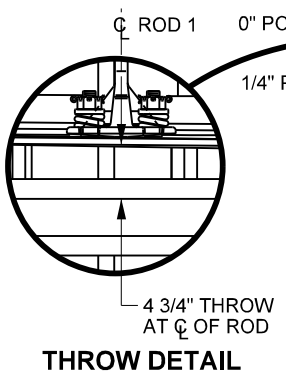
WOOD TIE QUANTITIES BY LENGTH

ACCUMULATIVE TIE SPACING FROM C TIE 1



POWER OPERATED

- NOTES:
1. SEE DWGS 345001, 345002, AND 345003 FOR THE BALANCE OF LAYOUT PLANS.
 2. ALL TIE SPACING 19 1/2" EXCEPT WHERE NOTED.
 3. ALL TIES 7" X 9" BODY UNLESS OTHERWISE SHOWN.
 4. SEE DWG 345100 FOR TURNOUT GEOMETRY.
 5. SEE DWG 345200 FOR TURNOUT BILL OF MATERIAL.
 6. APPLY 5" SAFE BOND WIRES ONE CRIB AHEAD OF HEEL OF SWITCH ON STOCK AND SWITCH POINT RAILS.
 7. BNSF MANUAL AND MANUAL SPRING SWITCHES WILL BE SUPPLIED WITH UHMWPE PADS ON TIES 1 THROUGH 14.
 8. PANEL WEIGHT = APPROXIMATELY 20,900 LBS.

VARIABLE TIE SPACING		
VARIABLE	UPRR	BNSF
A	23 1/4"	22"
B	20"	21 1/4"
C	23 1/4"	22"



	UPRR	BNSF LH	BNSF RH
136LB. POWER	N/A	518030091	518030065
136LB. MANUAL	N/A	518030093	518030092
136LB. MAN. SPRG.	N/A	518030095	518030094
141LB. POWER	N/A	518030134	518030135
141LB. MANUAL	N/A	518030136	518030137
141LB. MAN. SPRG.	N/A	518030138	518030139

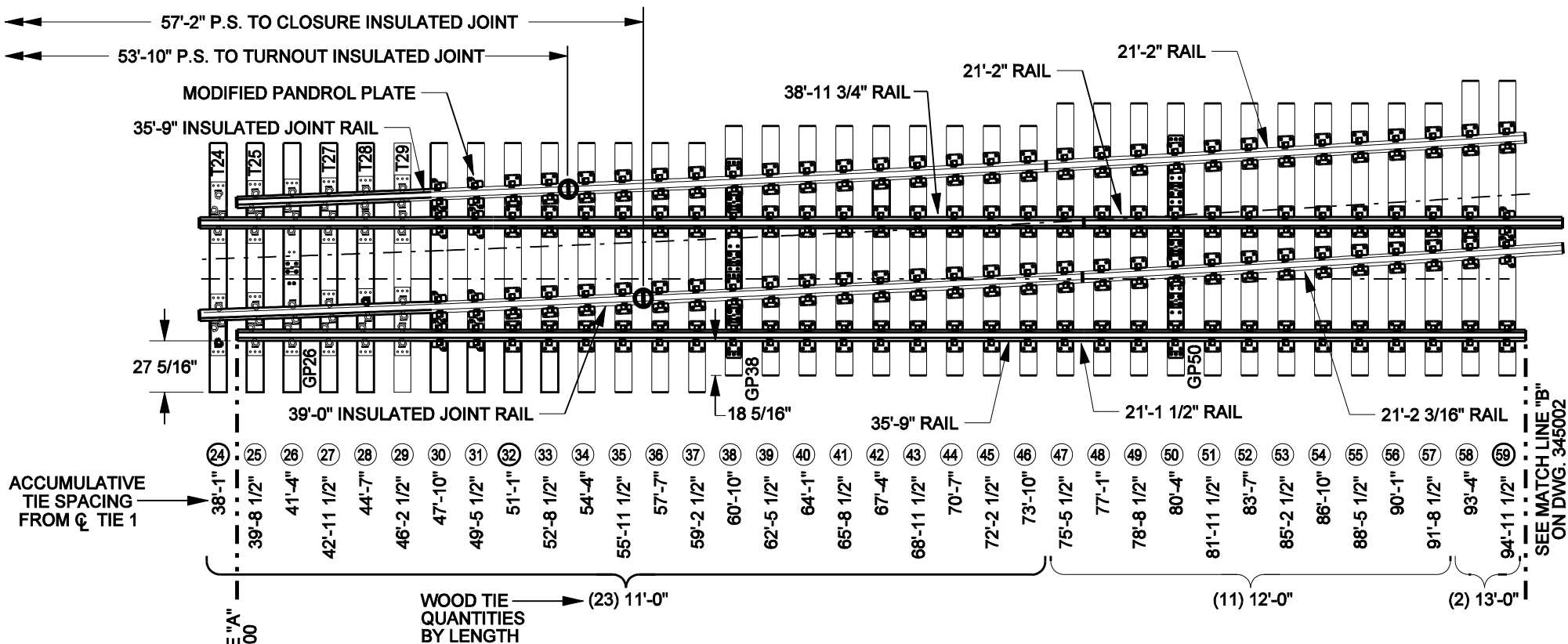



COMMON STANDARDS

NO. 15 TURNOUT 136/141 LB. PANEL NO. 1

FILE OWNER: UPRR	DATE: NOV. 22, 2016
REV. NO.: 6	DWG NO: 345000

345C167

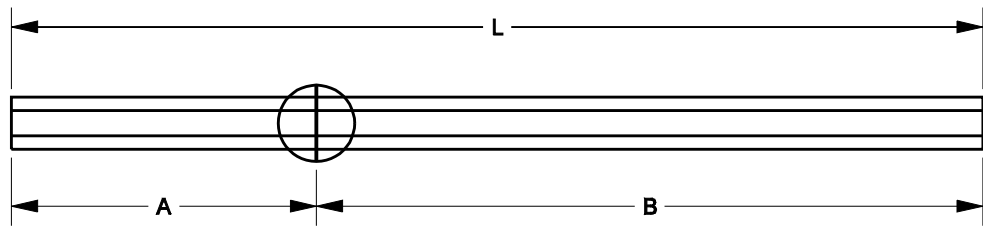


ACCUMULATIVE TIE SPACING FROM ϕ TIE 1

SEE MATCH LINE "A" ON DWG. 345000

SEE MATCH LINE "B" ON DWG. 345002

WOOD TIE QUANTITIES BY LENGTH



NOTES:

1. SEE DWGS 345000, 345002, AND 345003 FOR THE BALANCE OF LAYOUT PLANS.
2. ALL TIE SPACING IS 19 1/2" ON THIS PANEL.
3. ALL TIES 7" X 9" BODY UNLESS OTHERWISE SHOWN.
4. SEE DWG 345100 FOR TURNOUT GEOMETRY.
5. SEE DWG 345200 FOR TURNOUT BILL OF MATERIAL.
6. PANEL WEIGHTS = APPROXIMATELY 19,500 LBS. AND 11,800 LBS.



COMMON STANDARDS

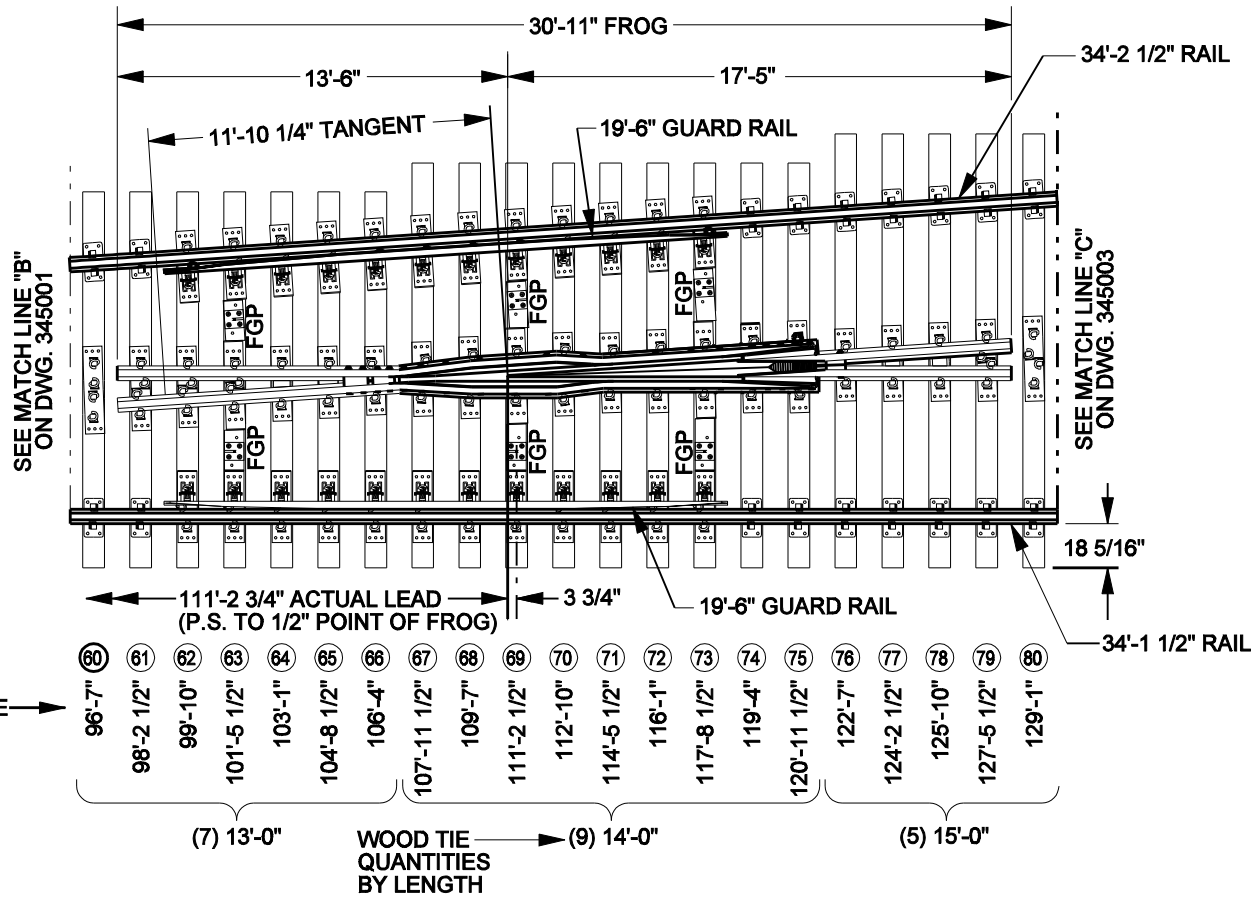
NO. 15 TURNOUT 136/141 LB. PANELS NO. 2 AND NO. 3

	A	B	L
TURNOUT INSULATED JOINT RAIL	14'-8"	21'-1"	35'-9"
CLOSURE INSULATED JOINT RAIL	19'-7"	19'-5"	39'-0"

	BNSF ITEM NUMBER	
	136LB.	141LB.
LH TURNOUT INSULATED JOINT RAIL	518030155	518030140
LH CLOSURE INSULATED JOINT RAIL	518030156	518030141
RH TURNOUT INSULATED JOINT RAIL	518030157	518030142
RH CLOSURE INSULATED JOINT RAIL	518030158	518030143

FILE OWNER: UPRR	DATE: MAY 19, 2008
REV. NO.: 3	DWG NO: 345001

22-14



ACCUMULATIVE TIE SPACING FROM Q TIE 1

- ⑧ 96'-7"
- ⑨ 98'-2 1/2"
- ⑩ 99'-10"
- ⑪ 101'-5 1/2"
- ⑫ 103'-1"
- ⑬ 104'-8 1/2"
- ⑭ 106'-4"
- ⑮ 107'-11 1/2"
- ⑯ 109'-7"
- ⑰ 111'-2 1/2"
- ⑱ 112'-10"
- ⑲ 114'-5 1/2"
- ⑳ 116'-1"
- ㉑ 117'-8 1/2"
- ㉒ 119'-4"
- ㉓ 120'-11 1/2"
- ㉔ 122'-7"
- ㉕ 124'-2 1/2"
- ㉖ 125'-10"
- ㉗ 127'-5 1/2"
- ㉘ 129'-1"

(7) 13'-0" WOOD TIE QUANTITIES BY LENGTH (9) 14'-0" (5) 15'-0"

- NOTES:
1. SEE DWGS 345000, 345001, AND 345003 FOR THE BALANCE OF LAYOUT PLANS.
 2. ALL TIE SPACING IS 19 1/2" ON THIS PANEL.
 3. ALL TIES 7" X 9" BODY UNLESS OTHERWISE SHOWN.
 4. SEE DWG 345100 FOR TURNOUT GEOMETRY.
 5. SEE DWG 345200 FOR TURNOUT BILL OF MATERIAL.
 6. PANEL WEIGHT = APPROXIMATELY 28,800 LBS.

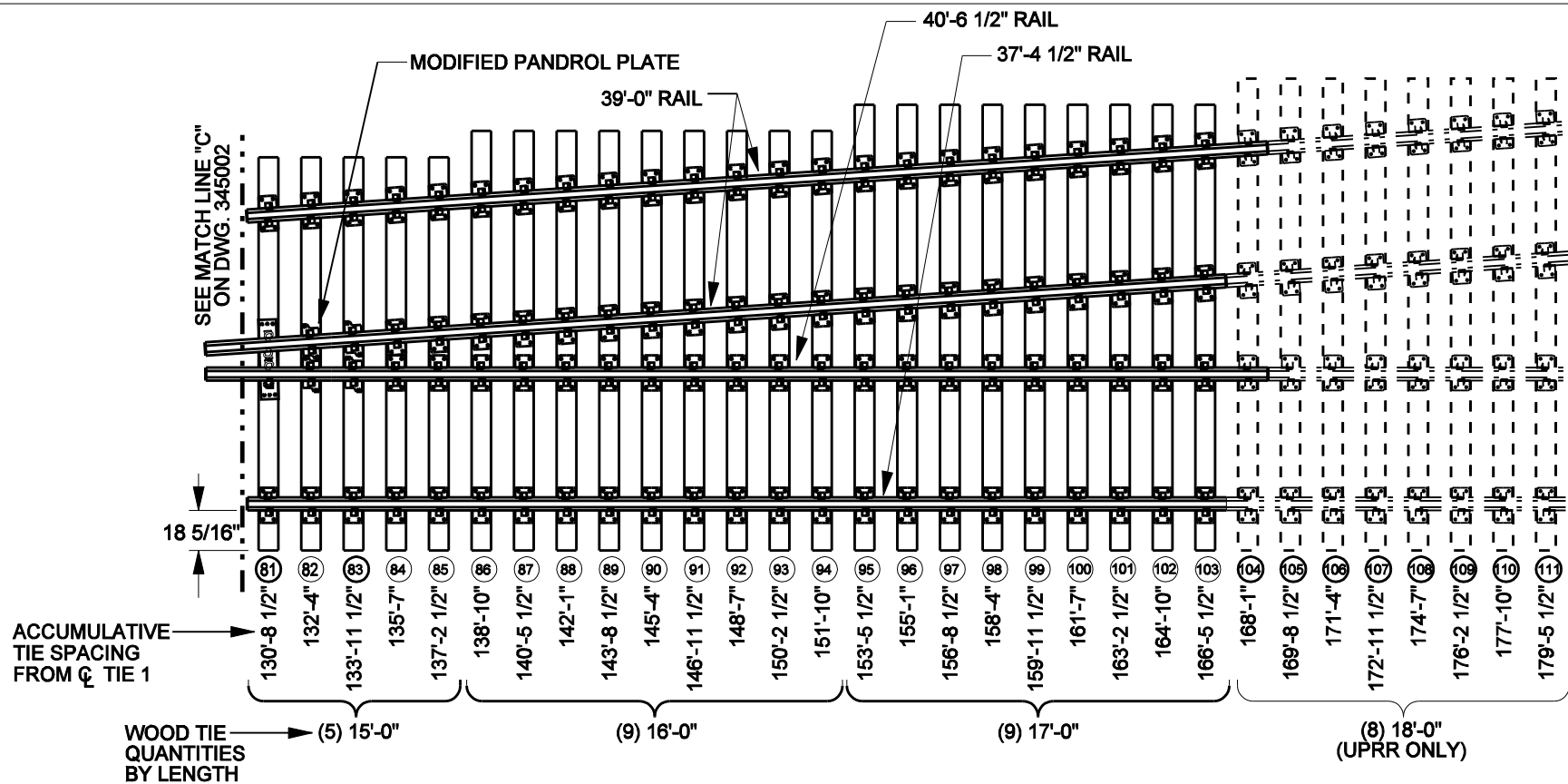


COMMON STANDARDS

NO. 15 TURNOUT 136/141 LB. PANEL NO. 4

	UPRR	BNSF LH	BNSF RH
136LB. RBM	N/A	513450060	513450059
136 LB. SPRING	N/A	513450063	513450061
141 LB. RBM	N/A	513450232	513450233
141 LB. SPRING	N/A	513450234	513450235

FILE OWNER: UPRR	DATE: MAY 16, 2008
REV. NO.: 3	DWG NO: 345002



NOTES:

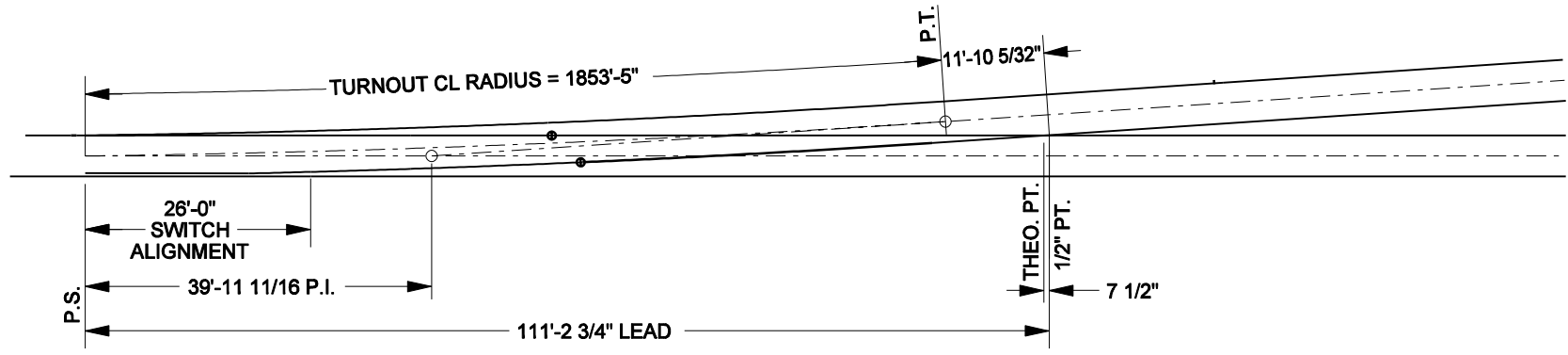
1. SEE DWGS 345000, 345001, AND 345002 FOR THE BALANCE OF LAYOUT PLANS.
2. ALL TIE SPACING IS 19 1/2" ON THIS PANEL.
3. ALL TIES 7" X 9" BODY UNLESS OTHERWISE SHOWN.
4. SEE DWG 345100 FOR TURNOUT GEOMETRY.
5. SEE DWG 345200 FOR TURNOUT BILL OF MATERIAL.
6. PANEL WEIGHT = APPROXIMATELY 23,650 LBS.



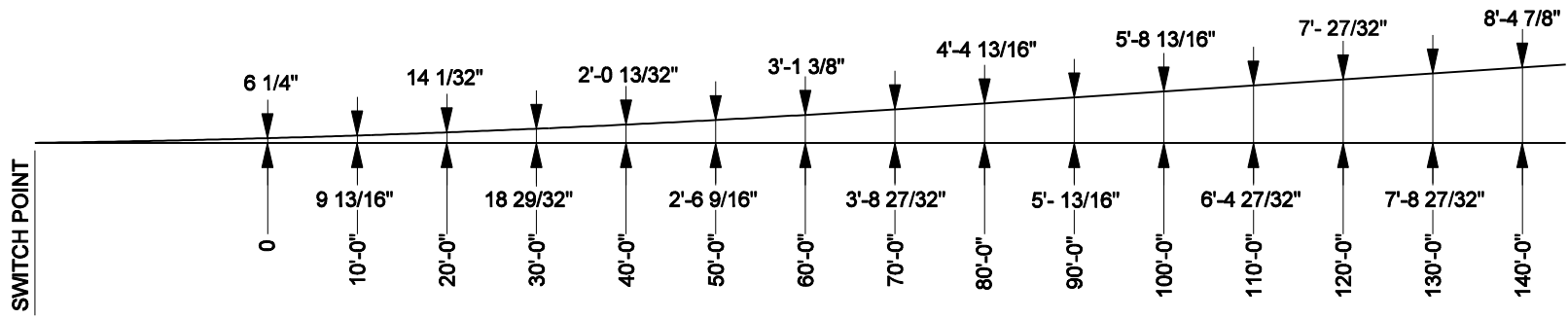
COMMON STANDARDS

NO. 15 TURNOUT 136/141 LB. PANEL NO. 5

FILE OWNER: UPRR	DATE: MAY 2, 2008
REV. NO.: 1	DWG NO: 345002



GENERAL LAYOUT



SPREAD LAYOUT

SWITCH DATA	
SWITCH LENGTH	26'-0"
HEEL SPREAD	6 1/4"
HEEL ANGLE	1°-33'-2"
SWITCH ANGLE	0°-44'-47"
THROW AT ROD #1	4 3/4"
RADIUS (CENTER LINE)	1853.42'
T =	49.68'
CENTRAL ANGLE - CLOSURE CURVE	3°-04'-16"
DEGREE OF CURVE	3°-05'-30"
THICKNESS AT POINT	1/4"
RADIUS (CLOSURE CURVE)	1855.77'
VERTEX DISTANCE	0"

FROG DATA	
ANGLE	3°-49'-06"
LENGTH	VARIES

TURNOUT DATA	
RADIUS OF CENTER LINE	1853.42'
T =	49.68'
CENTRAL ANGLE - CLOSURE CURVE	3°-04'-16"
DEGREE OF CURVE	3°-05'-30"

NOTES:



COMMON STANDARDS



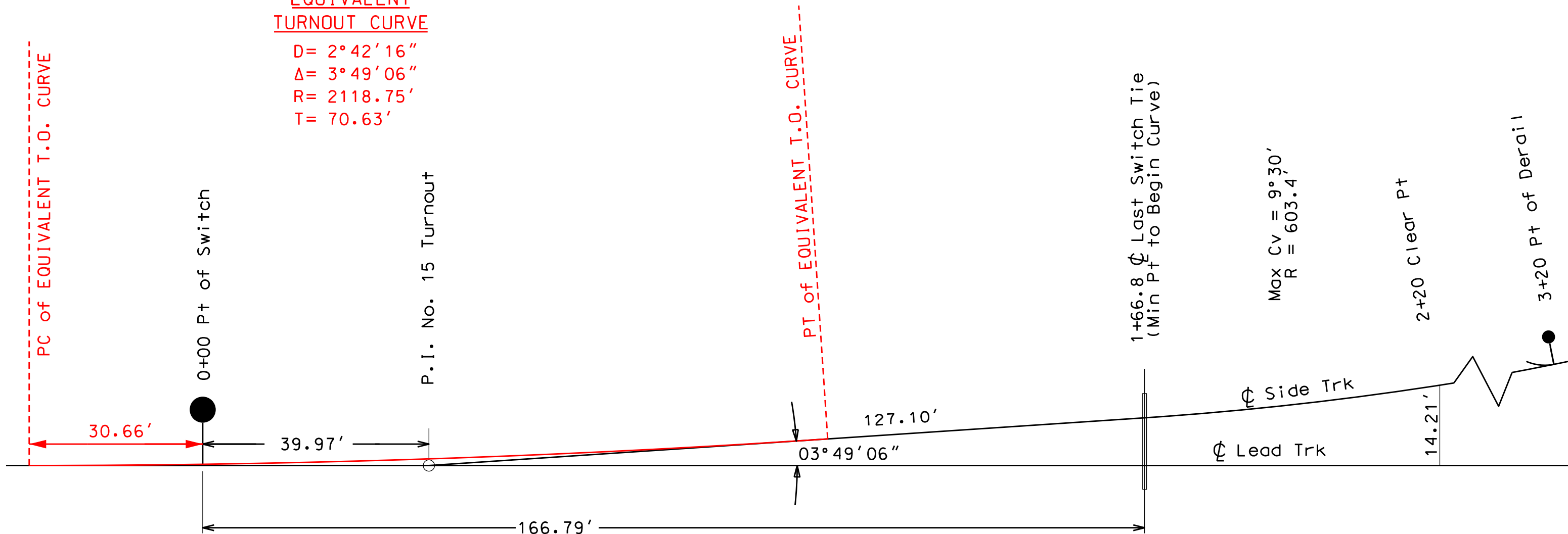
**NO. 15 TURNOUT 26'-0"
CURVED SWITCH,
TURNOUT GEOMETRY**

FILE OWNER: UPRR	DATE: JAN. 14, 2003
REV. NO.: 0	DWG NO: 345100

3451 171

**EQUIVALENT
TURNOUT CURVE**

D = 2° 42' 16"
 Δ = 3° 49' 06"
 R = 2118.75'
 T = 70.63'

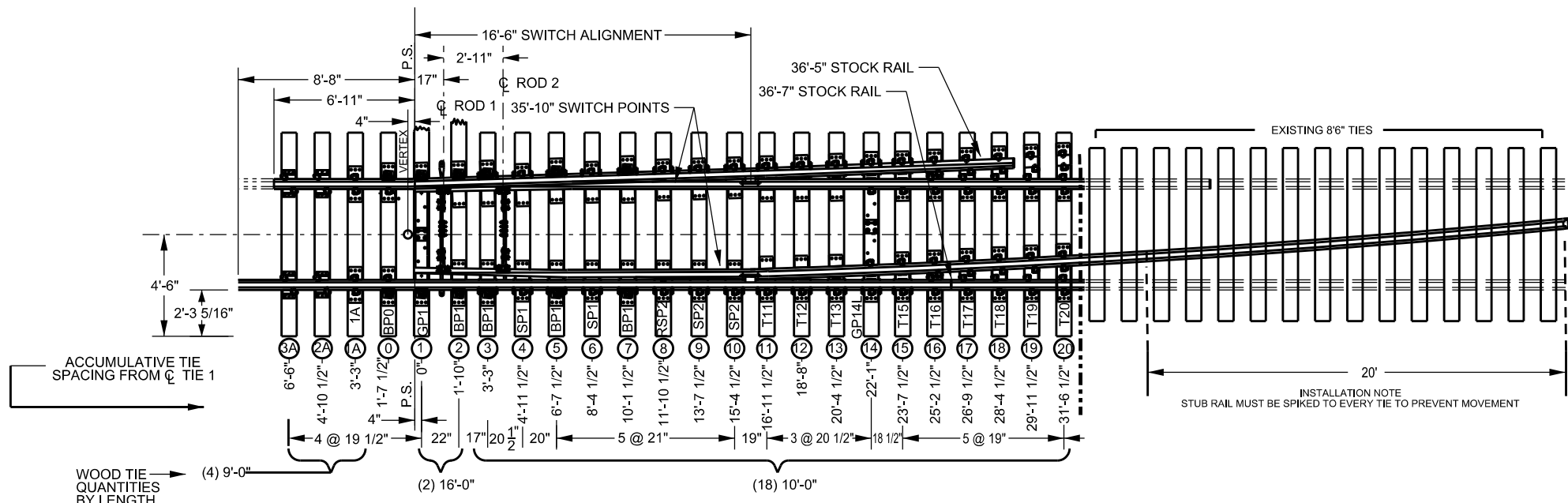


APPROVALS - (NAME - TITLE)	DATE	APPROVALS - (NAME - TITLE)	DATE



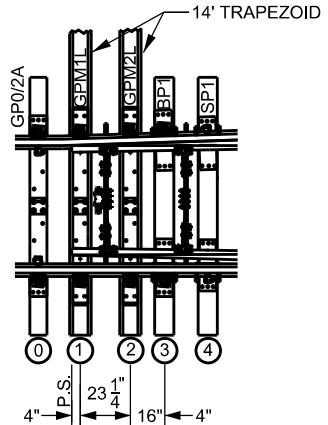
**NUMBER 15 TURNOUT
TRACK ALIGNMENT GEOMETRY**

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	Added CP and Derail info	4/5/17	JRG

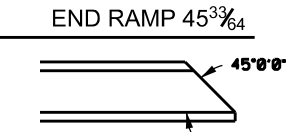


ACCUMULATIVE TIE SPACING FROM ϕ TIE 1

WOOD TIE QUANTITIES BY LENGTH



MANUAL OPERATED
 PANEL WEIGHT: 20,000 LBS.
 Panel Length 44' 6"



POWER OPERATED
 PANEL WEIGHT: 20,000 LBS.

- NOTES:
1. ALL TIES 7" X 9" BODY UNLESS OTHERWISE SHOWN ABOVE.
 2. SEE DWG 341100 FOR TRACK GEOMETRY.
 3. FULLY BOX ANCHOR STOCK RAILS, TIES 3-15 FOR SHIPPING OF PANELS ONLY.
 4. SWITCH POINT DERAIL FURNISHED AS A COMPLETE PANEL.
 5. WHEN ORDERING SPECIFY LEFT OR RIGHT HAND AND POWER OR MANUAL OPERATION. SUPPLIER TO PROVIDE CORRECT PLATING AND TIES FOR POWER APPLICATIONS.
 6. FOR OPERATING STANDS SEE STANDARD PLANS 2501.02 & 2153.01. FOR ROD PLAN SEE DRAWING 2156.01 AND DERAIL SIGN ON PLAN 3020.01.
 7. SEE STANDARD PLAN 24000202 FOR DOUBLE SWITCH POINT DERAIL REQUIREMENTS.
 8. SEE LATEST REVISED ENGINEERING INSTRUCTIONS 9.3.3 FOR INSTALLATION AND USE.
 9. MANUFACTURER WILL PROVIDE A DRILLED 20" STUB RAIL, A DRILLED TURNOUT SWITCH POINT AND ANGLE BARS FOR HOOK UP.
 10. END RAMP REQUIRED ON STUB RAIL AND TURNOUT STOCK RAIL.

INSTALLATION NOTE
 STUB RAIL MUST BE SPIKED TO EVERY TIE TO PREVENT MOVEMENT

	LH	RH
POWER 141	054333703	054333711
POWER 136	054333646	054333653
POWER 115	054333687	054333695
MANUAL 141	054333661	054333679
MANUAL 136	54590633	54590641
MANUAL 115	054333638	54590658

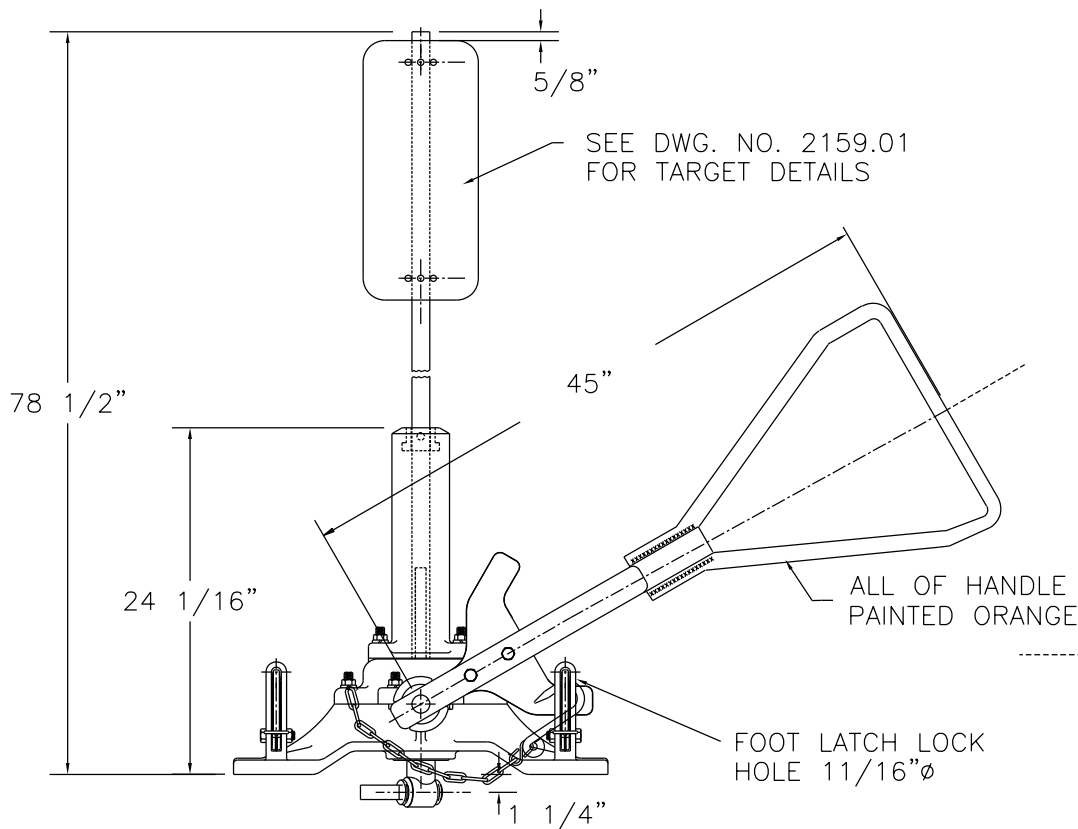
STANDARD PLAN

DOUBLE SWITCH POINT DERAIL

16' 6" POINTS 136 LB

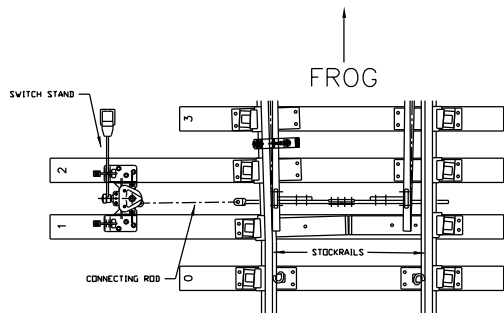
DATE: SEPTEMBER 8, 2011	FILE OWNER: BNSF
DWG NO: 2400	SHEET NO: 04
	REV NO: 00

3-6

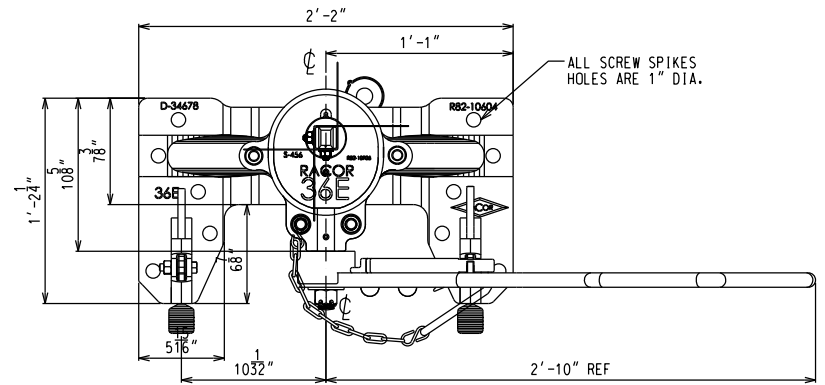


ELEVATION VIEW

36 EH STANDS,
SHOWN WITH HIGH STAFF
AND TRI-HANDLE.



INSTALLATION VIEW



PLAN VIEW

PLAN VIEW
36 E STANDS,
SHOWN WITH LOW STAFF
AND TRI-HANDLE.

BILL OF MATERIALS

QUANTITY SWITCH STAND DESCRIPTION

1 EA.	36E LOW TARGET WITH TRI-HANDLE @ 30'	ITEM NO. 517740985N
1 EA.	36EH HIGH TARGET WITH TRI-HANDLE @ 30'	ITEM NO. 517740995N
1 EA.	36D RETRO-FIT KIT WITH TRI-HANDLE @ 30'	ITEM NO. 513960006N

NOTES:

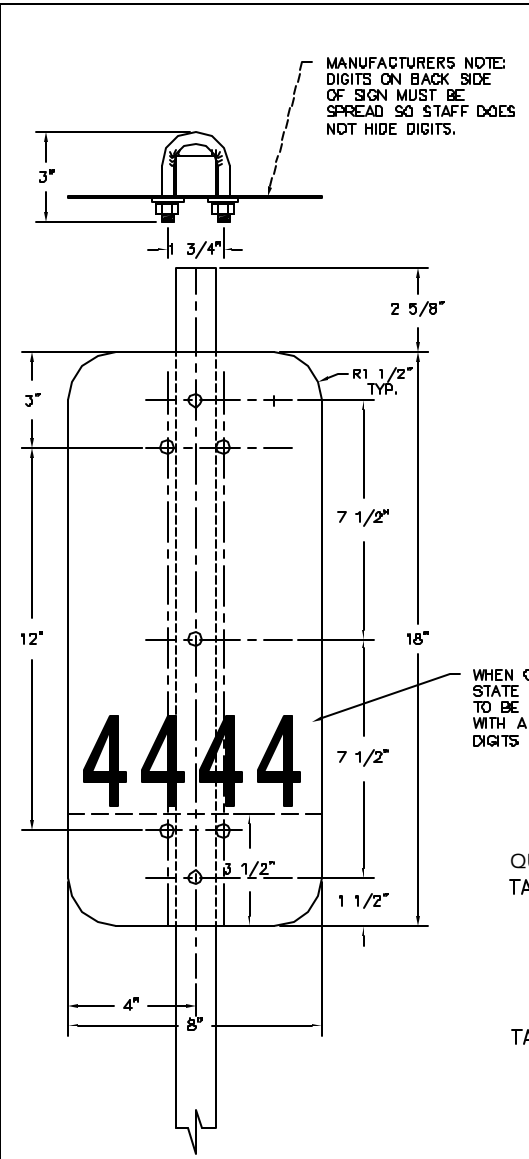
1. SEE DWG. 2156 & 2160 FOR SPINDLE AND CRANK EYE DETAILS.
2. HANDLE KITS (STRAIGHT OR TRI-HANDLE) ARE AVAILABLE FOR FIELD RETRO FIT OF EXISTING 36 STYLE SWITCH STANDS.
3. STAND 36EH IS FOR MAIN LINE USE ONLY. FURNISHED WITH NO. 1.2 STAFF, SEE DWG. 2160.01.
4. STAND 36E IS FOR MAIN LINE OR YARD USE, FURNISHED WITH NO. 2 STAFF, SEE DWG. 2160.01.
5. 16:1 MECHANICAL ADVANTAGE.
6. SWITCH STANDS ARE TO BE INSTALLED WITH HANDLE DIRECTED TOWARDS FROG WHEN LINED TO THE STRAIGHT SIDE OF SWITCH.
6. STAND INCLUDES 1/2" DIAMETER HOOK ON 19" CHAIN



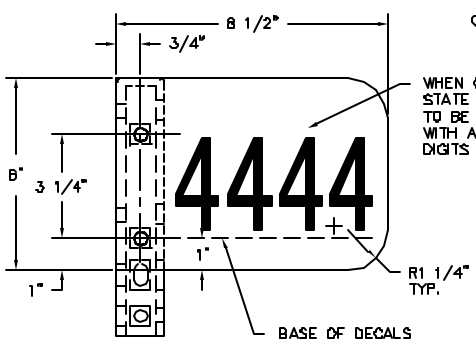
STANDARD PLAN

**RACOR STYLE 36E & 36EH
SWITCH STAND
WITH 45" TRI-HANDLE**

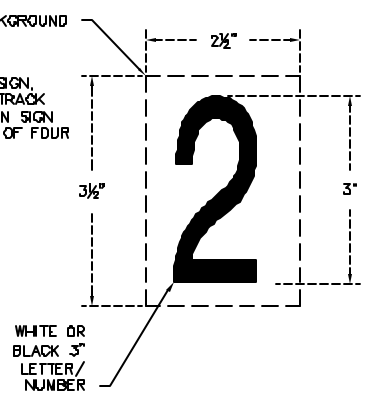
FILE OWNER BNSF	DATE: DECEMBER 10, 2010
REV. NO.: 13	DWG NO: 215301



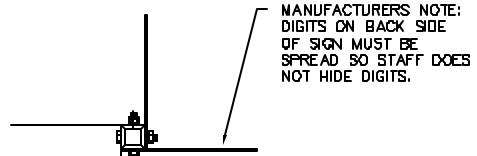
NO. 1 UNIVERSAL TARGET
 1. MAIN LINE HIGH STANDS (RED)
 2. NON-MAIN LINE HIGH STANDS (YELLOW)



TARGET NO. 2
 1. MAIN LINE LOW STANDS (RED ONLY)
 2. NON-MAIN LINE LOW STANDS (YELLOW/GREEN)



ALPHANUMERIC DECAL
 WHITE OR BLACK 3" LETTER/NUMBER
 CLEAR BACKGROUND



ASSEMBLY
 (YELLOW/GREEN)

BILL OF MATERIALS

QUANTITY	SIGN PANEL	ITEM NO.
TARGETS BLANK WITH NO DIGITS		
1 EA.	TARGET NO. 1 UNIVERSAL, (HIGH)-RED.....	518250994
1 EA.	TARGET NO. 1 UNIVERSAL, (HIGH)-YELLOW	518250996
1 EA.	TARGET NO. 2 (LOW)-RED.....	518250005
1 EA.	TARGET NO. 2 (LOW)-YELLOW.....	518250006
1 EA.	TARGET NO. 2 (LOW)-GREEN.....	518250007
TARGETS WITH DIGITS		
1 EA.	TARGET NO. 1 REFL. WHITE DIGITS ON RED BACKGROUND.....	518250003
1 EA.	TARGET NO. 1 BLACK DIGITS ON YELLOW BACKGROUND.....	518250004
1 EA.	TARGET NO. 2 REFL. WHITE DIGITS ON RED BACKGROUND....	518250008
1 EA.	TARGET NO. 2 BLACK DIGITS ON YELLOW BACKGROUND.....	518250010
1 EA.	TARGET NO. 2 REFL. WHITE DIGITS ON GREEN BACKGROUND	518250009
HARDWARE		
2 EA.	3/8" X 1 3/4" X 3 1/2" U-BOLTS CADMIUM PLATED WITH FLAT WASHERS, AND ELASTIC STOP NUTS. (NO.1 TARGET)	
3 EA.	3/8" X 2 1/2" BOLTS, CADMIUM PLATED WITH FLAT WASHERS, AND ELASTIC STOP NUTS. (NO. 1 TARGET)	
2 EA.	3/8" X 2 1/2" BOLTS, CADMIUM PLATED WITH FLAT WASHERS, AND ELASTIC STOP NUTS. (NO. 2 TARGET)	

FOR RETROFITTING EXISTING TARGET SIGNS, ORDER SHEETS AS STATED BELOW.
 16 LETTERS/NUMBERS TO THE 8 1/2" x 11" SHEET. ONE CHARACTER TYPE PER SHEET. MUST STATE NUMBERS AND LETTERS REQUIRED WHEN ORDERING.

THEY ARE SELF-ADHESIVE AND ARE APPLIED AS SHOWN ON TARGETS NO. 1 AND 2. CHARACTERS WILL HAVE TO BE TEST SPACED PRIOR TO ADHERING TO SIGN. THE DECAL IS WIDER THAN WILL FIT ACROSS THE SIGNS DEPENDING ON NUMBER OF CHARACTERS REQUIRED. OVERLAP THE CHARACTERS AS NECESSARY.

CLEAN THE AREA THE LETTERS / NUMBERS ARE TO BE APPLIED WITH WINDEX, AMMONIA BASE OR BEST OF ALL A CITRUS BASE CLEANERS. AFTER THE SURFACE HAS DRIED, APPLY CHARACTERS IN TEMPERATURES ABOVE 60°. IF APPLIED AS ABOVE THE LETTERS/NUMBERS WILL STICK. BELOW 60° THEY MAY NOT.

APPLY THE LETTERS/NUMBERS ON THE TARGET APPROPRIATE FOR THAT TRACK NAME WHEN THE SWITCH HAS BEEN THROWN FOR THAT MOVEMENT.

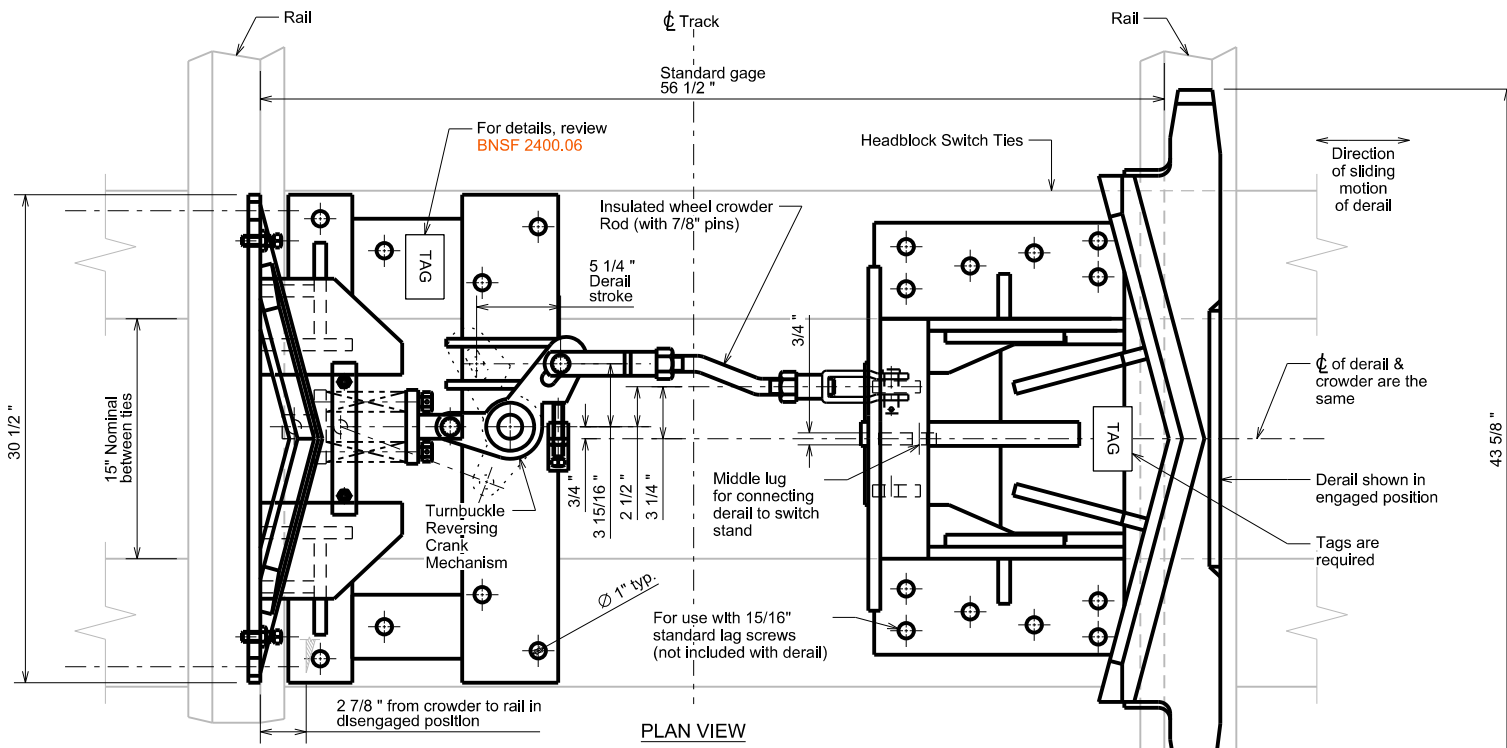
YOU MAY SPECIAL ORDER TARGETS WITH NUMBERS/LETTERS BUT YOU MUST SPECIFY THE LABEL YOU WANT ON THE TARGET AT TIME OF ORDERING.

YELLOW TARGET REQUIRES BLACK LETTERS/NUMBERS WITH CLEAR BACKGROUND.

NOTES:

- ALL SIGNS LISTED IN THIS PLAN ARE 6" X 8 1/2" OR 8" X 18" SIZED WITH RED, YELLOW, OR GREEN REFLECTIVE BACKGROUND AS SHOWN.
- TARGETS TO BE MADE OF .081" 5052 H38 SHEET ALUMINUM.
- REFLECTORIZED MATERIAL TO BE APPLIED TO BOTH SIDES OF TARGET FOR BIDIRECTIONAL VIEWING.
- GREEN SCOTCHLITE SERIES 3877, YELLOW SCOTCHLITE SERIES 3871, AND RED SCOTCHLITE SERIES 3872 TO BOTH SIDES. HIGH INTENSITY GRADE.
- ALL HOLES IN TARGETS ARE 7/16"Ø.
- SEE PLAN 2160.01 FOR TARGET STAFFS.

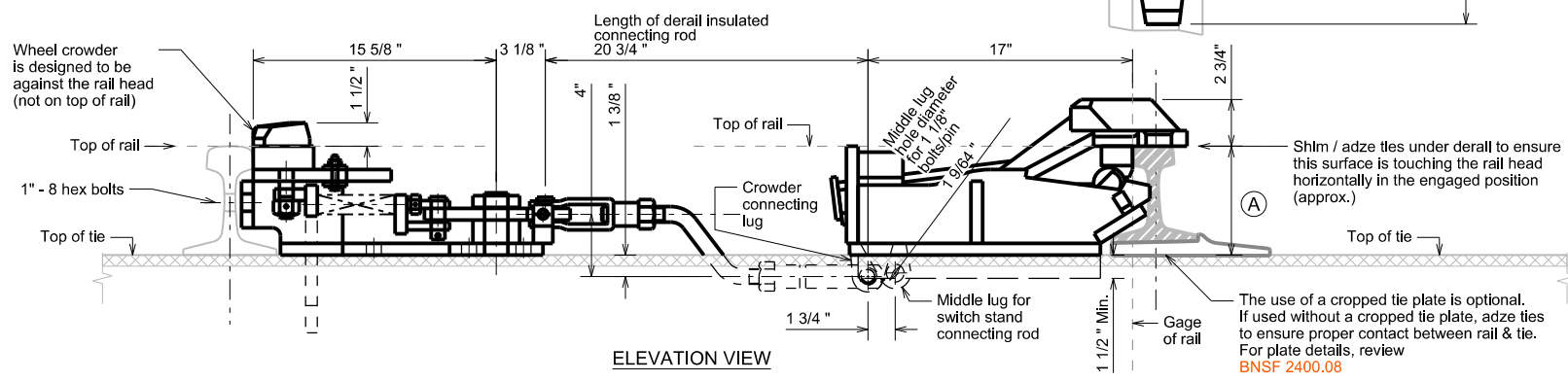
BURLINGTON NORTHERN SANTA FE STANDARD PLAN ENGINEERING DEPT., FORT WORTH, TEXAS	
SWITCH STAND TARGETS	
RAIL: N/A	
DATE: 05/22/03	SCALE: NONE
DWG. NO. 2159	SHEET NO. 01
REV. NO. 12	
USE OF THIS DRAWING IS LIMITED TO BURLINGTON NORTHERN SANTA FE AND THE PARTY THEREIN AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM WITHOUT THE WRITTEN CONSENT OF BURLINGTON NORTHERN SANTA FE.	



8'-2" derail connecting rod to be used to connect the derail to the switch stand on the side of the derail

Stand to be installed such that the center of the middle lug is 8'-2" to 9'-3" from the switch stand

Rod to be used with a connecting pin of 1 1/8" dia. pin (new style) or 7/8" dia. pin (old style) based on the middle lug hole size



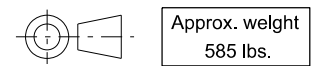
(A) denotes the nominal height. Derail should lay flat on the rail head

Select derail size based on the height of the rail or the height of the rail plus tie plate

Derail sizes	(A)
6	6" +/-
7	7" +/-
8	8" +/-

GENERAL NOTES:

1. The Western Cullen Hayes bi-directional short stroke sliding derail (HBXSS derail) is not designed to be installed & used in absence of the crowder component.
2. Use of tie plates under the rail is optional. The plate must be cropped at the edge of the rail seat such that it does not prevent the proper seating of the derail on the ties or the proper installation of the derail.
3. The use of this derail is not intended to waive any requirements from the Engineering Instructions (EI). If apparent conflicts are present, the EI should govern.
4. For installation instructions, ordering and additional information, please review [BNSF 2400.06](#) & [BNSF 2400.07](#)



BNSF RAILWAY

BNSF STANDARD PLAN
TRACK STANDARDS

WESTERN CULLEN HAYES MODEL HBX-SS
2-WAY SLIDING DERAIL WITH CROWDER

PLAN NO 2400 SHEET 03 REVISION 06

Stock Codes Table (Login With Your BNSF email account)

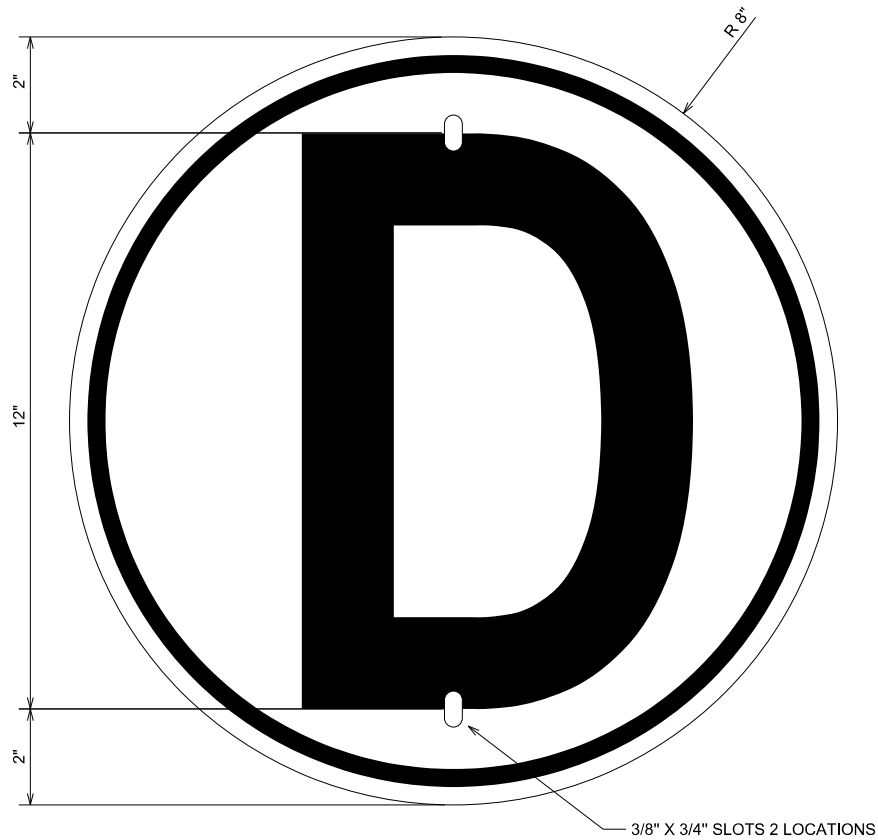
2400.03.06

BNSF RAILWAY COMPANY - SYSTEM TRACK STANDARDS

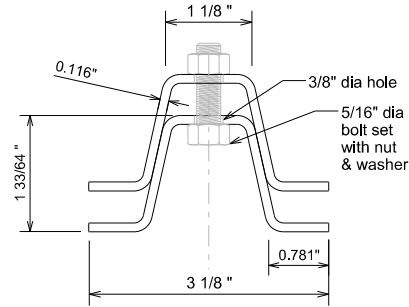
DATE: 3/12/2019

Navigate to Other Drawings (Login With Your BNSF email account)

SIGN NO. 28 - DERAIL SIGN



SPLICING DETAIL MINIMUM OVERLAP 12"



NO. 28 SIGN DATA

WIDTH:	16 "	HEIGHT:	16 "
THICK:	0.063 "	BORDER:	3/8 "
BACKGROUND COLOR	WHITE		
TEXT/SYMBOL COLOR	BLACK		

ORDERING/OTHER INSTRUCTIONS

Includes one sign and two sets of mounting screws

INSTRUCTIONS FOR THE USE OF THIS SIGN

General:

- Place derail sign opposite of derails without high target stand. Mounted on both sides of steel post for bidirectional viewing
- Sign may be mounted on switch stand mast

BILL OF MATERIALS

- 1 EA. No. 28 Derail Sign
- 2 EA. 6' long galvanized flanged channel steel post with pointed ends
2 lbs. per linear feet
3/8" Dia. mounting holes on 1" centers
- 1 EA. 8' (or longer) galvanized flanged channel steel post with blank ends
2 lbs. per linear feet
3/8" Dia. mounting holes on 1" centers
- 6 EA. 5/16" Dia. x 2" galvanized round head square neck machine bolt with washer and lock nuts
Fully threaded for sign panel mounting
- 6 EA. 5/16" Dia. x 1 1/4" mounting bolt sets (with washer & lock nuts)
For post splicing

ALL SIGNS SHALL COMPLY WITH BNSF SIGN SPECIFICATIONS UNLESS OTHERWISE STATED

MOUNTING INSTRUCTIONS

1. Sign to be mounted no closer than 14' from nearest center of track, where practical



BNSF STANDARD PLAN
ROADWAY SIGNS

NO. 28 SIGN
DERAIL SIGN

3028.01.00

Stock Codes Table (Login With Your BNSF email account)

DRAFTED BY	CLY	CHECKED BY	EKF-S
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BNSF RAILWAY COMPANY - SYSTEM TRACK STANDARDS

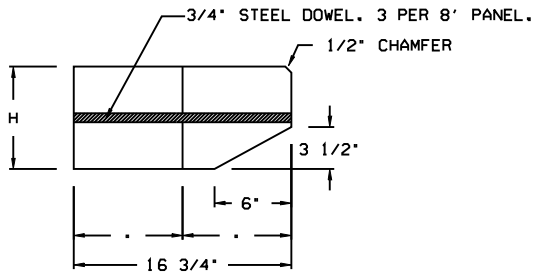
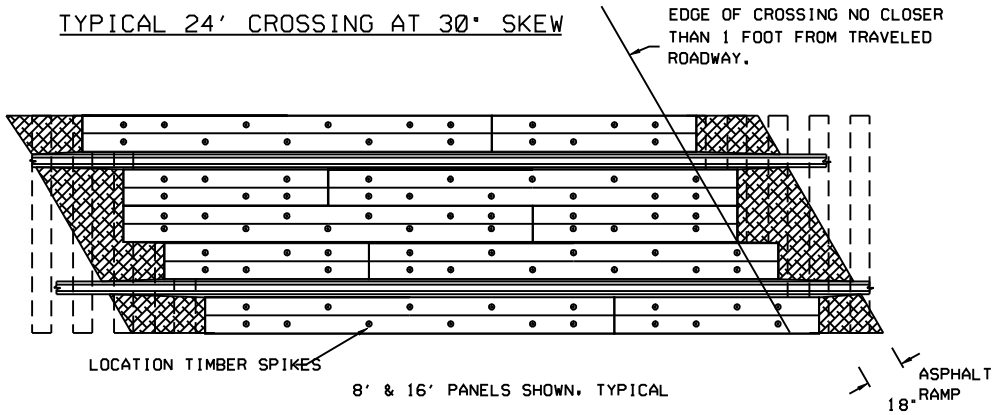
DRAFTED FOR REVIEW	CLY	CHECKED BY	EKF	STATUS	Preliminary Draft
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DATE: 02/18/2020

PLAN NO: 3028 SHEET 01 REVISION 00

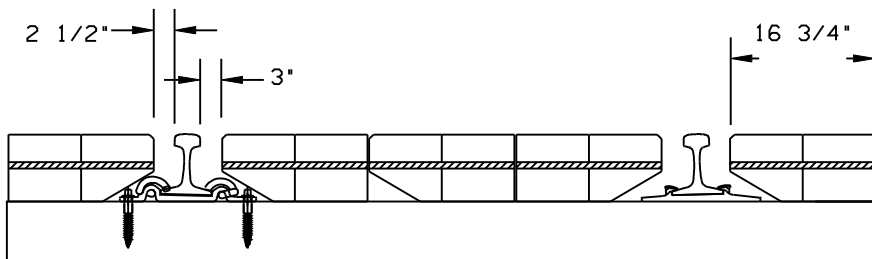
Navigate to Other Drawings (Login With Your BNSF email account)

TYPICAL 24' CROSSING AT 30° SKEW



TWO PIECE PANEL

H • 7" FOR 100 LB RAIL
 H • 7 1/2" FOR 115 LB RAIL
 H • 8" FOR 136 LB. RAIL



8' 6" CROSS TIE

MATERIAL & FABRICATION

1. HARDWOOD PANELS TO BE TREATED (BNSF SPECIFICATIONS) MIXED HARDWOOD, FREE OF WANE.
2. BRANDING: EACH CROSSING PANEL SHALL BE IDENTIFIED ON THE END WITH MANUFACTURER ID, MO/YR MANUFACTURED, WEIGHT RAIL.

INSTALLATION

1. BALLAST THROUGH CROSSING AREA SHALL BE CLEAN CRUSHED ROCK BALLAST, 12" BELOW BOTTOM OF TIES, TOP OF BALLAST TO BE 2" BELOW TOP OF TIES. TIES THROUGH CROSSING SHALL BE NO. 5 TREATED HARDWOOD 19 3/16" ON CENTERS, IN GOOD CONDITION.
2. IF REQUIRED BY GDLM, PERFORATED DRAINAGE PIPE RECOMMENDED FOR PROPER DRAINAGE PER BNSF DWG. 2259.01.
3. ENDS OF CROSSING PANELS SHOULD BE CENTERED ON TIE.
4. THERMITE WELDS OR RAIL JOINTS SHOULD BE LOCATED OUTSIDE THE CROSSING. WHEREVER POSSIBLE, WELDED RAIL SHOULD BE RELAYED THROUGH CROSSING (MINIMUM RAIL WEIGHT, 112 LB.) BEFORE NEW TIES AND CROSSING PANELS ARE INSTALLED.
5. PANELS SHALL BE HANDLED CAREFULLY, SLATTED AND STACKED ON LEVEL GROUND TO PREVENT WORPAGE.
6. PUBLIC CROSSINGS SHALL BE OF SUCH WIDTH AS PRESCRIBED BY LAW, BUT IN NO CASE SHALL THE WIDTH BE LESS THAN THAT OF THE ADJACENT TRAVELED ROADWAY PLUS 2 FEET.
7. TWIN LEAD TIMBER SPIKES FURNISHED SEPARATELY.
8. 3/8" DIA. HOLES SHOULD BE BORED IN FIELD, TO PATTERN SHOWN.
9. GAGE SIDE AND FIELD SIDE PANELS ARE INTERCHANGEABLE.
10. ALL CROSSING PANELS HAVE CLEARANCE FOR PANDROL PLATES AND CLIPS.
11. USE OF 10' TIES IS REQUIRED IN HEAVILY RAIL TRAFFIC CROSSINGS SEE DWG. 2253.03.
12. PANELS ARE FURNISHED FOR ANY LENGTH CROSSING IN INCREMENTS OF 8 AND 16 FEET. THE ITEM NUMBERS LISTED BELOW COVERS THE REQUIRED PANELS BY THE TRACK FOOT.

BILL OF MATERIAL		
WT. RAIL	DESCRIPTION	STOCK CODE
100 LB	8' FULL DEPTH PANEL (2 PCS. DOWELED)	004938916
115 LB	8' FULL DEPTH PANEL (2 PCS. DOWELED)	004938940
115 LB	16' FULL DEPTH PANEL (2 PCS. DOWELED)	004938932
136 LB	8' FULL DEPTH PANEL (2 PCS. DOWELED)	004938866
136 LB	16' FULL DEPTH PANEL (2 PCS. DOWELED)	004938957
	3/4" X 12" TWIN LEAD TIMBER SPIKE	004744074
	3/4" X 13" TWIN LEAD TIMBER SPIKE	004743985



STANDARD PLAN

TIMBER CROSSING PANELS FOR LOW DENSITY RAIL TRAFFIC ON 8'6" WOOD TIES

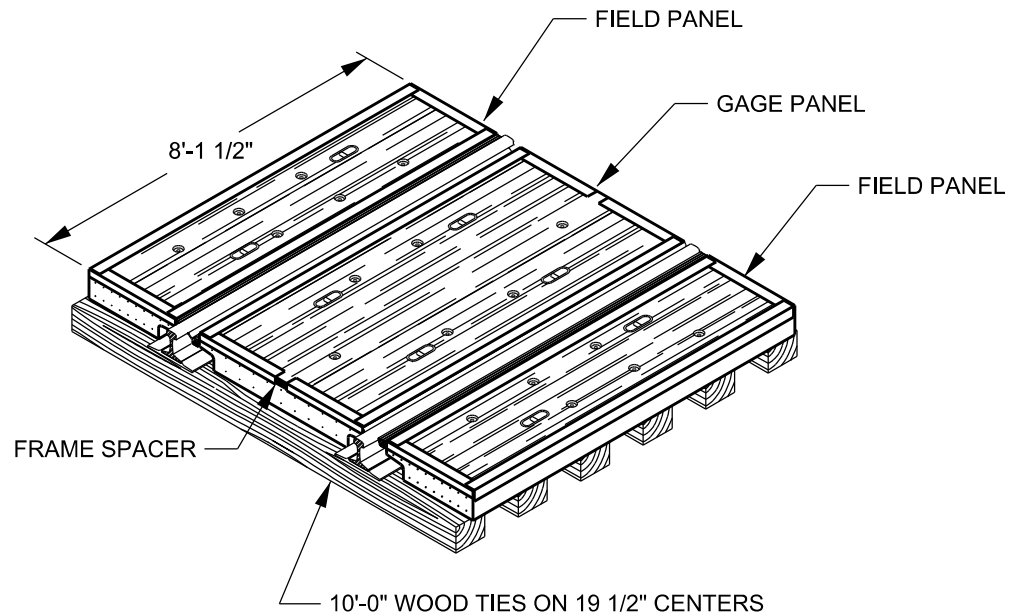
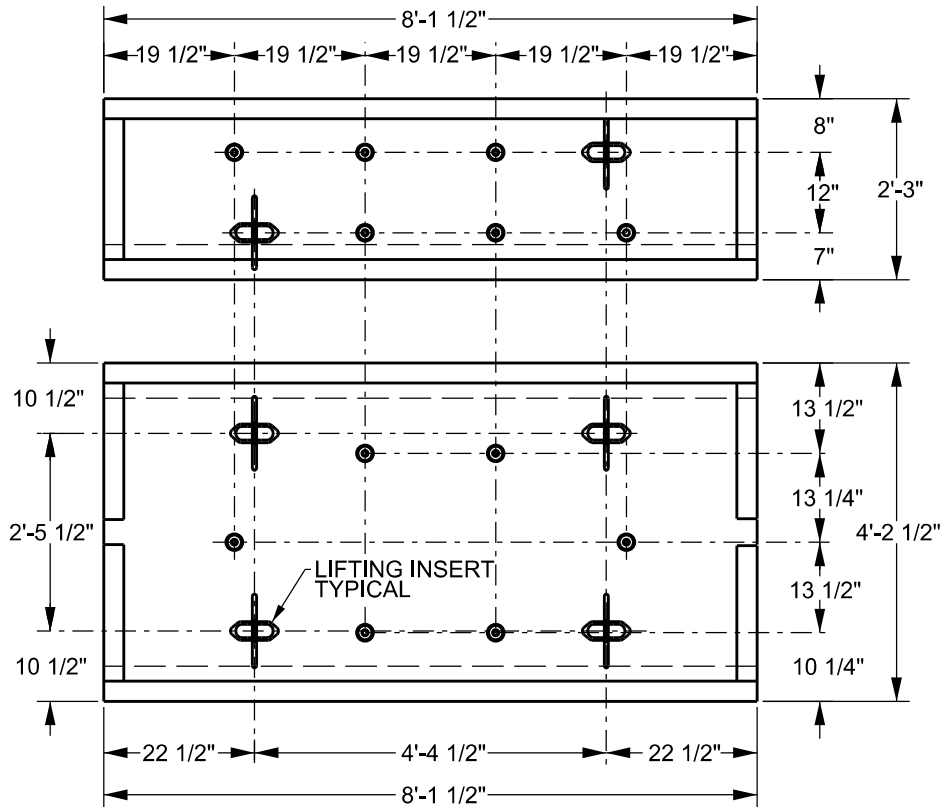
SCALE: NONE

FILE OWNER BNSF

DATE: MAY 11, 2010

REV. NO.: 07

DWG NO: 225302



NOTES:
 1/4" RUBBER INTERFACE PAD TO BE PLACED BETWEEN PANEL AND TIES FOR 141 LB. RAIL SECTION. PAD TO BE NAILED TO TIES,

CROSSING TYPE - 10W

RAIL SIZE	PANEL HEIGHT	GAGE PANEL WEIGHT	FIELD PANEL WEIGHT
115	7 1/8"	2850 LBS.	1550 LBS.
132-141	7 7/8"	3125 LBS.	1675 LBS.



COMMON STANDARDS

LAYOUT FOR CONCRETE
 PANELS ON 10'-0" LONG
 WOOD TIES (10W)

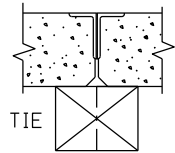
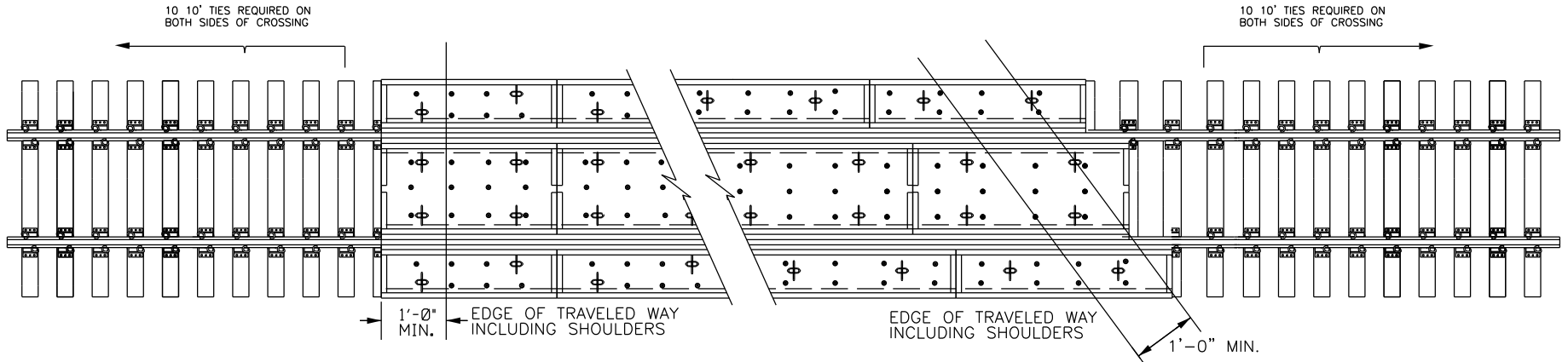
ITEM NUMBERS

141 LB. BNSF	133-141 LB. UPRR	132-136 LB. BNSF	115 LB. UPRR	115 LB. BNSF
054374616	540-1301	004935722	540-0202	004935706

FILE OWNER: UPRR DATE: DEC. 6, 2010

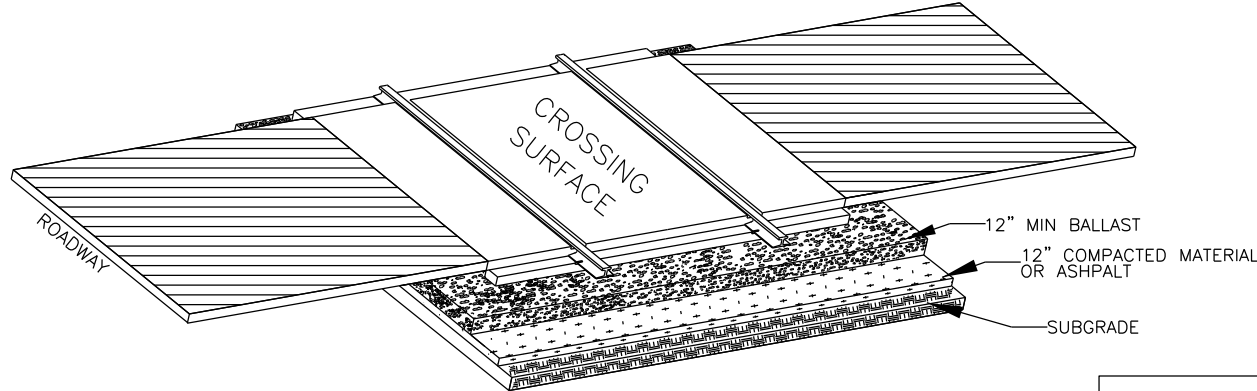
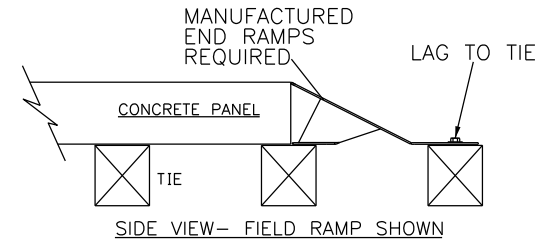
REV. NO.: 2 DWG NO: 179 00

15-1



CONCRETE PANELS MUST BE SUPPORTED BY TIE AS SHOWN

CONCRETE CROSSING ON WOOD TIES



BALLAST SECTION

NOTES:

- SEE E.I. 10 FOR ROAD CROSSING REQUIREMENTS
- 1. DIRECT DRAINAGE AWAY FROM THE TRACK
- 2. PREVENT MATERIAL FROM FOULING THE ROAD CROSSING BALLAST SECTION
- 3. DIVERT SURFACE WATER FLOWING ALONG THE ROADWAY OR APPROACHES AWAY FROM THE TRACK
- 4. SEE BNSF STANDARD PLANS 2258.03, 2258.04 AND 2258.05 FOR END RAMP SYSTEM

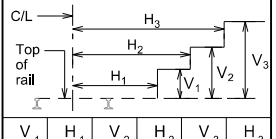


ROAD CROSSING LAYOUT

DRAWING: 2259	SHEET: 01	REVISION: 07
DATE: OCTOBER 29, 2013		OWNER: BNSF

15-180

CLEARANCES BY STATES		TRACK CENTERS										VERTICAL					HORIZONTAL																					
STATE	REGULATION REFERENCE	YEAR OF LATEST AMENDMENT	MAIN TRACKS	ANY TWO SUBSIDIARY TRACKS	ADJACENT SUBSIDIARY TRACK TO ANY MAIN TRACKS	LADDER TRACK ADJACENT TO ANY PARALLEL TRACK	TWO ADJACENT PARALLEL LADDER TRACKS	YARD LEADS, REPAIR, & CABOOSE TRACKS	TEAM TRACKS IN PAIRS	UNLOADING TRACKS AT PLATFORMS	GENERAL	THRU BRIDGES	HIGHWAY BRIDGES	TUNNELS	BUILDING DOORS	IN BUILDINGS	GENERAL	THRU BRIDGES	HIGHWAY BRIDGES	TUNNELS	BUILDING DOORS	IN BUILDINGS	PLATFORMS							SIGNALS				POLES	ORE AND COAL DOCKS	CATTLE CHUTES		
																							H = Horizontal Clearance (Min.) V = Vertical Clearance (Max.)							HIGH SIGNALS	LOW BETWEEN TRACKS	SWITCH BOXES, ETC.						
																							C/L	H ₁	H ₂	H ₃	V ₁	V ₂	V ₃				HEIGHT (MAX)				CLEARANCE	HEIGHT (MAX)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37		
ALABAMA	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
ARIZONA	CHPTR. 5, ART. 1	1987	14-0	14-0	15-0	20-0	20-0	NR	13-0	13-6	22-0	22-0	23-0	22-0	18-0	18-0	8-6	8-0	8-6	8-0	7-8	8-6	0-8	4-8	NR	NR	4-6	8-0	8-6	3-0	6-0	0-5	3-0	8-6	8-6	8-6		
ARKANSAS	CASE R-1012	1956	14-0	14-0	14-0	17-0	20-0	14-0	13-0	13-0	22-0	22-0	22-0	23-0	17-0	18-0	8-6	8-0	8-6	8-0	7-0	7-0	0-8	5-0	4-0	5-9	4-0	8-0	8-6	3-0	6-0	0-4	3-0	8-6	8-6	8-6		
CALIFORNIA	G.O. 26-D	1988	14-0	14-0	15-0	20-0	20-0	14-0	13-0	13-0	22-6	22-6	22-6	22-6	18-0	18-0	8-6	8-0	8-6	8-0	8-6	8-6	0-8	4-8	NR	NR	4-0	7-6	8-6	3-0	6-0	0-4	3-0	8-6	8-6	8-6		
CANADA	CHPTR. 1189	1983	13-0	13-6	14-0	15-0	18-0	13-6	12-0	12-0	22-6	22-6	22-6	22-6	22-6	22-6	8-4 1/4	8-0	8-4 1/4	8-0	8-4 1/4	8-4 1/4	12	12	12	12	4-0	12	8-4 1/4	3-0	8-4 1/4	NR	NR	NR	8-4 1/4	8-4 1/4	8-4 1/4	
COLORADO	DEC. 55621	1987	14-0	14-0	15-0	17-0	20-0	14-0	13-0	13-6	22-6	22-0	22-6	23-0	17-0	18-0	8-6	8-0	8-6	8-0	7-0	8-0	0-8	5-0	4-0	5-9	4-0	8-6	8-6	3-0	6-0	0-4	3-0	8-6	8-6	8-6		
IDAHO	G.O. NO. 158	1980	14-0	14-0	15-0	20-0	20-0	14-0	13-0	13-0	23-6	22-6	22-6	22-6	18-0	18-0	8-6	8-0	8-6	8-0	8-6	8-6	0-8	4-8	4-0	7-3	4-0	8-6	8-0	3-0	6-0	0-4	3-0	8-6	8-6	8-6		
ILLINOIS	TITLE 92 I.A.C.	1986	13-6	13-6	15-0	17-0	19-0	NR	13-6	13-6	21-6	21-3	21-6	21-6	H	21-6	8-0	8-0	8-0	8-0	7-0	8-0	0-4	4-6	0-8	5-1	CFH	6-2	8-6	NR	NR	NR	NR	9-0	8-0	8-0		
IOWA	NR	1982	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
KANSAS	ART. 5 -RSR	1987	14-0	14-0	14-0	17-0	20-0	14-0	13-0	13-0	22-6	22-6	22-6	23-0	17-0	18-0	8-6	8-6	8-6	8-0	7-0	7-0	0-8	5-0	4-0	6-2	4-0	8-6	8-6	3-0	6-0	0-4	3-0	8-6	8-6	8-6		
KENTUCKY	277.240	1942	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	22-0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
MINNESOTA	219.47	1980	14-0	14-0	14-0	17-0	19-0	14-0	14-0	14-0	22-0	22-0	22-0	22-0	22-0	22-0	8-6	8-6	8-6	8-6	8-6	8-6	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
MISSISSIPPI	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
MISSOURI	TTL 4 CSR 265-8.060	1987	14-0	14-0	14-0	17-0	19-0	14-0	13-6	14-0	22-0	22-0	22-0	22-0	22-0	22-0	8-6	8-0	8-0	8-6	8-6	8-6	0-4	4-6	0-8	5-1	CFH	8-6	8-6	4-0	5-0	0-3	4-2	8-6	8-6	8-6		
MONTANA	ADM. RULES	1980	14-0	14-0	15-0	20-0	20-0	14-0	13-0	13-0	22-6	22-6	22-6	22-6	18-0	18-0	8-6	8-0	8-6	8-0	8-6	8-6	0-8	4-8	4-0	5-9	4-0	8-6	8-0	3-0	6-0	0-4	3-0	8-6	8-6	8-6		
NEBRASKA	ORD 16, CHPT 5, ART 4	1987	14-0	14-0	15-0	17-0	20-0	14-0	13-0	13-6	22-6	22-0	23-0	23-0	17-0	18-0	8-6	8-0	8-6	8-0	7-0	8-6	0-8	5-0	4-0	5-9	4-0	8-6	8-6	3-0	6-0	0-4	3-0	8-6	8-6	8-6		
NEW MEXICO	NMAC 18.14.2.9(B)	2011	14-0	14-0	15-0	17-0	20-0	14-0	13-0	13-0	22-6	22-0	22-6	23-0	17-0	18-0	8-6	8-0	8-6	8-0	7-0	7-0	0-8	4-8	4-0	5-9	4-0	8-0	8-6	3-0	6-0	0-4	3-0	8-6	8-6	8-6		
NORTH DAKOTA	SEC.49.10.1-13	1981	NR	NR	NR	NR	NR	NR	NR	NR	21-0	21-0	21-0	21-0	21-0	21-0	8-0	8-0	8-0	8-0	8-0	8-0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
OKLAHOMA	ORDER 33847	1987	14-0	14-0	14-0	17-0	20-0	14-0	13-0	13-6	22-0	22-0	22-0	23-0	17-0	18-0	8-6	8-0	8-6	8-0	7-0	7-0	0-8	4-8	4-0	5-9	4-0	8-6	8-6	3-0	6-0	0-4	3-0	8-6	8-6	8-6		
OREGON	ORDER 83-313	1983	15-0	14-0	15-0	20-0	20-0	14-0	14-0	13-0	20-9	20-9	20-9	20-9	18-0	18-0	8-6	8-0	8-6	8-0	8-6	8-6	0-8	4-8	NR	NR	4-0	7-3	8-6	3-0	6-0	0-4	3-0	8-6	8-6	8-6		
SOUTH DAKOTA	ORDER F2465	1957	NR	NR	NR	NR	NR	NR	NR	NR	22-6	22-6	22-6	22-6	17-0	22-6	8-6	8-0	8-0	8-6	8-6	7-0	8-6	0-8	4-8	CFH	5-9	NR	NR	NR	NR	NR	NR	NR	NR	NR		
TENNESSEE	RULE 1220-3-1-.12	1970	14-0	13-0	14-0	18-0	18-0	14-0	13-0	13-0	22-0	22-0	22-0	22-0	17-0	17-0	8-0	8-0	8-0	8-0	8-0	8-0	0-8	4-8	4-0	5-9	4-0	7-6	8-0	NR	6-6	0-4	3-0	8-0	8-0	8-0		
TEXAS	SEC. 5, CHPT 11	1988	NR	NR	NR	NR	NR	NR	NR	NR	22-0	22-0	22-0	NR	22-0	22-0	8-6	7-6	8-6	NR	8-6	8-6	1-0	4-6	NR	NR	4-0	8-6	8-6	2-6	5-6	0-6	4-0	8-6	8-6	8-6		
WASHINGTON	CHPTR. 480-60	1969	14-0	14-0	15-0	20-0	20-0	14-0	13-0	13-0	22-6	22-6	22-6	22-6	18-0	18-0	8-6	8-0	8-6	8-0	8-6	8-6	0-8	4-8	4-0	7-3	4-0	8-6	8-0	3-0	6-0	0-4	3-0	8-6	8-6	8-6		
WISCONSIN	CHPTR. TC-3	1982	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0	22-0	22-0	22-0	22-0	22-0	22-0	8-6	E	8-6	8-6	8-6	8-6	0-4	4-6	1-9	6-0	5-0	6-4	8-6	E	E	E	E	12-0	8-6	8-6		
WYOMING	CHPTR. XIII	1979	14-0	14-0	15-0	17-0	20-0	14-0	13-0	13-0	22-6	22-0	23-6	23-0	17-0	18-0	8-6	8-0	8-6	8-0	7-0	7-0	0-8	5-0	4-0	5-9	4-0	8-6	8-6	3-0	6-0	0-4	3-0	8-6	8-6	8-6		
BNSF RY. CO.	18	1997	20-0	14-0	20-0	20-0	20-0	14-0	14-0	20	23-0	23-6	23-0	23-0	20	20	8-6	8-6	21	8-6	20	20	20	20	20	20	20	20	8-6	20	6-0	20	20	8-6	8-6	8-6		



THIS CHART IS FOR INFORMATION ONLY Architects, contractors, etc. should check with state(s) involved

NO LIABILITY CAN BE ASSUMED

LEGEND CFH = Car floor height H = Height of car governs
E = Exempt NR = No current regulations known

FOOTNOTES

- 1 Lesser clearances not permitted in quadrants
- 2 Engine houses and shop bulids exempt / permitted lesser dimensions
- 3 Only if tracks end within buildings
- 4 May be reduced to 5-9 if 8-3 (8-6 for WY) provided on opposite (opp.) side
- 5 May be reduced to 5-9 if 8-0 (8-6 for NE, MO & WY) provided on opp. side
- 6 Only if 8-0 (7-3 for MT & WY; 8-6 for WA & SD) provided on opp. side
- 7 Passenger platforms only
- 8 May be 8-0 at 4-6 for refrigerator car platforms only
- 9 For platforms at car eave height - supports to be 8-0 (8-6 for TX)
- 10 For freight tracks - can be 13 for passenger tracks
- 11 Regarding Canada - Check standard clearance diagram approved by board of transport commissioners for Canada for railway involved
- 12 May be reduced to 6-2 if 8-3 provided on opposite side
- 13 May be reduced to 6-2 if 8-0 provided on opposite side
- 14 May be reduced to 6-2 if 8-0 provided on opposite side
- 15 For hand operated switches (May be 15-0 for mechanically operated switches)
- 16 For hand operated switches (May be 17-0 for mechanically operated switches)
- 17 Must have additional side clearance of 2 inches per degree of curvature
- 19 New construction 20-0 center to center main track / control siding
- 20 State regulation governs
- 21 Center line of track to closest edge of pier: 25' for main line, 18' for others

GENERAL NOTES

1. Dimensions are shown in feet and inches for tangent track. Most laws specify increases for curved and super-elevated track.
2. All are minimums except columns 24, 26, 28, 31, and 33 which are maximums.
3. Vertical clearances are measured from top of rail, except Canada using the base of rail for other than platforms. Horizontal clearances are measured from the center line of track.
4. Application cases vary, from only to new construction, some reconstruction, and to some extensions. They can be changed upon approval by applying to governing body.
5. Dimensions are based on maximum car size for California, Idaho, Minnesota, Montana, North Dakota, Oregon, and Washington states.
6. For a visual illustration of these use cases and additional information on main line related clearances, see [BNSF 2509.01](#) & [BNSF 2509.03](#)

BNSF STANDARD PLAN TRACK STANDARDS

CLEARANCE REQUIREMENTS BY STATE AND RECOMMENDED BNSF CLEARANCE

[Stock Codes Table \(Login With Your BNSF email account\)](#)

DRAWN BY	ISC	CHECKED BY	EKF	APPROVED BY	EKF
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BNSF RAILWAY COMPANY - SYSTEM TRACK STANDARDS

STATUS: Released DATE: 3/18/2019 PLAN NO: 2509 SHEET: 02 REVISION: 04

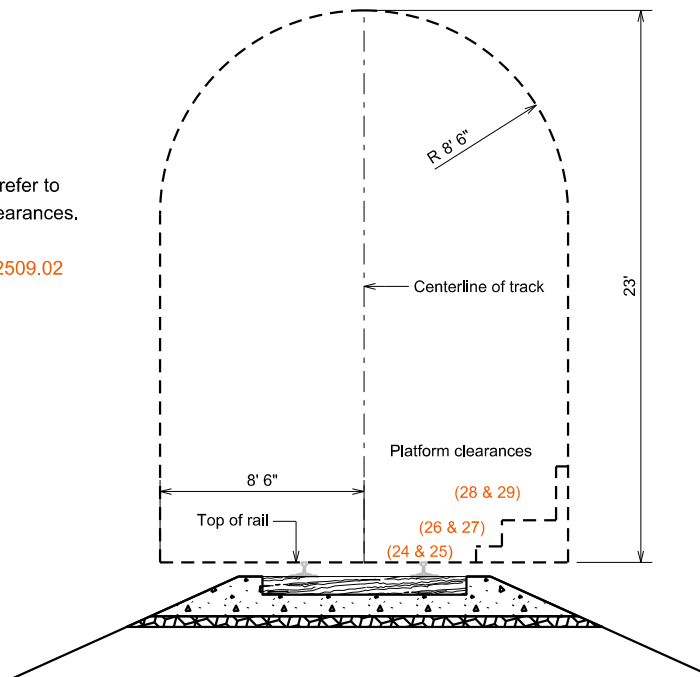
2509.02.04

ILLUSTRATIVE DIAGRAM FOR CLEARANCES



GENERAL NOTES

- Dimensions shown are BNSF general clearances only. Where dimensions are not shown, refer to [BNSF 2509.02](#) for details. State or federal regulations supersede BNSF recommended clearances.
- Numbers in parenthesis represent column numbers for dimensions in columns per [BNSF 2509.02](#)
- For existing track centers, refer to [BNSF 2509.03](#)
- For new construction track centers, refer to [BNSF 2509.01](#) & [BNSF 2509.02](#)
- Stepped platforms are not allowed. For additional information regarding platforms, refer to [BNSF 1001.00 / CS 100100](#)



**CLEARANCE ENVELOPE
ALL STRUCTURES (BNSF)**
(12 - 23, 36 & 37)

BNSF RAILWAY			
BNSF STANDARD PLAN TRACK STANDARDS			
BNSF MINIMUM CLEARANCE DIAGRAMS & ILLUSTRATIONS			
PLAN NO	2509	SHEET	01
REVISION	11		

2509.01.11

[Stock Codes Table \(Login With Your BNSF email account\)](#)

DRAWN BY	ISC	CHECKED BY	EKF	APPROVED BY	EKF
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BNSF RAILWAY COMPANY - SYSTEM TRACK STANDARDS

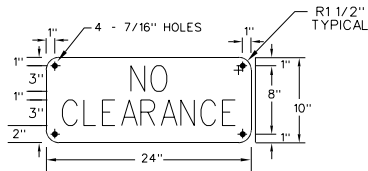
STATUS
Released

DATE: 3/18/2019

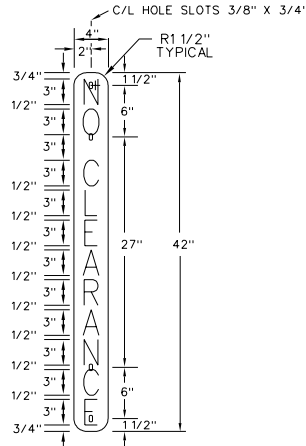
PLAN NO 2509 SHEET 01 REVISION 11

[Navigate to Other Drawings \(Login With Your BNSF email account\)](#)

EXAMPLE 1



EXAMPLE 2



SIGNS:

NO. 44 - "NO CLEARANCE"

PLACE NO CLEARANCE SIGN ON BUILDING STRUCTURE OVER C/L TRACK WHERE VERTICAL CLEARANCE IS LESS THAN REQUIRED. LETTERED AND MOUNTED AS SHOWN IN EXAMPLE 1.

NO. 44A - "NO CLEARANCE"

PLACE NO CLEARANCE SIGN ON BUILDING STRUCTURE OR POST WHERE HORIZONTAL CLEARANCE IS LESS THAN REQUIRED. LETTERED AND MOUNTED AS SHOWN IN EXAMPLE 2.

NOTES:

1. THE SIGNS LISTED IN THIS PLAN ARE 10" X 24" AND 4" X 42" SIZED WITH WHITE BACKGROUND AND BLACK LETTERS, ONE SIDE ONLY, AS SHOWN IN EXAMPLES 1 AND 2.
2. SEE PLAN 3000.01 FOR ADDITIONAL SPECIFICATIONS AND INFORMATION CONCERNING THE REFLECTIVE AND PANEL MATERIAL.
3. FOR USE IN THE STATE OF MINNESOTA AS ORDERED BY THE PUB. SERV. COMM. AT POINTS WHERE CLEARANCE IS LESS THAN THE LEGAL REQUIREMENT.

BILL OF MATERIALS

QUANTITY	SIGN PANEL
1 EA.	SIGN NO. 44-NO CLEARANCE ITEM NO. 047220983
1 EA.	SIGN NO. 44A-NO CLEARANCE ITEM NO. 047220984
	OPTIONAL HARDWARE
1 EA.	2 LB. PER LIN. FT. GALVANIZED FLANGED CHANNEL STEEL POST, 8'-0" LONG WITH 3/8"Ø MONTING HOLES, 1" CENTERS, WITH POINTED END.
2 EA.	5/16" DIA. X 2" GALVANIZED ROUND HEAD SQUARE NECK MACHINE BOLT, ALL THREAD, WITH LOCK NUT AND WASHER.

BURLINGTON NORTHERN SANTA FE STANDARD PLAN ENGINEERING DEPT., FORT WORTH, TEXAS	
CLEARANCE SIGNS	
RAIL:	
DATE: 06/10/96	SCALE:
DWG. NO. 3044	SHEET NO. 01
183	
USE OF THIS DRAWING IS LIMITED TO BURLINGTON NORTHERN SANTA FE AND THE PARTY DESIGNATED ON THE ATTACHED CHECKS. NO USE MAY BE MADE BY ANY THIRD PARTY WITHOUT THE WRITTEN CONSENT OF BURLINGTON NORTHERN SANTA FE.	

VERTICAL CURVES

Vertical curves should be used to round off all intersecting grades.

The length of a vertical curve is determined by the grades to be connected and the speed of the traffic.

The rate of change for tracks with a vertical curve concave upwards (sag) should be one-half the rate of change of a vertical curve concave downward (summit).

The rate of change for high-speed main tracks (> 50 MPH) should not be more than 0.05 feet per station (of 100 feet) in sags, and not more than 0.10 feet per station on summits.

For secondary main tracks (speed < 50 MPH), the rate of change should not be more than 0.10 feet per station in sags, and not more than 0.20 feet per station on summits.

For industry tracks and non-main tracks with speeds not greater than 20 MPH, the rate of change should not be more than 2.0 feet per station for both sags and summits.

The rate of change per station is calculated as follows: $R = D/L$ Where:

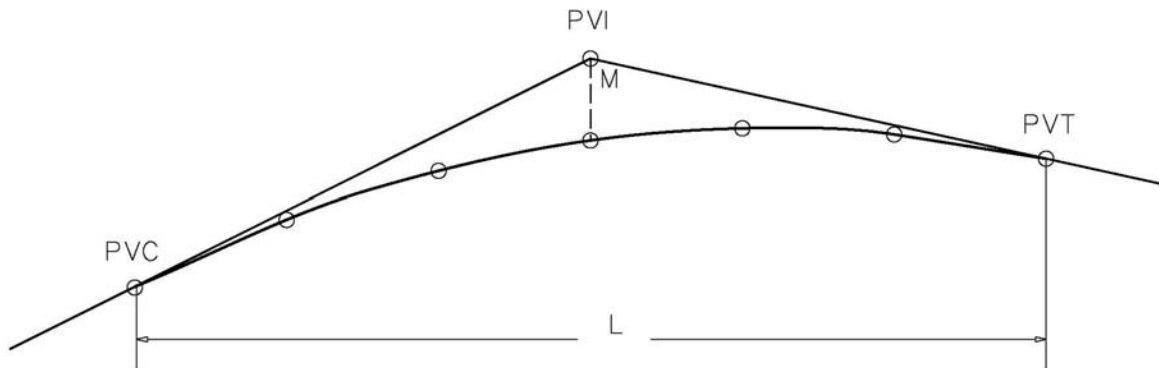
R = Rate of change per station

D = Algebraic difference of the two intersecting grades

L = Length of vertical curve in 100-ft. stations

M = Correction from the straight grade to the vertical curve

A parabola is used for the vertical curve in which the correction from the straight grade for the first station is one half the rate of change, and the others vary as the square of the distance from the point of tangency. Where points fall on full stations, it will be necessary to figure these for only one half the vertical curve, as they are the same for corresponding points each side of the vertex. Corrections are (-) when the vertical curve is concave downwards (summit), and (+) when the vertical curve is concave upwards (sag). The rate of change may be assumed and the length of vertical curve computed, or preferable the length assumed and the rate computed.



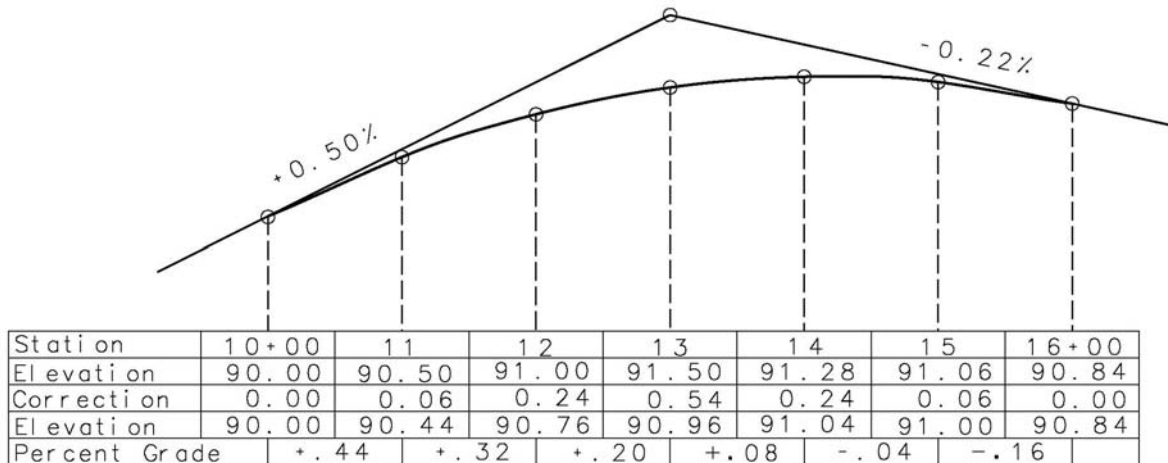
VERTICAL CURVES

For example:

Assume length = 600 feet (6 stations)

$D = 0.50 \text{ minus } -0.22 = 0.72$

$R = 0.72/6 = 0.12$



Calculate the straight-grade elevations for each station.

The correction for the first station is one-half the rate of change (R). So, the correction for station 11 is 0.06 (minus since it concaves downwards).

The correction for the Station 12 is $4(0.06) = 0.24$. This is the correction to the first station (one-half the rate of change) multiplied by the square of the length, in stations, from the PVC. At Station 13 (the PVI), the correction is $9(0.06) = 0.54$. Notice the corrections for Stations 11 and 15 are the same. Likewise, for 12 and 14, since they are the same distance from the PVC and PVT. So, only one-half of the curve's corrections need to be calculated.

Next, apply the correction at each station to the straight-grade elevation to obtain the elevation on the vertical curve.

A simpler method of computing this and one that furnishes check throughout is the following:

Sta. 10	90.00	
	<u>+0.44</u>	(% grade sta. 9 to 10) minus one half rate = $0.50 - 0.06$
Sta. 11	90.44	
	<u>+0.32</u>	(% grade sta. 10 to 11) minus rate = $0.44 - 0.12$
Sta. 12	90.76	
	<u>+0.20</u>	(% grade sta. 11 to 12) minus rate = $0.32 - 0.12$
Sta. 13	90.96	
	<u>+0.08</u>	(% grade sta. 12 to 13) minus rate = $0.20 - 0.12$
Sta. 14	91.04	
	<u>-0.04</u>	(% grade sta. 13 to 14) minus rate = $0.08 - 0.12$
Sta. 15	91.00	
	<u>-0.16</u>	(% grade sta. 14 to 15) minus rate = $-0.04 - 0.12$
Sta. 16	90.84	

BNSF Railway

Underground Cable Location and Acknowledgement

Date: _____ Project: _____

Meeting Location: _____ Time: _____

Attendees at proposed work site (Signature of representative)

BNSF Telecom _____

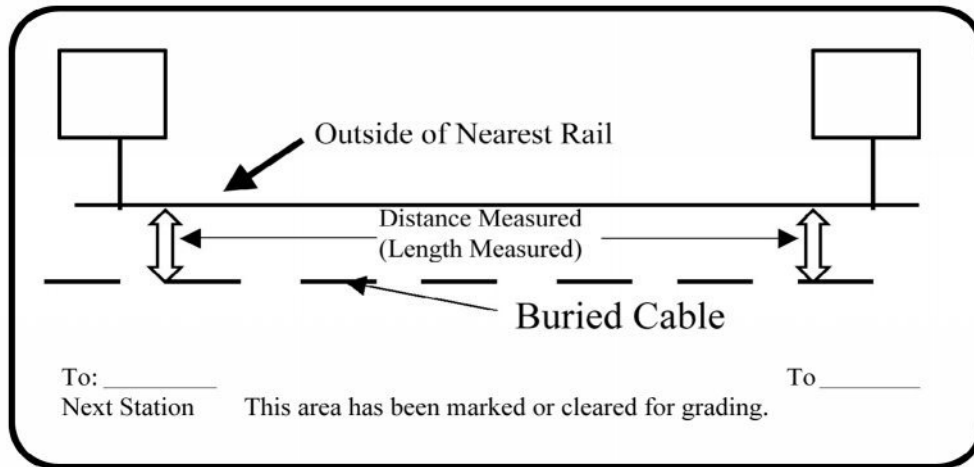
BNSF Signal _____

Grading Contractor _____

Project Inspector _____

Flag Person on Duty _____

No grading will be permitted in this area without this completed form in the possession of the above.



Notes:

All signal cables must be marked with paint and flags (as ground conditions permit) prior to any grading.

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Revision: October 15, 2004

Figure 26-1. Underground Cable Location and Acknowledgement

STAKING OUT REQUIRES A
RAILROAD QUALIFIED LOOKOUT
FLAGGER TO PROVIDE
AUTHORITY TO WORK WITHIN 25'
OF THE TRACKS

ED

Stake additional offset stake at around the edge
of the turnout pad (~45'-56'+) and write on the stake:

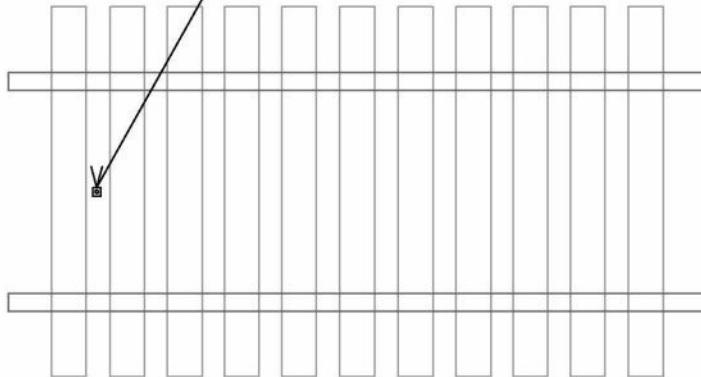
(PSw - mm/dd/yy location type - project description)

Example:

PSw - 1/1/15 E WILLISTON ED - NFC/EVR

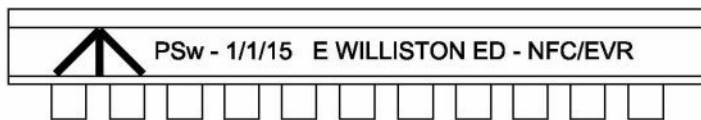
Insert stake/pin with a highly visible ribbon
Write information on ribbon or spray on ground

Stake must be completely hammered into the ground
and shall not pose a tripping hazard for crews



PLAN VIEW

(PSw - mm/dd/yy location type - project description)



SIDE VIEW



STAKE OUT GUIDELINES
BNSF RAILWAY SWITCH INSTALLS

SHEET 1 OF 1 DATE: 06/10/2015

FILE: RAL_MARRUP.DGN

DIVISION
SUBDIVISION
LINE SEGMENT

REVISIONS

DATE

APPROVALS - NAME - TITLE

DATE

APPROVALS - NAME - TITLE

NAME

PREPARED BY

DATE

APPROVALS - NAME - TITLE

DATE

APPROVALS - NAME - TITLE

DATE

APPROVALS - NAME - TITLE

DATE

APPROVALS - NAME - TITLE

DATE

BNSF RAILWAY COMPANY - ENGINEERING SERVICES

I acknowledge that I have received the internet link and/or hard copy of BNSF's "Guidelines for Industry Track Projects" dated July 2023. I understand that the design and construction of this facility will follow the Guidelines. Questions concerning the Guidelines are to be directed to the BNSF Project Engineer listed below.

<https://www.bnsf.com/ship-with-bnsf/rail-development/pdf/IndustryTrackGuidelines.pdf>
(Industrial Track Guidelines)

<https://www.bnsf.com/bnsf-resources/pdf/about-bnsf/utility.pdf> << Utility Specs

Owner Representative

Signature

Date

Printed

Company Name

BNSF Project Engineer