



Specifications

For

City of Jonesboro, Arkansas

Industrial Rail Lead

Maintenance

(Bid #2020:28)

Jonesboro, Arkansas

City of Jonesboro ■ Engineering Department

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

CITY OF JONESBORO
Jonesboro, Arkansas

INDUSTRIAL RAIL LEAD MAINTENANCE

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I. ADVERTISEMENT FOR BIDS

Sealed bids for the Yearly Maintenance Contract for the City of Jonesboro , Arkansas Industrial Rail Lead 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 October 21, 2020 and then publicly opened and read in the Third Floor Conference Room for furnishing all labor, material, and equipment, and performing all work required to provide up to 14 rail inspections and up to 14 signal inspections. All Submissions shall be annotated on the outside of the envelope with the bid number 2020:28.

The project consists of the rail maintenance and up to 14 inspections and up to 14 crossing signal inspections, testing, and maintenance.

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 \$25.00 Dollars per set from the City of Jonesboro, 300 South Church Street, Jonesboro, Arkansas 72401. No refunds will be made. Any addendum to this bid will be posted no later than 5 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 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.

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.

Each bid must be submitted in a sealed envelope clearly marked on the outside that it contains a bid for the City of Jonesboro, Arkansas Industrial Rail Lead Maintenance, Bid Number 2020:28 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 readvertise 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.

III. PROPOSAL

Place Jonesboro

Date October 21, 2020 @ 2:00pm

Proposal of Shelby Railroad Service, Inc.

a corporation organized and existing under the laws of the State of Tennessee.

or

Proposal of _____,

a partnership consisting of _____.

or

Proposal of _____,

an individual doing business as _____.

TO: City of Jonesboro

This bid results from your advertisement for bids for the City of Jonesboro, Arkansas Industrial Rail Lead Maintenance.

The undersigned Bidder, having visited the site of the work, having examined the Plans, Specifications, and other Contract Documents including all Addenda, and being familiar with all of the conditions relating to the construction of the proposed project, hereby agrees to comply with all other conditions or requirements set forth in the Plans, Specifications, and other Contract Documents, and further proposes to furnish all material, supplies, equipment, and appliances specified for incorporation into the project and to furnish all labor, tools, equipment, and incidentals to complete the work in accordance with the Plans, Specifications, and other Contract Documents at and for the lump sum and unit prices proposed in the attached Unit Price Schedule.

The undersigned Bidder agrees to begin work within ten (10) calendar days after the issuance by the Owner of a "Work Order" or "Notice to Proceed" and to complete the work from January 2021 until December 2021 (except as modified in the GENERAL CONDITIONS of these Contract Documents). **Time between individual inspections shall not exceed 28 days.** Should the work fail to be completed within the time herein stated, the Contractor shall pay to the Owner, as fixed and agreed liquidated damages, and not as a penalty, the sum, for each day of delay until the work is completed and accepted, as stipulated in the SPECIAL CONDITIONS of these Contract Documents. It is understood that additional time for the completion of the project is to be allowed only for delays as stipulated in the GENERAL CONDITIONS of these Contract Documents.

Bidder acknowledges receipt of the following addendum (addenda):

none Dated _____

_____ Dated _____

The undersigned Bidder agrees that this bid shall be good and shall not be withdrawn for a period of sixty (60) calendar days after the opening thereof. If written notice of the acceptance of this Proposal is mailed, telegraphed, or delivered to the undersigned within sixty (60) days after the opening thereof, or at any time thereafter before this Proposal is withdrawn, the undersigned agrees to execute and deliver a Contract in the prescribed form, and furnish the required Performance and Payment Bond, within ten (10) days after the Contract is presented to him for signature.

It is understood by the undersigned Bidder that the Owner reserves the right to reject any or all bids.

Accompanying this Proposal as bid security is certified check/bid bond (Strike One) in the amount of 5% Dollars (\$ _____), being not less than five percent (5%) of the total of the bid. If the undersigned Bidder is the successful Bidder, but fails or refuses to execute the contract and furnish the required bond within the prescribed ten (10) days of the notification of award, then this bid security is to become the property of the Owner as liquidated damages for the delay and additional expense to the Owner caused by such failure or refusal.

Jennifer Bracken
(Witness)

3021 Shelby Drive
Memphis, Tn 38118
(Address)

Shelby Railroad Service, Inc.
(Name of Bidder)

By [Signature]
Kirk Tarver, Vice President
(Print Name and Title)

3021 Shelby Drive
Memphis, Tn 38118
(Office Address of Bidder)

NOTES: Sign in ink. Do not detach.
Items must be bid upon as specified in the Unit Price Schedule.

IV. UNIT PRICE SCHEDULE

<u>Item No</u>	<u>Description</u>	<u>Unit</u>	<u>Approx. Quantity</u>	<u>Unit Price</u>	<u>Total Cost</u>
1	Railroad Maintenance and Inspection	Each	14	<u>\$ 1,460.⁰⁰</u>	<u>\$ 20,440.⁰⁰</u>
2	Crossing Signal Inspection and Testing	Each	14	<u>\$ 1,078.⁰⁰</u>	<u>\$ 15,092.⁰⁰</u>
TOTAL BASE BID				<u>\$ 35,532.⁰⁰</u>	

WRITTEN IN WORDS:

Thirty five thousand five hundred thirty two and no cents

3	Replace Degraded Cross-ties				
	A. (25-100 Ties)	*	Each	<u>\$ 120.⁰⁰</u>	<u>\$ 120.⁰⁰</u>
	B. (101+ Ties)	*	Each	<u>\$ 133.⁰⁰</u>	<u>\$ 133.⁰⁰</u>

*For establishing the Unit Price only. Quantity will be on an as needed/approved basis for replacement of degraded cross-ties.

NOTE: REFER TO SECTION 1100 FOR SPECIFICS ON EACH PAY ITEM

The Contractors understand that all inspection and testing shall meet the Federal Railroad Administrations guidelines. Only Contractors that are experienced in rail construction and in railroad crossing signals shall bid the contract. To bid, Contractors must be qualified to perform the monthly road crossing signal inspection and testing.

BID BOND

KNOW ALL MEN BY THESE PRESENTS:

That we,

Shelby Railroad Service, Inc.

as Principal, (hereinafter called the "Principal"), and The Ohio Casualty Insurance Company

62 Maple Avenue, Keene, New Hampshire 03431

, a corporation duly organized under the laws of the State of New Hampshire, as Surety, (hereinafter called the "Surety"), are held and firmly bound unto

City of Jonesboro, 300 South Church Street, Jonesboro, AR 72403

as Obligee, (hereinafter called the "Obligee"), in the sum of Five percent of the attached bid amount

Dollars (\$ 5%)

, for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

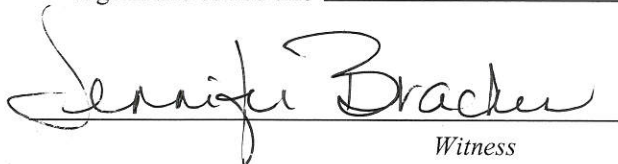
WHEREAS, the Principal has submitted a bid for
Inspection Services

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a contract with the Obligee in accordance with the terms of such bid and give such bond or bonds as may be specified in the bidding or contract documents with good and sufficient surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter into such contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this 1st

day of November

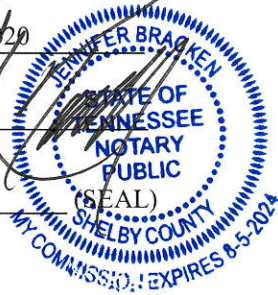
A.D. 2020

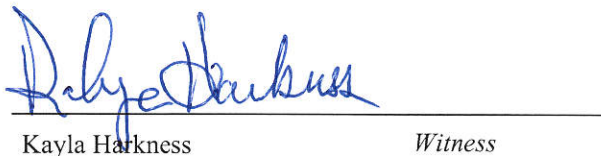


Witness

{ Shelby Railroad Service, Inc.
Principal

{ The Ohio Casualty Insurance Company
Surety





Kayla Harkness
Witness

By


Michael R. Henry

(SEAL)

, Attorney-in-Fact

Printed in cooperation with the American Institute of Architects (AIA) by The Ohio Casualty Insurance Company

The Ohio Casualty Insurance Company

vouches that the language in the document conforms exactly to the language

used in AIA Document A-310, February 1970 Edition.

BID70000ZZ0701F



This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

Certificate No: **8201254-977264**

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Barry L. Wilson; Louis G. Clay, Jr.; Jo Beth Glassco; Mary C. Hart; Michael R. Henry; Milton T. Less; Jefferson F. Michael; Paul F. Portis, Jr.; Linda Faye Reynolds; Mary E. Wade

all of the city of Memphis state of TN each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 13th day of May, 2019.



Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

By:

David M. Carey
David M. Carey, Assistant Secretary

State of PENNSYLVANIA ss
County of MONTGOMERY

On this 13th day of May, 2019 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By:

Teresa Pastella
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts: Section 5. Surety Bonds and Undertakings.

Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 1st day of November, 2020



By:

Renee C. Llewellyn
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

V. BID BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT we the undersigned, Shelby Railroad Service, Inc., as PRINCIPAL, and

The Ohio Casualty Insurance Company, as SURETY, are held and firmly bound unto the

City of Jonesboro, hereinafter called the OWNER in the penal sum of Five percent of the

attached bid amount

(\$ 5%), 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 November 1, 2020, for the City of Jonesboro, Arkansas Industrial Rail Lead Maintenance,

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 1st day of November, 20 20, 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,

Jennifer Bracken
(Witness)

3021 Shelby Drive
Memphis, TN 38118

Shelby Railroad Service, Inc.

(Principal)

By

(Title)

3021 Shelby Drive

Memphis, TN 38118

(Address)

SEAL



[Signature]

The Ohio Casualty Insurance Company

(Corporate Surety)

By

Mary E. Wade, Attorney-in-Fact

62 Maple Avenue, Keene, New Hampshire 03431

(Address)

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

VI. 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. Shelby Railroad Service Inc.
2. Permanent main office address. 3021 Shelby Drive, Memphis, TN 38118
3. When organized. 1974
4. If a corporation, where incorporated. Tennessee
5. How many years have been engaged in the contracting business under your present firm or trade name? 46 years
6. Contracts on hand: (Schedule these, showing amount of each contract and the appropriate anticipated dates of completion). Kelloggs - Jackson \$36,000. Nov 2020; Kelloggs - Memphis. \$25,000. Dec 2020; Ford \$11,000. Dec 2020
7. General character of work performed by your company.
Railroad track construction and repairs
8. Have you ever failed to complete any work awarded to you?
No
9. Have you ever defaulted on a Contract?
No
If so, where and why?
10. Have you ever been fined or had your license suspended by a Contractor's Licensing Board?
No
If so, where and why?
11. List the more important projects recently completed by your company, stating the approximate cost for each, and the month and year completed. Zellner \$840,000. 06-20-20; Kelloggs Jackson \$345,000. 9-28-20; Franklin Minerals \$189,000 9-16-20; Roehm - \$106,000. 8-5-20
12. List your major equipment available for this Contract.
motor car to ride over the track
13. Experience in construction work similar in importance to this project.
Jonesboro for the last 4 years
14. Background and experience of the principal members of your organization, including the officers.
15. Credit available: \$ 5,000,000⁰⁰
16. Give Bank reference: SunTrust Bank - Toni Barnes 901-681-4122

17. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the Owner?
18. 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 3:10 PM this 19th
day of October, 20 20.

Shelby Railroad Service, Inc
(Name of Bidder)

By [Signature]

Title Vice President

STATE OF Tennessee)
) SS.
COUNTY OF Shelby)

Kirk Tarver being duly sworn deposes and says that
he is Kirk Tarver of Shelby Railroad Service
(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 19th day of October, 20 20.



My Commission Expires:

August 5, 2024

Jennifer Bracken
(Notary Public)

VII. CONTRACT

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

between Shelby Railroad Services, Inc.

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

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 City of Jonesboro, Arkansas Industrial Rail Lead Maintenance, 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 from January 2021 until December 2021 (except as modified in the GENERAL CONDITIONS of these Contract Documents). **Time between individual inspections shall not exceed 28 days.** 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. If agreeable to both the Owner and the Contractor, this contract can be extended for up to

an additional 24 months.

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

- | | |
|------------------------------|--|
| a. This Agreement (Contract) | g. Supplemental General Conditions |
| b. Addenda | h. Special Conditions |
| c. Advertisement for Bids | i. Technical Specifications including |
| d. Instructions to Bidders | Special Provisions |
| e. Proposal | j. Drawings (Plans) |
| f. General Conditions | k. Performance-Payment Bond |
| | l. Division 1 – General Requirements |
| | m. Division 17 – Railroad Roadbed Construction |
| | n. Division 18 – Track Construction |

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.

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IX. 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) | - \$1,000,000/occurrence |

and Property Damage

- \$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)

- \$1,000,000/occurrence

and Physical Damage Liability

(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 2021 SCHEDULE - CONTRACTED PROJECTS	
City of Jonesboro Payment Schedule	Deadline for Invoice Submittal to Engineering
Friday, January 8, 2021	Monday, December 28, 2020
Monday, February 8, 2021	Friday, January 29, 2021
Monday, March 8, 2021	Friday, February 26, 2021
Thursday, April 8, 2021	Wednesday, March 31, 2021
Monday, May 10, 2021	Friday, April 30, 2021
Tuesday, June 8, 2021	Friday, May 28, 2021
Thursday, July 8, 2021	Monday, June 28, 2021
Monday, August 9, 2021	Friday, July 30, 2021
Wednesday, September 8, 2021	Friday, August 27, 2021
Friday, October 8, 2021	Tuesday, September 28, 2021
Monday, November 8, 2021	Friday, October 29, 2021
Wednesday, December 8, 2021	Friday, November 26, 2021

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.

X. SUPPLEMENTAL GENERAL CONDITIONS

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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)

Railroad Protective Liability Insurance will not be required for this project. No work required in BNSF right-of-way.

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

If it is determined that "Trench and Excavation Safety Systems" are needed for this project, the price for payment for the installation of the "Trench and Excavation Safety Systems" will be negotiated after the determination is made.

SGC.6 MINIMUM WAGES

The Contractor shall comply with all state and federal laws regarding wages and pay.

XI. SPECIAL CONDITIONS

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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 in the industrial park along the City of Jonesboro, Arkansas Industrial Lead. A map showing the general location 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 provide up to 14 inspections of the industrial rail and railroad crossing signals.

SC.4 TIME ALLOTTED FOR COMPLETION

The time allotted for completion of the work shall be from January 2021 until December 2021 (except which time shall begin within ten (10) days of the work order or notice to proceed. **Time between individual inspections shall not exceed 28 days.** 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 Proposal, Contract and Bonds, and Plans and Specifications may be examined at the City of Jonesboro Engineering Department, 300 South Church Street, Jonesboro, Arkansas 72403, and obtained upon payment of \$25.00 each. 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.

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.

As a minimum, the Contractor shall provide the following instrument control for the work:

- a. For the full length and width of all areas within the limits of paving, the finished grade of the concrete surface course shall be controlled by grade wires or forms set by the Contractor to control the final surface, in accordance with the plans.
- b. For the full length and width of all areas within the limits of paving, the initial courses of bituminous pavement will be controlled by uniform thickness. The course under the final surface course shall be controlled by grade wire, and the final surface course shall be controlled by uniform thickness. The bituminous pavement shall be constructed with a lay down machine with automatic controls and a forty (40) foot ski.
- c. For the full length and width of all areas within the limits of paving, the crushed aggregate base

course and the sub base course will be controlled with intermediate and final surface stakes, "blue tops". Stakes shall be set as required or as directed by the Engineer to control the construction.

- d. The Contractor shall set intermediate line and grade stakes and final grade stakes, "blue tops," as required to control the construction of shoulders.

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 required for this project.

XII. TECHNICAL SPECIFICATIONS

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	DESIGN GUIDELINES FOR INDUSTRIAL TRACK PROJECTS

SP-1
GENERAL REQUIREMENTS

1. GENERAL

- 1.01 Measurement of and payment for all supplies, services, equipment, tools, plant, and labor furnished and all work completed in accordance with these Contract Documents shall be shown on the drawings and adhere to the current 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 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 not 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 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 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 INDUSTRIAL SPUR FACILITY MONTHLY SCHEDULED MAINTENANCE

1. Item No. 1 – Monthly Scheduled Railroad Maintenance and Inspection

This item will be measured on a unit basis and paid for at the unit price listed in the Proposal. The unit price shall include the cost of deploying a crew to the site and performing the following items of work on appropriately 6.00 miles of Industrial railroad extending from the BNSF Main Line on the West to Barnhill Road on the East.

- a. Switch Maintenance – oiling and adjusting all along the lead track.
- b. Inspecting the lead track, switches and industry tracks to the 14 foot clear point. The inspector should be checking the gauge of the rail as well as looking for broken rails, bad ties, track settlement, missing components (anchors, bolts, tie plates) and any other deficiencies that may appear. After inspecting the tracks the contractor's representatives shall make a list of any of the items that need to be addressed and deliver the results to the City of Jonesboro. If there are no deficiencies found, then a report so notifying shall be prepared for the City of Jonesboro. The contractor shall contact the city at least one week prior to performing the inspections and shall have written reports to the city within 3 days of the inspection. If the deficiencies need to be fixed prior to any rail traffic, then the city is to be notified immediately. Note: Routine maintenance such as tightening loose bolts is a part of routine monthly inspections.

2. Item No. 2 – Monthly Scheduled Crossing Signal Inspections and Testing

This item will be measured on a unit basis and paid for at the unit price as listed in the Proposal. The unit price shall include all labor, materials, tools, equipment and incidentals necessary to inspect and test all nine (9) signalized crossings. The contractor shall test the crossings and document all findings according to the Federal Railroad Administration's requirements. All documentation shall be done in accordance to the FRA requirements. If any maintenance is required for the crossings, the city is to be notified and a price agreed on prior to the work being performed. The unit cost shall also include the required quarterly and yearly testing in accordance with the FRA. The contractor shall notify the city and Burlington Northern Santa Fe at least a week prior to performing the monthly inspections.

3. Item No.3a-3b – Degraded Cross-tie Replacement

This item shall be measured on a unit basis and paid for at the unit price listed in the Proposal. The unit price shall include the labor, materials, equipment (including backhoe), tools and incidentals required to replace degraded ties with new ties. The old ties are to be removed and disposed of at the contractor's expense. Any ties to be replaced will be discussed with the city prior to the monthly maintenance visit and the actual number of ties will be conveyed by phone call to the contractor prior to the visit. Material and Methods shall be in accordance with Division 18 contained in this contract.

SP-2
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. CONSTRUCTION METHODS

2.01 GENERAL

The areas denoted on the drawings to be cleared and grubbed 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 logs, brush, weeds, and other unsatisfactory materials shall be removed. Where embankments are to be made, all unsatisfactory materials shall be removed.

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 the materials of which the foundations, wells, cesspools, etc., are built to a depth 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.

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EXCAVATION AND EMBANKMENT
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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 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 excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued. At the direction of the Engineer, the Contractor 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.

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Those areas outside of the roadbed areas in which the top layer of soil material has become compacted, by hauling or other activities of 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 material 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".

III. Resistance to Environmental Factors

a. Mildew, Rot Resistance, % Strength Retention	AATCC-30-74	100
b. Insect, Rodent Resistance, % Strength Retention	AATCC-24-74	100

*Corps of Engineers Method

Geotextile woven fabric shall be CONTECH 300C, MIRAFI 600X, or an approved equal. Nonwoven 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 receive prior acceptance by the Engineer shall not be usable on the project.

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EXCAVATION AND EMBANKMENTS

Section 17050, Page 3

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 as 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-1556 (Sand Cone Method) or ASTM D-2922 (Nuclear Method). Stones or rock fragments larger than 4 inches in their greatest dimension will not be permitted in 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 a 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 1000 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.

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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 material 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 predominantly 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

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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 recompact.

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 on 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 recompact 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.

EXCAVATION AND EMBANKMENT
Section 17050, Page 7

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".

* * * * *

TEMPORARY WATER POLLUTION, SOIL
EROSION, AND SILTATION CONTROL
Section 17070, Page 1

1. DESCRIPTION

1.01 GENERAL

This item shall consist of temporary control measures 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 measures 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 Texas Department of Pollution Control and Ecology. The permit will be secured by the Contractor. The permit shall include the contractor's methods of controlling the storm water discharges and erosion prevention as required by the state.

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 hydroseeding.

2.02 MULCHES

Mulches may be hay, straw, netting, bark, wood chips, or other suitable material reasonably 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.

TEMPORARY WATER POLLUTION, SOIL
EROSION, AND SILTATION CONTROL
Section 17070, Page 2

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 contamination of 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 Contractor shall perform the permanent seeding and mulching and other specified slope 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 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 acceptably maintained by the Contractor during the construction period.

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

TEMPORARY WATER POLLUTION, SOIL
EROSION, AND SILTATION CONTROL
Section 17070, Page 4

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 hereinafter 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 SUB-GRADE 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 SUB-GRADE 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 SUB-GRADE MATERIALS HAVE A GRADATION SMALLER THAN LISTED ABOVE.

1.05 CONSTRUCTION METHODS

A. Preparation of Sub-grade – 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 $\pm 2\%$ 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 insure 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 sub-grade for tracked 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 in the following table:

<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	650
	(Diaphragm Method)	
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

SP-3
BNSF RAILWAY COMPANY
DESIGN GUIDELINES FOR INDUSTRIAL TRACK PROJECTS

BNSF RAILWAY COMPANY

DESIGN GUIDELINES FOR INDUSTRIAL TRACK PROJECTS



Engineering Services

**4515 Kansas Avenue
Kansas City, KS 66106**

May 2011 – Revised Dec 2011

BNSF RAILWAY COMPANY

DESIGN GUIDELINES FOR INDUSTRIAL TRACK PROJECTS

MAY 2011

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GENERAL PROCEDURE FOR DEVELOPMENT OF TRACK PLANS AND

ESTIMATES FOR INDUSTRIAL TRACK PROJECTS

These guidelines are intended for the development of industry tracks and facilities. Build-ins and tracks other than industrial need to follow BNSF's Main Line Design Guidelines for Track Projects.

1. Customer will contact BNSF's Economic Development (ED) representative. A questionnaire will be completed that will be used in preparing the New Business Review (NBR) to be reviewed by various BNSF groups, including Service Design & Performance (SDP).
2. Customer will be required to furnish a track plan for the project. Prior to preparing the track plan, it is recommended a site meeting be held to review the proposal. BNSF's ED, Engineering, Division Maintenance, Signal Engineering and Division Operating personnel should attend as appropriate to meet with the Customer.

The feasibility of constructing the project at the location will be discussed along with operating issues and recommendations from the NBR. Track layout concepts and constraints will be identified with the Customer, the intent being to guide the track design to an efficient layout given specific site conditions. The Customer's track designer can attend this meeting. Following meeting, BNSF Engineering will prepare a project schematic (see appendix, page A-9, for example) and forward to Division Operating, Division Maintenance, Signal Engineering and ED for review and approval. Approvals and comments are returned to BNSF Engineering and the sketch is edited as necessary. ED will furnish a copy to the Customer upon BNSF internal approval.

3. The Customer may use a designer or contractor of its choice to prepare the track plans. The project schematic is to be used as a guide for preparation of the track plans. Plans should be complete and follow the example outlined herein. 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.
4. The Customer will develop an industrial track plan (in electronic format), including plan/profile and drainage plan, which is to be submitted to ED for further handling by BNSF. Design plans shall include all information contained in "Industrial Track Survey and Plan Requirements" section, pages 10 and 11. BNSF Engineering will review and approve the track design, and if there are significant changes from the project schematic, the plan may need to be reviewed by other BNSF departments.
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 approved.
6. BNSF Engineering will prepare a cost estimate, chargeable to the Customer, for *the BNSF portion of track construction*, and revise the project schematic if necessary. In general, BNSF will construct from point of switch to the 14-ft clearance point. When a power turnout is required, BNSF will construct from the point of switch to just beyond the power derail.
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.
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. The final plans must be approved by BNSF Engineering prior to start of work on BNSF property. Materials for BNSF's portion of the project are ordered, work scheduled and construction completed.

BNSF RAILWAY COMPANY

STANDARDS FOR INDUSTRIAL TRACKAGE (NON-UNIT)

1. Roadbed:

Roadbed and ballast section for industrial trackage shall conform to the special roadbed section (see appendix, page A-10), and to the ballast material requirements on page 16.

2. Curvature:

Maximum degree of curve shall not exceed 9°30' (603.80' radius). All curves are defined using the chord definition method. A minimum tangent length of 50 feet must be placed between reversing curves. No turnouts (switches) can be placed in a curve. Mainline turnouts must be placed at least 200 feet from the end of a mainline curve.

3. Profile Grade:

Track profile grades shall be limited to a maximum of 1.5%.

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-41 and A-42 for BNSF's standard for vertical curves.

5. Track:

Recommended rail section is 112-lb. or greater. 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. Steel ties are spaced at 24" centers with 8" ballast section.

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 - 112 lb. as the minimum (see appendix, pages A-15 to A-32). 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 berm 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 berm is shown in the appendix on page A-13.

For turnouts placed off of BNSF property and/or maintained by the Customer, and operated by BNSF, the recommended minimum is a No. 9 - 112 lb. All switch stands need to include a "30 Degree" handle (see appendix, page A-34).

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.

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 (see appendix, page A-33) and installed so that the derailed car is directed away from BNSF trackage. 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.

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. All structural plans will need to be reviewed and accepted by BNSF Engineering. Gratings covering open pits must be bolted in place.

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 cross-ties. For crossings installed and maintained by the Customer, a concrete plank is recommended, with a wood plank surface as acceptable (see appendix, pages A-35 to A-37).

10. Clearances:

BNSF will adhere to the "Clearance Requirements By State," BNSF Dwg. No. 2509, Sheet No. 2 (see appendix, page A-38) 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-39) 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-40).

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.

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 Class 2 and no larger than 1" in size (ballast gradation shown on page 16).

12. Signals and Electrical 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 at the initial on-site meeting. 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.

13. Inspection of Materials and Track:

BNSF's Division Engineer 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.

14. General:

- a. 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.
- b. Utility installations may require a permit. Pipelines under track are to be encased per BNSF requirements. Wirelines are to be installed per BNSF requirements. Refer to "BNSF Utility Accommodation Policy" booklet. Utilities within 50 feet beyond the end of track must be underground, and protected as if they were under the track.
- c. 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)."

- d. An earthen berm (see appendix, page A-14) 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.
- e. **Customer is responsible for all grading including placing all subballast up to BNSF ballast and the placement of a construction berm.**
- f. 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.
- g. **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.

Billing for the flagman is separate from the cost for BNSF portion of the track work. Current cost for BNSF flagging is approximately \$1,000 per day with billing based on actual charges.

- h. 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.

BNSF RAILWAY COMPANY

STANDARDS FOR UNIT TRAIN/LOOP FACILITIES

1. Roadbed:

Roadbed and ballast section for industrial trackage shall conform to the special roadbed section (see appendix, page A-10), and to the ballast material requirements on page 16.

2. Curvature:

Maximum degree of curve shall not exceed 7°30' (764.49' radius). All curves are defined using the chord definition method. A minimum tangent length of 200 feet must be placed between reversing curves. No turnouts (switches) can be placed in a curve. Mainline turnouts must be placed at least 200 feet from the end of a mainline curve.

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.

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-41 and A-42 for BNSF's standard for vertical curves.

5. Track:

For New Unit Train Facilities minimum rail section is 112-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. Steel ties are spaced at 24" centers with 8" ballast section.

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-21 to A-32). 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 in 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 berm 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 berm is shown in the appendix on page A-13.

For turnouts placed off of BNSF property and/or maintained by the Customer, and operated by BNSF, a No. 11 - 112 lb. turnout will be the minimum. All switch stands need to include a "30 Degree" handle (see appendix, page A-34).

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.

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 (see appendix, page A-33) and installed so that the derailed car is directed away from BNSF trackage. 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.

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. All structural plans will need to be reviewed and accepted by BNSF Engineering. Gratings covering open pits must be bolted in place.

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 cross-ties. For crossings installed and maintained by the Customer, a concrete plank is recommended, with a wood plank surface as acceptable (see appendix, pages A-35 to A-37).

10. **Clearances:**

BNSF will adhere to the "Clearance Requirements By State," BNSF Dwg. No. 2509, Sheet No. 2 (see appendix, page A-38) 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-39) 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-40).

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.

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-11 and A-12 for typical sections of roads and walkways. Walkway ballast shall be Class 2 and no larger than 1" in size (ballast gradation shown on page 16).

12. Signals and Electrical 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 at the initial on-site meeting. 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.

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-11 and A-12 for typical sections of roads and walkways. A standard section with a 13-ft wide roadway is shown in the appendix, page A-12. The roadway can be constructed using subballast materials as specified in the Grading & Embankment section of this document, page 12.

14. Inspection of Materials and Track:

BNSF's Division Engineer 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.

15. General:

- a. 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.
- b. Utility installations may require a permit. Pipelines under track are to be encased per BNSF requirements. Wirelines are to be installed per BNSF requirements. Refer to "BNSF Utility Accommodation Policy" booklet. Utilities within 50 feet beyond the end of track must be underground, and protected as if they were under the track.

- c. 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)."

- d. An earthen berm (see appendix, page A-14) 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.
- e. **Customer is responsible for all grading including placing all subballast up to BNSF ballast and the placement of a construction berm, if required.**
- f. 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.
- g. **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. Billing for the flagman is separate from the cost for BNSF portion of the track work. Current cost for BNSF flagging is approximately \$1,000 per day with billing based on actual charges.
- h. 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.
- i. 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.

INDUSTRIAL TRACK SURVEY AND PLAN REQUIREMENTS

Provide a Plan View of new track(s):

Show complete description of all proposed trackage, including mainline or lead track stationing, curvature, milepost location and size (#9, #11, #15) of proposed or future turnouts, car capacities, and location of bumpers or wheel stops and derails. Include at least one existing fixed object (road xing, point of switch) to assist with staking the new trackage.

With track stationing show location of 14' clearance point, railroad property line and pertinent property corners, and any previously dedicated railroad easements. Ex: "Sta 1+85.0 Clear Pt". Note length of storage capacity of each track (clear length).

Show the location of present or proposed buildings including locations of unloading doors, ramps or docks. Show clearance from centerline of track to these facilities.

Show all existing trackage using railroad stationing, and locate all obstructions such as poles, pole lines, utilities, ditches and road crossings. Note the type of signal protection at grade crossings and location of insulated joints where applicable, and whether modifications to any of these facilities are required.

Note weight of rail in existing and proposed tracks, and list materials to be used for proposed tracks.

Furnish Milepost and Line Segment (if known) 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.

Suggested plan scale: 1" = 50'. **All plans and drawings need to be prepared electronically in MicroStation format (AutoCad acceptable).** 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. Upon approval, BNSF Engineering will revise the project schematic, if necessary.

Establish and document one local benchmark near industrial track site.

Provide a Profile View of new track(s):

Include profile of top/rail of new track and ground line at centerline of track.

Include profile of existing track at location of switch and switch ties.

Include cross-sections for proposed tracks and existing affected tracks.

Show drainage structures, if required, with invert elevations and ditch profiles.

Suggested scales for drawings:

Profiles: 1" = 50' horizontal and 1" = 5' vertical

Cross Sections: 1"=10' horizontal and vertical

Include a description of work to be performed by the railroad:

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.”

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. Accompany sketch with a brief narrative of a typical move to switch facility.

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

BNSF RAILWAY COMPANY

SPECIFICATIONS FOR CONSTRUCTION OF INDUSTRIAL TRACKAGE BY PRIVATE CONTRACTOR

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 and Division Engineer (if applicable) 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.

INSURANCE REQUIREMENTS

Contained within the Contract for Industrial Track Agreement to be signed prior to construction.

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, 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.

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. The minimum diameter for all culverts installed under main tracks or tracks maintained by BNSF is 36 inches. This diameter will allow for inspection and cleaning. For culverts maintained by the Customer, 24 inches is the minimum diameter.

Galvanized corrugated steel pipe shall be manufactured in accordance with ASSHTO Specifications M 36 and M 218. All areas of surface rust on re-corrugated ends or lockseams 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.

UTILITY CROSSINGS

Utility crossings and relocations shall conform to BNSF standards as outlined in the "BNSF Utility Accommodation Policy." Applications for utility crossings and relocations are handled by Jones, Lang, LaSalle, phone number 1- 866-498-6647. Any questions regarding utilities can be directed to the BNSF Engineering representative.

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.

CLEARANCES

BNSF will adhere to the "Clearance Requirements By State," BNSF Dwg. No. 2509, Sheet No. 2 (see appendix, page A-38) 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-39) 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-40). All loading/unloading equipment that fouls the clearance envelope during operation must positively lock in a non-fouling position when not in use.

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.

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-8). 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.

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.

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.

Turnouts (Switches, Frogs & Guardrails):

All parts shall be new or good secondhand, with secondhand parts being free of injurious defects.

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.

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.

Spikes:

5/8" x 6" cut track spikes shall be installed. All spikes shall conform to AREMA requirements.

Track Bolts & Nuts:

Track bolts and nuts shall be installed conforming to AREMA Specifications. Bolts will be correct size and length to fit rail.

Lock Washers:

One lock washer conforming to AREMA Specifications shall be installed on each track bolt.

Ballast:

Track ballast shall be Class 2 (1" - 3/8"). 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 Class 2 (1" - 3/8").

NOMINAL BALLAST SIZE		PERCENT PASSING (BY WEIGHT)										
SIZE NO.	SQ. OPENING	2 ½"	2"	1 ¾"	1 ½"	1 ¼"	1"	¾"	½"	3/8"	No. 4	
Class 2	1" – 3/8"				100		90-100	40-75	15-35	0-15	0-5	

Bumping Post:

An earthen berm (see appendix, page A-14) 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.

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 (see appendix, page A-33) and installed so that the derailed car is directed away from BNSF trackage. 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.

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.

Timber ties are recommended within 50 feet of a derail.

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.

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," Section 8.4. Gratings covering open pits must be bolted in place.

TRACK CONSTRUCTION

General:

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

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.

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.

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-8). The completed "Record of Neutral Temperature of Welded Rail as Laid" form will be completed and presented to the BNSF Roadmaster at time of final track inspection.

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 insure proper space allowance for expansion required by the rail temperatures in the following table, and shall be left in place:

39-ft Rail Temperature	
<u>Deg. F</u>	<u>Expansion</u>
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

Bending Stock Rails:

Use approved rail bending equipment. Make bends uniform and accurate for all stock rails.

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.

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.

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.

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. Flange ways need to be kept clean to allow wheels to contact top of rail at all times.

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 Economic Development Manager that the trackwork is complete and ready for inspection. The ED Mgr will arrange an on-site inspection with the BNSF Roadmaster, or designate, who will inspect the finished trackwork and complete the checklist on page 20, or similar document. The Contractor will provide a copy of the "Record of Neutral Temp of Welded Rail as Laid" form to the Roadmaster prior to or during inspection. After the Roadmaster'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.

MISCELLANEOUS

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.

ACCEPTANCE

Final acceptance of the work will be subject to the inspection by BNSF, and any portion of the work not accepted will have its faults corrected before the track is put into service.

Customer _____ Contractor _____

Location _____

Roadmaster's Check List: Indicate OK, NO, N/A or other comments

Before traffic is permitted on trackage constructed by private contractor, Roadmaster shall make an inspection for compliance with the attached specifications and submit form to Division Engineer and Manager Economic Development:

Subgrade _____ Drainage _____

Ballast _____ Curvature & Alignment _____

Surface _____ Any Clearance Problems? _____

Rail/Gage _____ Anchors _____

Record of Neutral Temp of Welded Rail as Laid (from Contractor) _____

Tie _____ Switches, Frogs & Guard Rails _____

Tie Plates _____ Joint Bars _____

Spikes _____ Bolts, Nuts & Washers _____

Earthen Berm or
Bumping Post _____ Derails, Derail Signs _____

Walkways _____

Track or Highway Crossings _____

Comments _____

Roadmaster

Date

REQUIREMENTS FOR CONTRACTORS WORKING

ON BNSF RIGHT-OF-WAY

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

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

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



Procedures for the Installation, Adjustment, Maintenance, and Inspection of CWR in Industry Tracks

October 13, 2010

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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.

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Procedures for the Installation, Adjustment, Maintenance, and Inspection of CWR in Industry Tracks

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 tracks.

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 have been established to provide a specific desired neutral temperature to prevent track buckling. When laying or adjusting CWR, use Figure 6-1, *Target Rail Laying Temperatures*, located in Engineering Instruction 6.2.3 A, reproduced below (page 3).

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:

- Refer to Figure 6-1 (page 3) for the target rail laying temperature for your area.
- Take the rail temperature and calculate the expansion required before making adjustments.
- Record the rail laying temperature, location, and date on approved forms.
- Rail does not need to be adjusted when the actual rail temperature exceeds the target neutral temperature.
- 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.

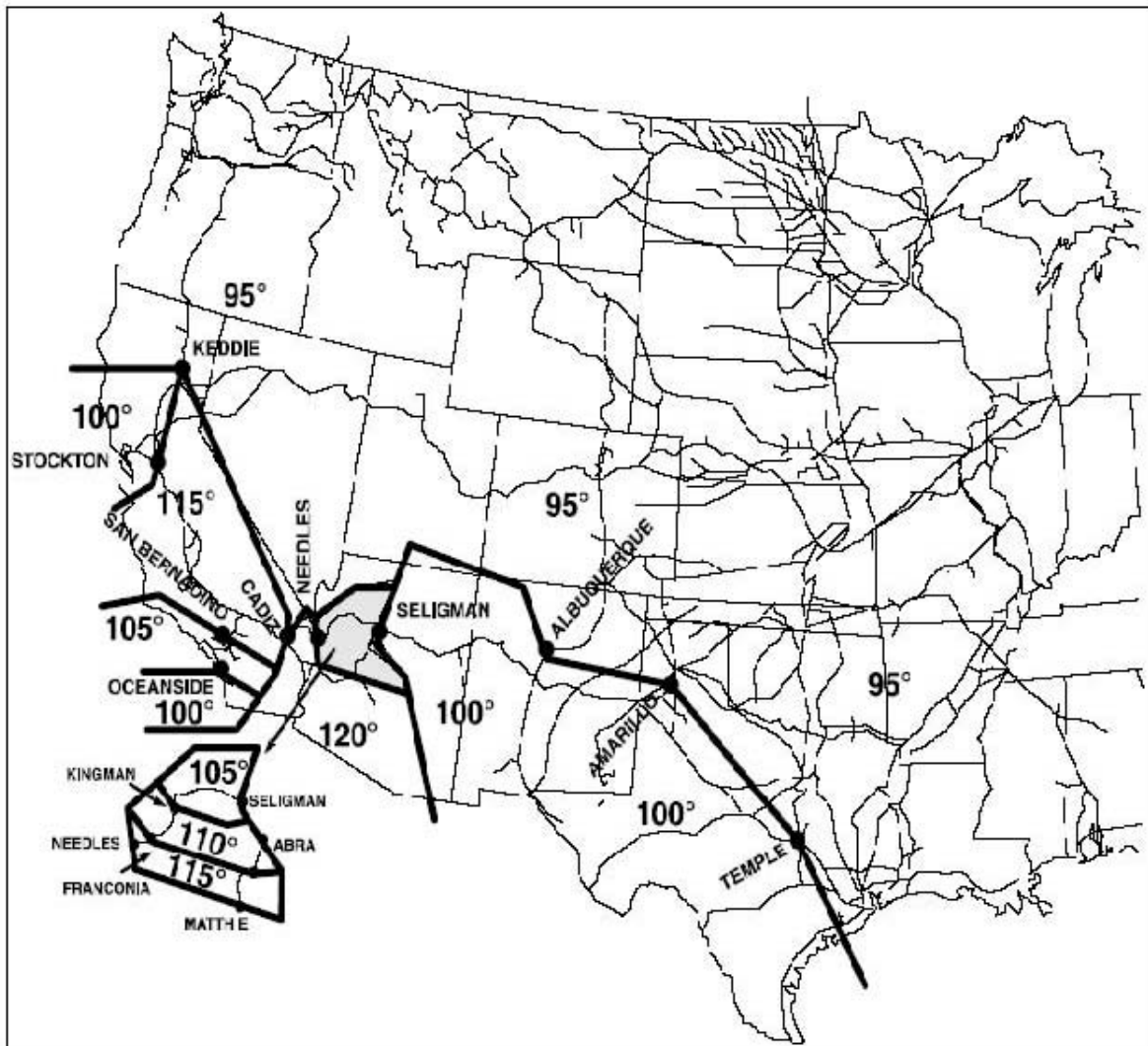


Figure 6-1. Target Rail Laying Temperatures

Chapter 2 Rail Anchoring Requirements

Where the anchoring function is otherwise provided, rail anchors may be omitted. Anchors may 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 at speeds above Class 1.

2.1 Standard Box Pattern

When installing CWR, box anchor every other tie except as outlined in Section 2.2.

2.2 Solid Box Pattern

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

Condition	Action
Turnouts Crossing Frogs Joint where CWR abuts bolted rail	Anchor every tie for 195 feet in each direction
Bolted joint created during CWR installation/construction when using heater, rail expander, or at or above Target Neutral Temperature	Within 60 days from date of creation: Weld Joint, OR Install joint with 6 bolts, OR Anchor every tie for 195' in both directions

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 section 2.1 and 2.2.
2. Open deck bridges should be anchored according to Engineering Instruction 6.4.5:
 - On open-deck timber bridges, apply anchors to all ties fastened to the stringers.
 - On open-deck steel bridges 150 feet long or less, apply anchors to all ties fastened to the steel structure.

Maintenance or Rail Repair

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. At least every other tie will be box anchored for a distance of 195 feet in each direction unless anchoring is otherwise provided. When repairs are made to a stripped joint or failed joint bar, the adjustment or addition of anchors will be 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	1. Weld joint, OR 2. Remediate joint conditions (per Chapter 6.5) 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 (with provisions for adjusting later, if necessary)

Chapter 3 Preventive Maintenance on Existing CWR Track

Performing track buckling preventive maintenance can reduce the risk of buckles. When tight rail conditions exist, be governed by Chapter 7.1.

3.2 De-Stressing Rail

Rail can be de-stressed by cutting rail out or by re-aligning a curve. When cutting rail out, use this procedure:

Procedure

1. Cut rail to be de-stressed.
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. Take the rail temperature (far enough away from the cut so that the reading is not affected by the cutting procedure).
5. Use Figure 6-1 (page 3) to compare the rail temperature with the target neutral temperature for the territory. This is known as the temperature differential.
6. If the actual rail temperature is lower than the target neutral temperature for the territory, use Table 6-3, *Change in Length of Welded Rail to Change Neutral Temperature* (page 8), to determine the rail length to be removed based on the total distance the anchors or clips have been removed.
7. If the rail temperature is at or above the Target Neutral Temperature, no additional adjustments are needed.
8. Weld the joint or apply joint bars.
9. Replace the rail anchors or clips.

9.1 Report of CWR Installations

[illegible]

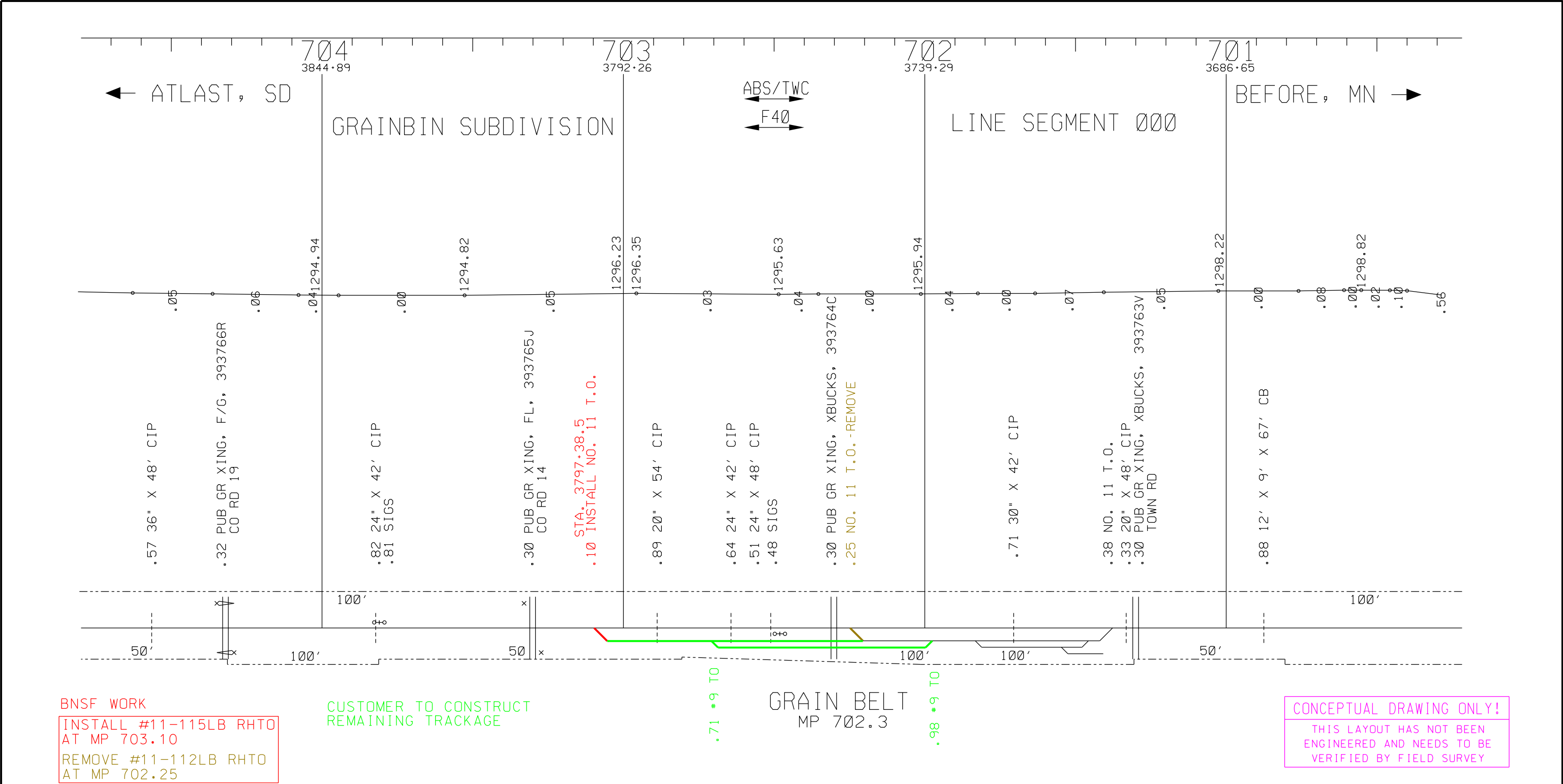
9.2 Report Maintenance Work in CWR


- Rail that is added for any reason, including repair of broken or defective rail, pullaparts, and welding of rail joints
- Where a curve has been staked and inward lateral curve movement exceeds 3"
- CWR installation or maintenance work that does not conform to these written procedures. A record of rail neutral temperature will be maintained where rail has pulled apart, broken or been cut for defect removal.

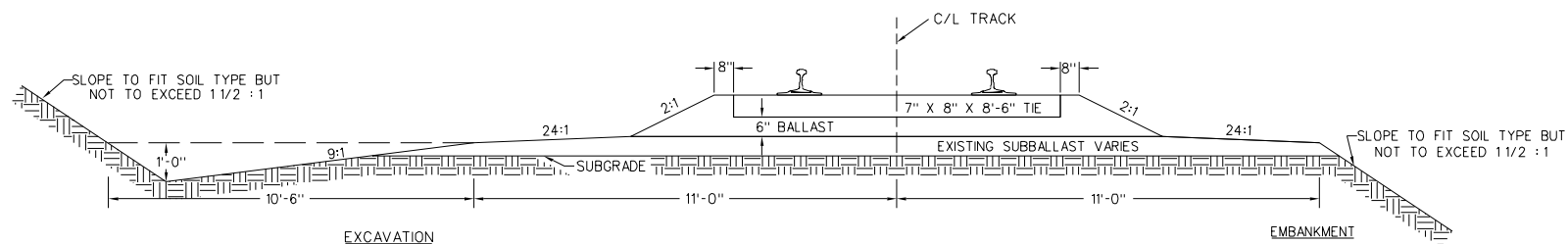
A-7

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

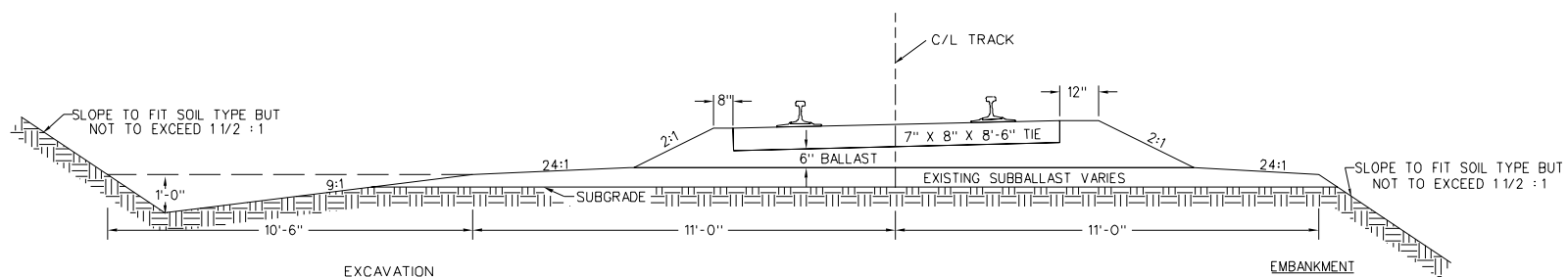
Temp. Diff. in Deg. F	Length of Unrestrained Rail							
	200'	400'	600'	800'	1,000'	1,200'	1,400'	1,600'
5°	1/8"	1/4"	1/4"	1/4"	1/2"	1/2"	1/2"	1/2"
10°	1/8"	1/4"	1/2"	1/2"	3/4"	1"	1"	1-1/4"
16°	1/4"	1/2"	3/4"	1"	1 1/4"	1 1/2"	1 3/4"	1 3/4"
20°	1/4"	1/2"	1"	1-1/4"	1-1/2"	1-3/4"	2-1/4"	2-1/2"
25°	3/8"	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"



APPROVALS - (NAME - TITLE)		DATE	APPROVALS - (NAME - TITLE)		DATE	DAKOTA DIVISION GRAINBIN SUBDIVISION LINE SEGMENT 000						
						REVISIONS			NW GRAIN GROWERS GRAIN BELT,SD			
						NO.	DESCRIPTION	DATE				BY



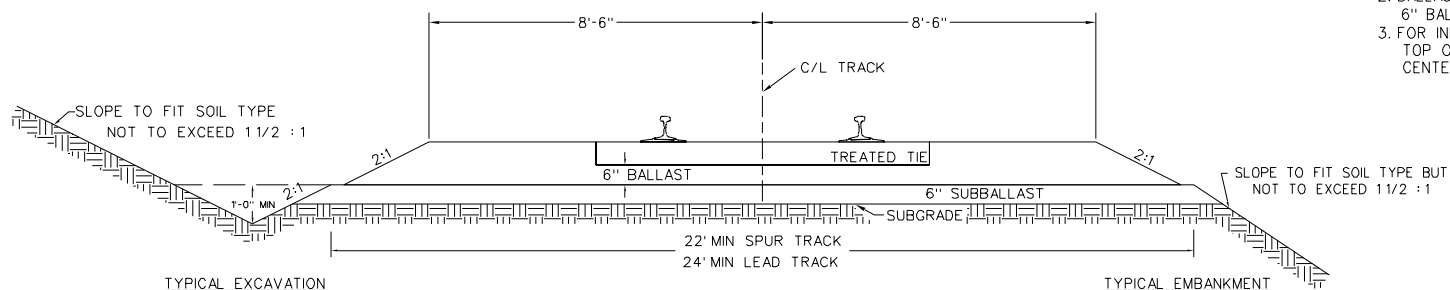
TANGENT TRACK LIGHT TRAFFIC LINES



CURVED TRACK LIGHT TRAFFIC LINES

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.



INDUSTRY TRACK

SLOPE DITCH LONGITUDINALLY TO DRAIN

BURLINGTON NORTHERN
SANTA FE
STANDARD PLAN
ENGINEERING DEPT., FORT WORTH, TEXAS

LIGHT TRAFFIC LINES
AND
INDUSTRY TRACK

RAIL:

DATE: 10/29/97

SCALE: NONE

DWG. NO.

SHEET NO.

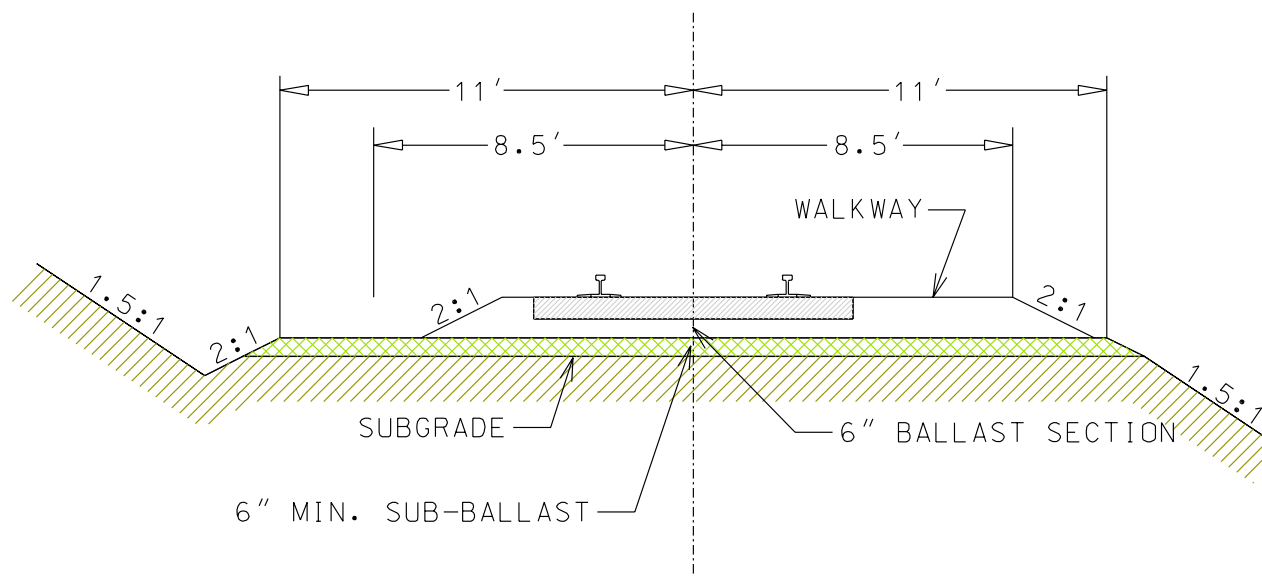
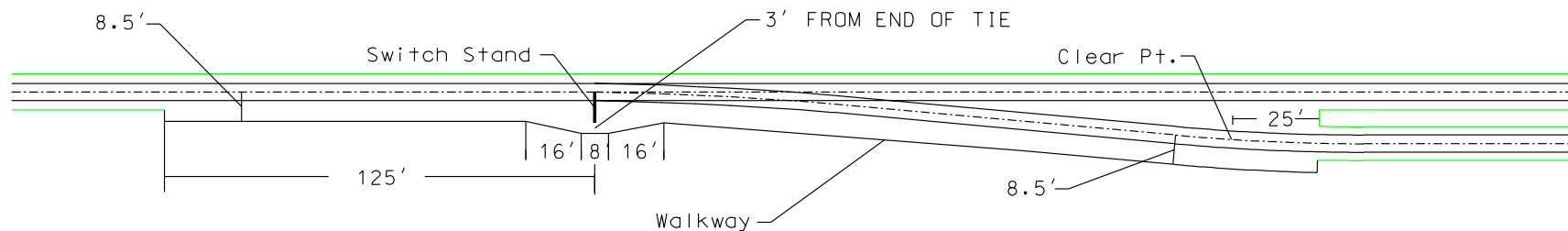
REV. NO.

1000

03

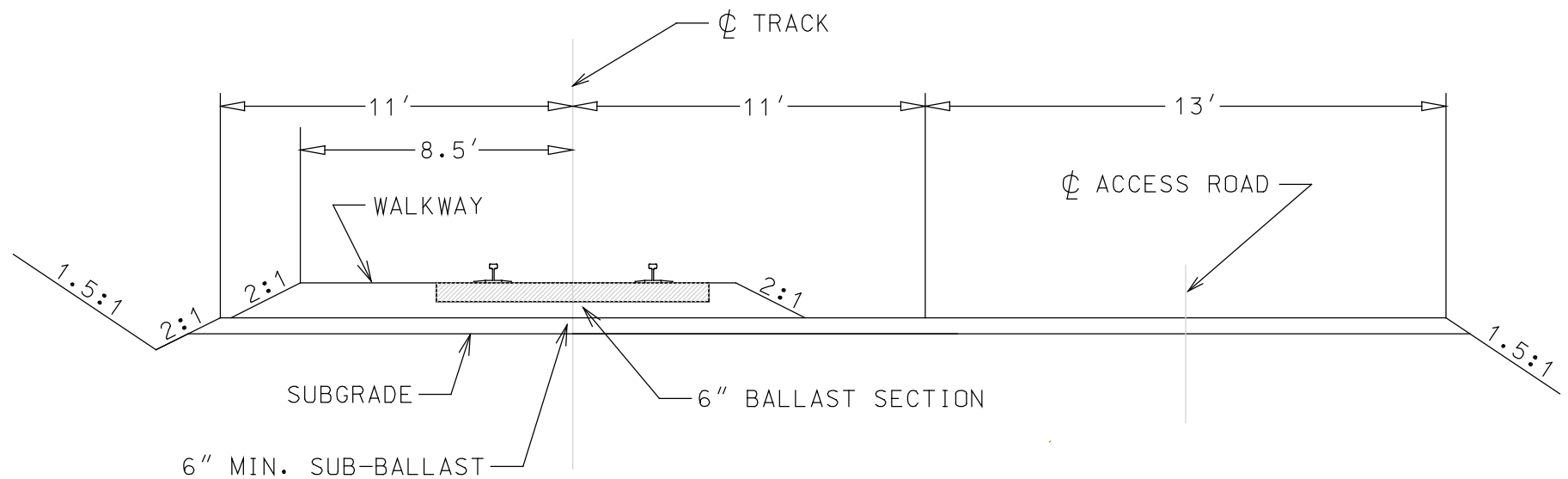
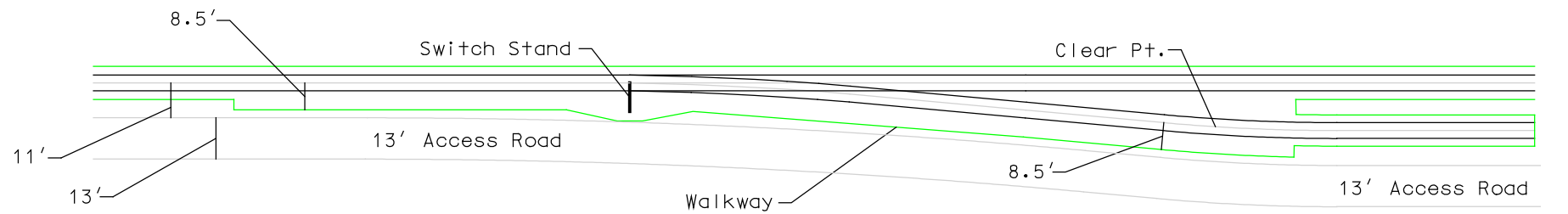
01

USE OF THIS DRAWING IS LIMITED TO BURLINGTON NORTHERN SANTA FE AND THE PARTY DESIGNATED ON THE ATTACHED EXHIBIT. NO OTHER USE MAY BE MADE BY ANY THIRD PARTY WITHOUT THE WRITTEN CONSENT OF BURLINGTON NORTHERN SANTA FE.



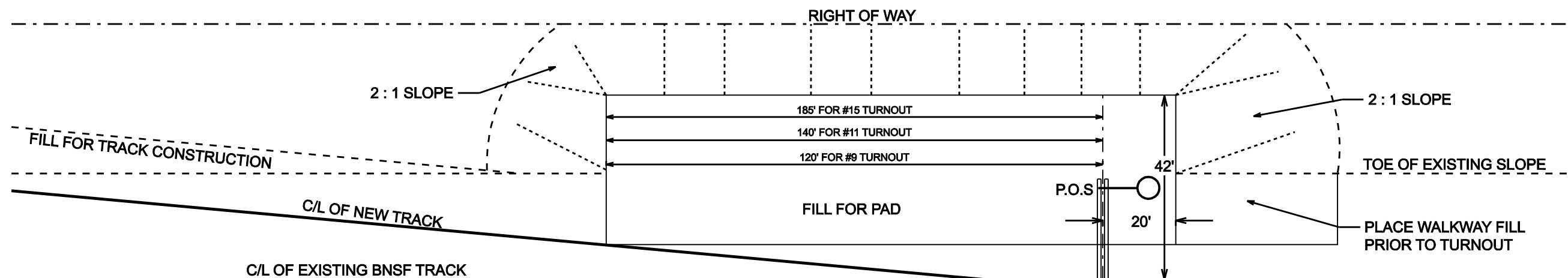
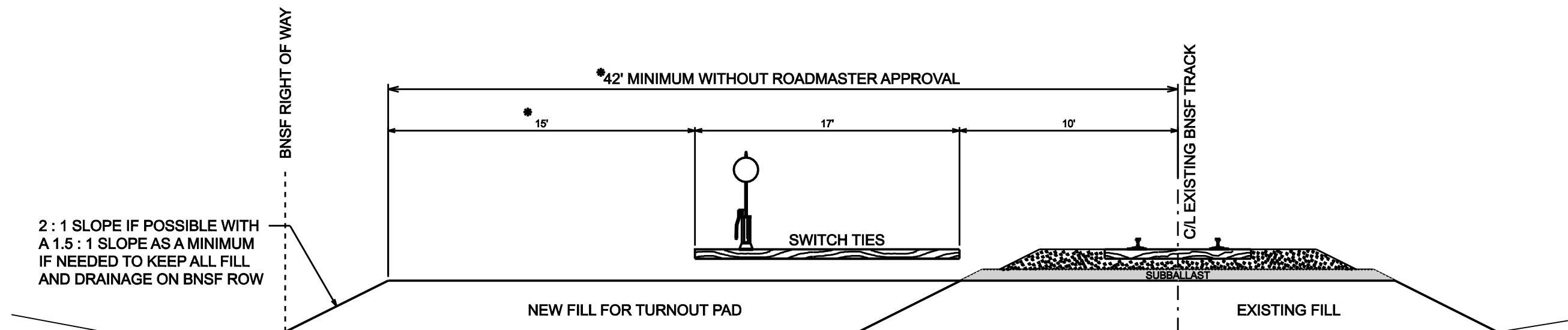
INDUSTRY TRACK STD SECTION
WITH 8.5' WALKWAY

BNSF ENG SVCS - 10/12/01



INDUSTRY TRACK STD SECTION
WITH 13' ACCESS ROAD

BNSF ENG SVCS - 04/02/04




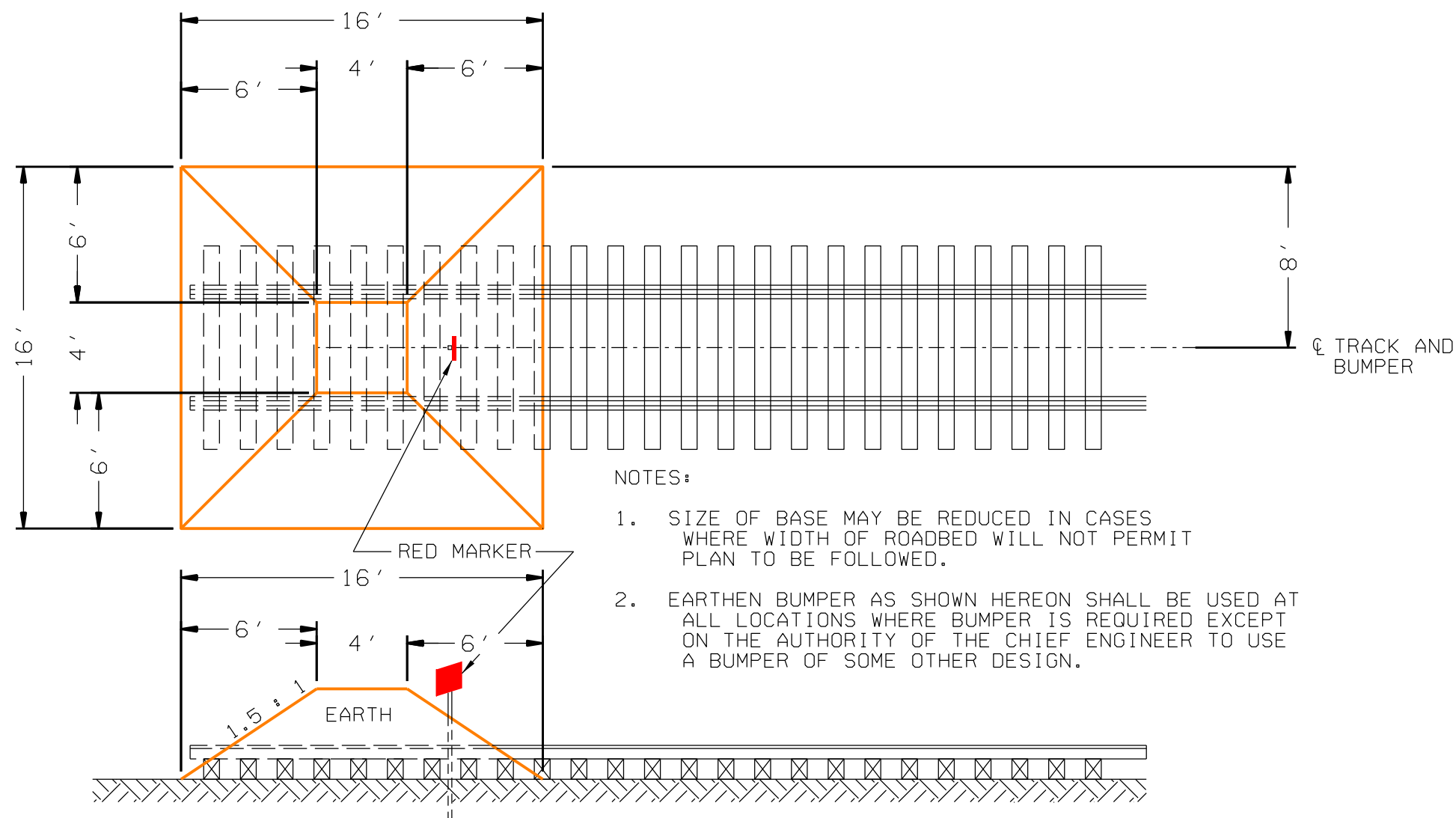
NOTE: CONSTRUCTION OF INDUSTRY TURNOUT PAD IS FOR THE PLACEMENT OF THE PROPOSED PACKAGE TURNOUT FOR ASSEMBLY AND INSTALLATION. TURNOUT PAD IS ALSO TO PROVIDE FOUNDATION FOR ANY REQUIRED SIGNAL EQUIPMENT

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.

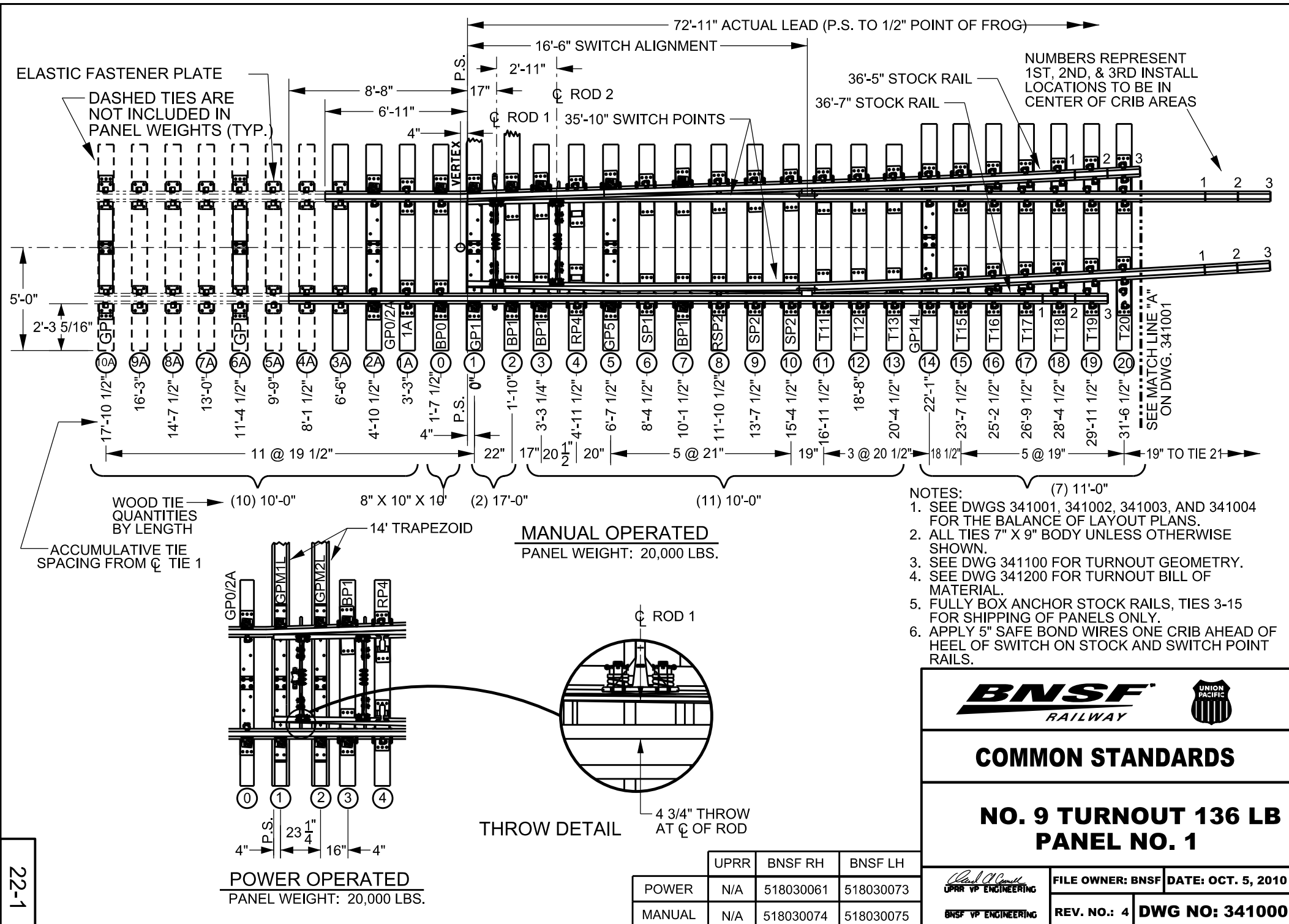
* NOTE: IF RIGHT OF WAY IS OVER 50' FROM C/L OF EXISTING BNSF TRACK THIS DISTANCE SHALL BE INCREASED TO 25' AND 50' RESPECTIVELY

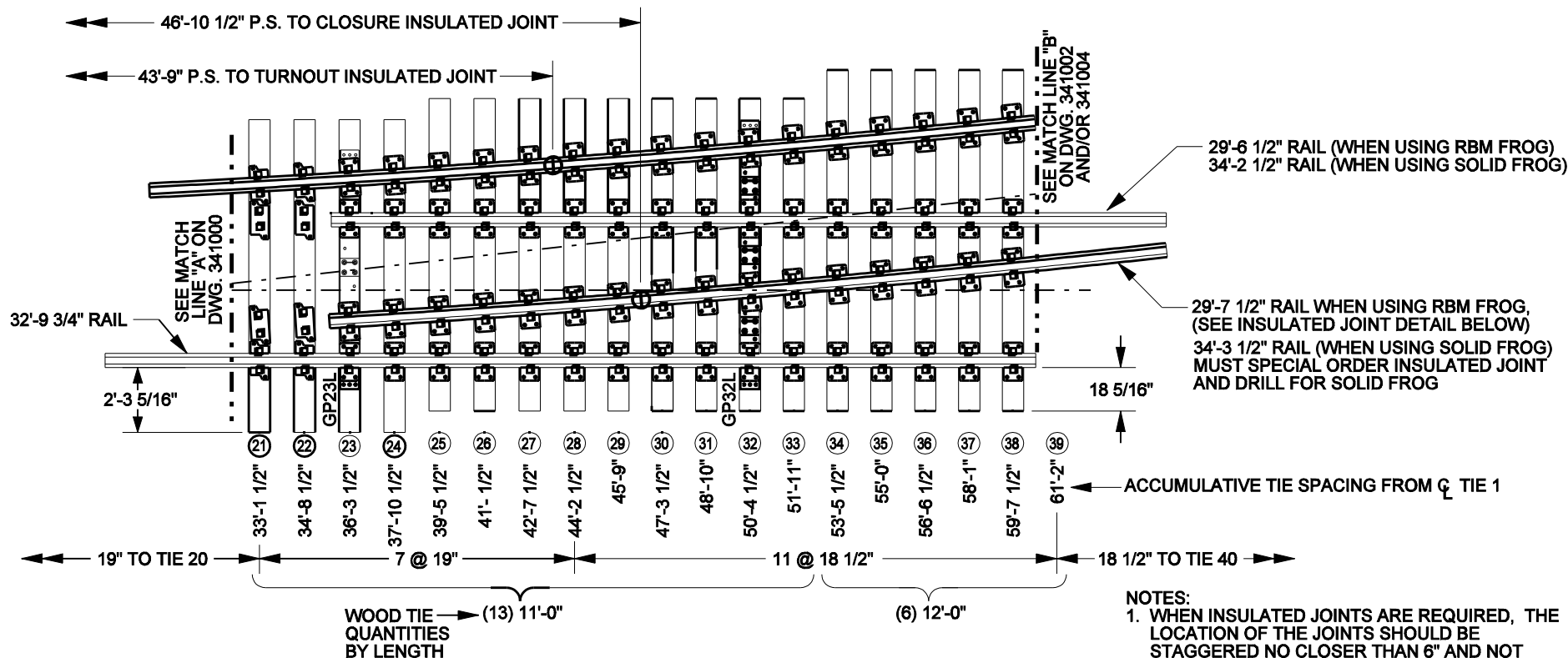
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							SYSTEM WIDE NOT TO SCALE REFERENCE ONLY					
						REVISIONS			SYSTEM WIDE NOT TO SCALE REFERENCE ONLY			
						NO.	DESCRIPTION	DATE				BY
DRAWN		CHECKED		BNSF RAILWAY COMPANY - ENGINEERING SERVICES		PROJECT SEC NO		STATUS PRELIMINARY		FILE: ...\\Instructions\\Turnouts\\Turnout Pad.dgn		
										SHEET 1 OF 1		
										DATE: 05/09/2011		



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

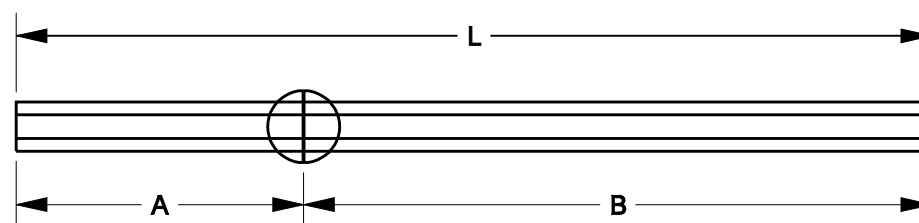
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						<div>REVISIONS</div> <table><thead><tr><th>NO.</th><th>DESCRIPTION</th><th>DATE</th><th>BY</th></tr></thead><tbody><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></tbody></table>				NO.	DESCRIPTION	DATE	BY																				
NO.	DESCRIPTION	DATE	BY																														
DRAWN	CHECKED	BNSF RAILWAY COMPANY - ENGINEERING SERVICES			PROTRAK SEQ NO	STATUS PRELIMINARY	FILE: EARTHEN BUMPER.DGN		SHEET 1 OF 1	DATE: 05/05/2011																							





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.



	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)

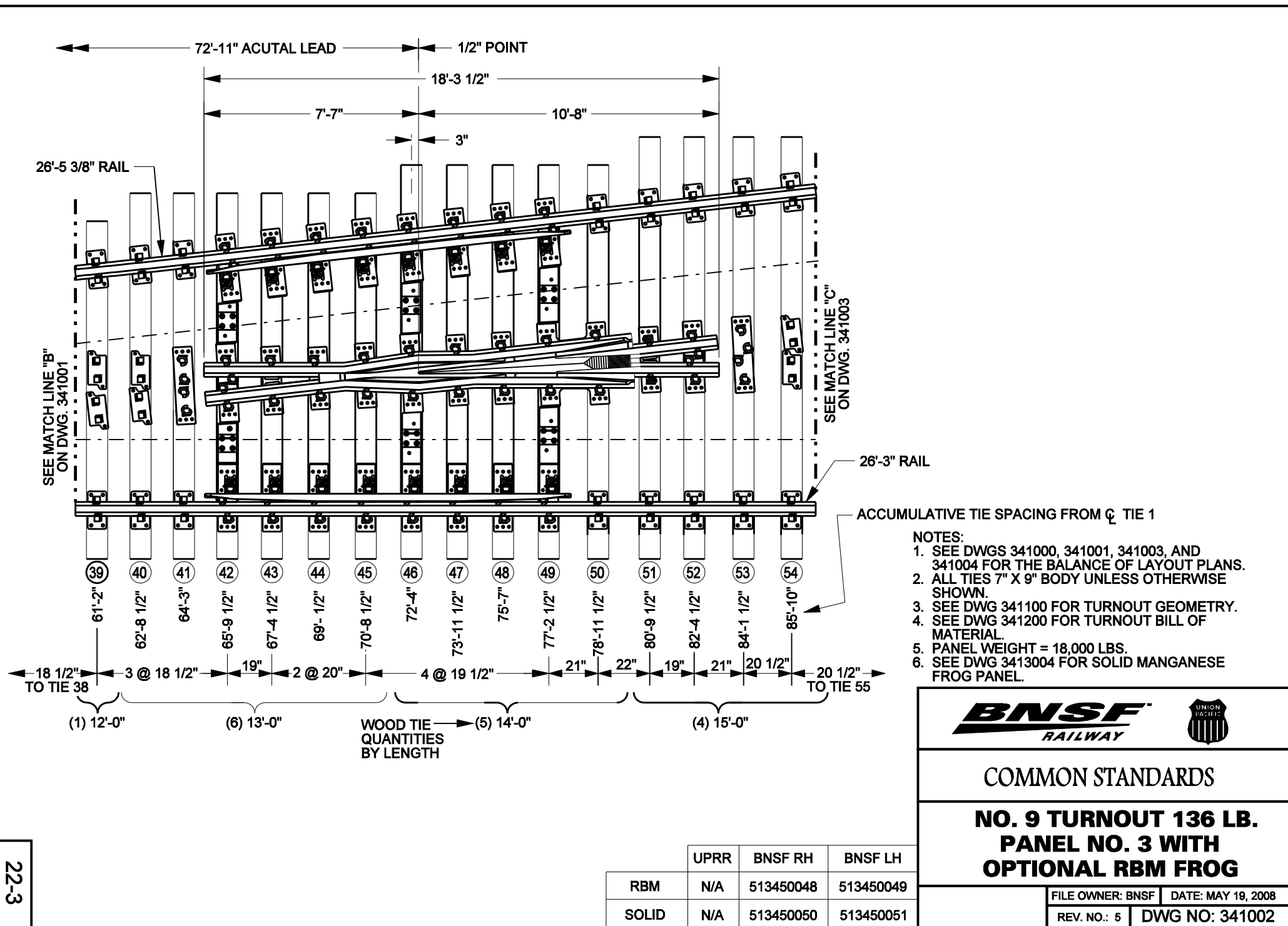
BNSF
RAILWAY

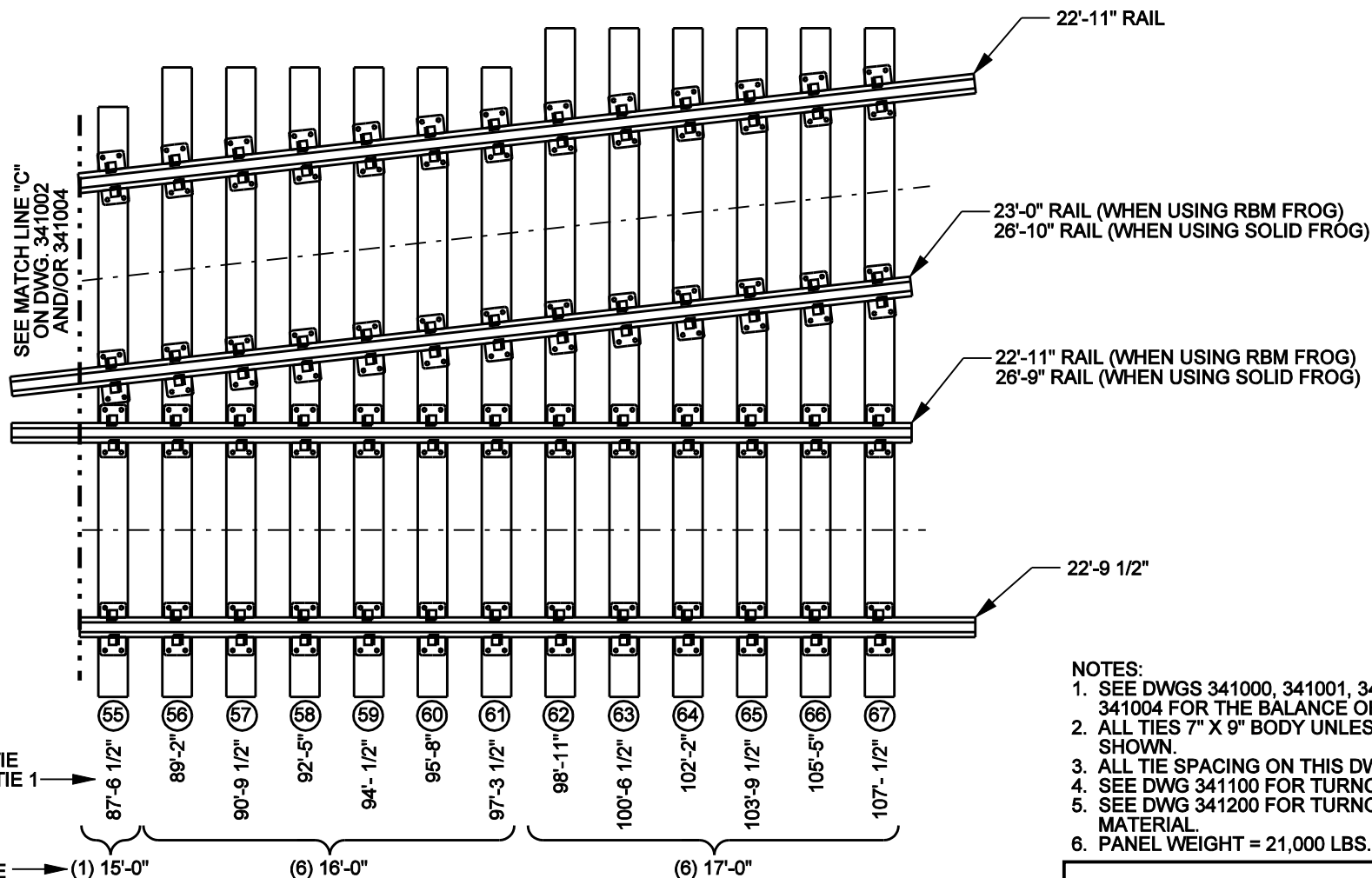


COMMON STANDARDS

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, 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.

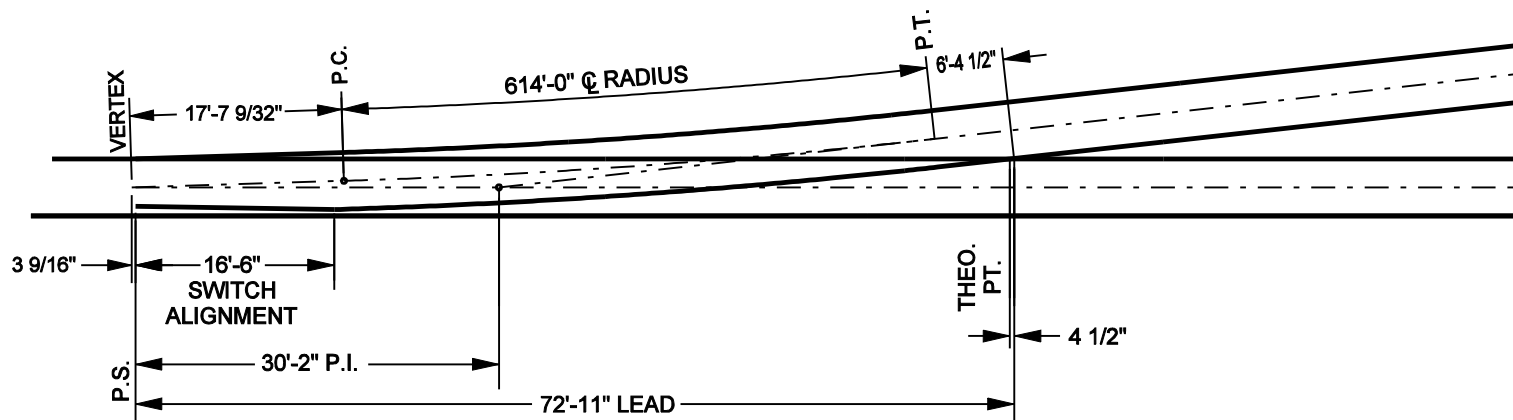
BNSF
RAILWAY



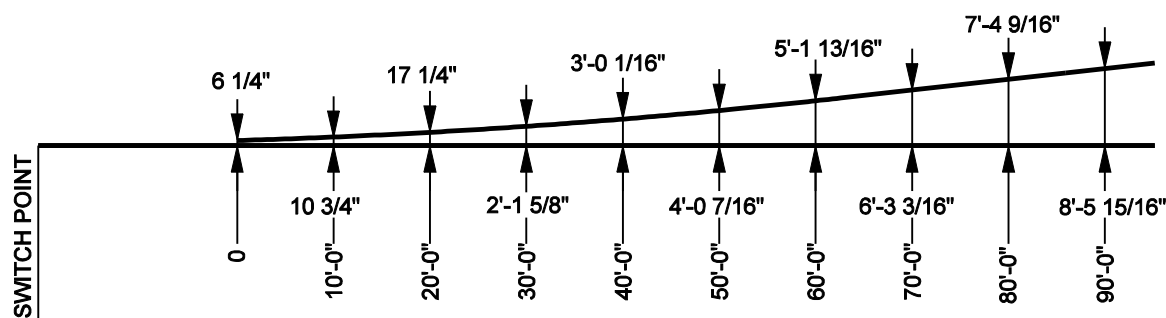
COMMON STANDARDS

**NO. 9 TURNOUT 136 LB.
PANEL NO. 4**

FILE OWNER: BNSF	DATE: FEB 28, 2007
REV. NO.: 2	DWG NO: 341003



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"

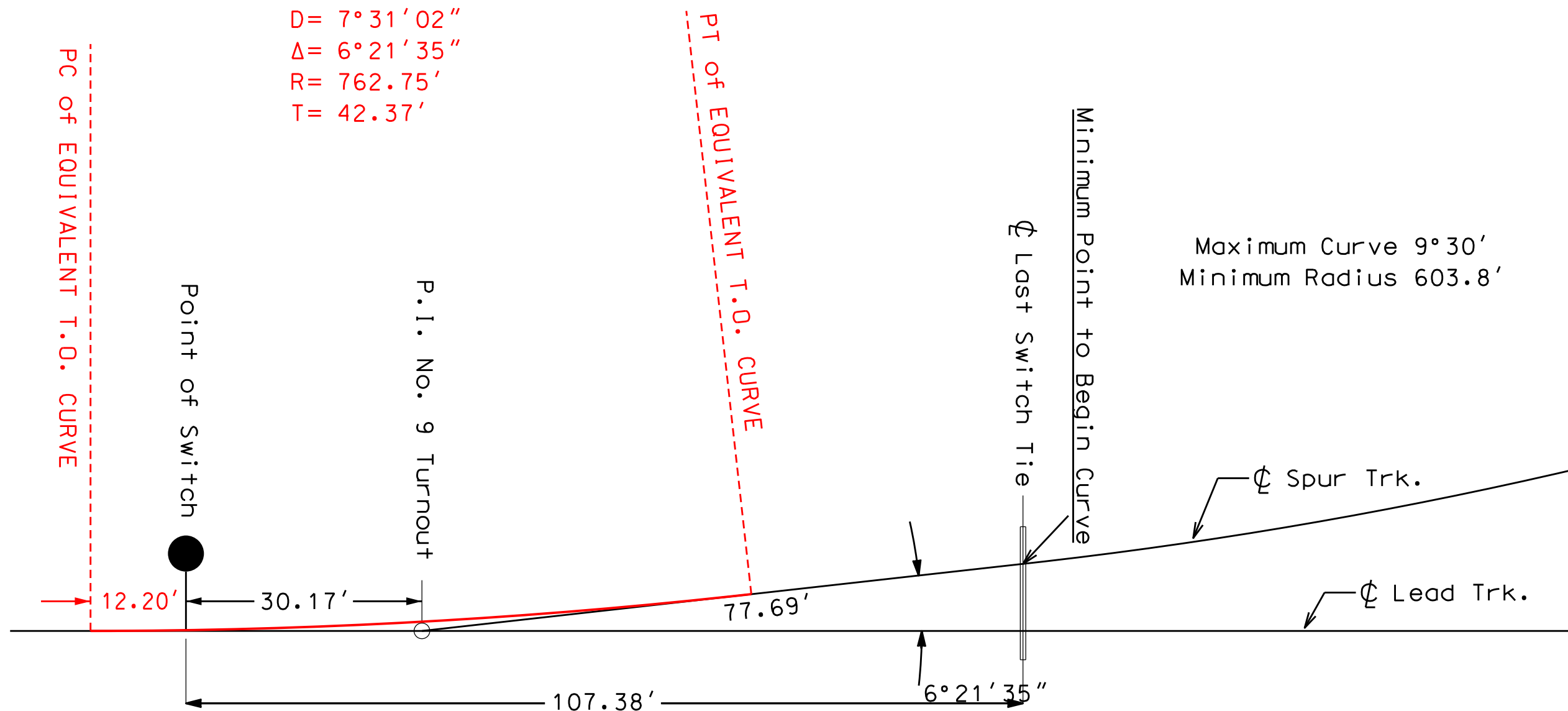



COMMON STANDARDS

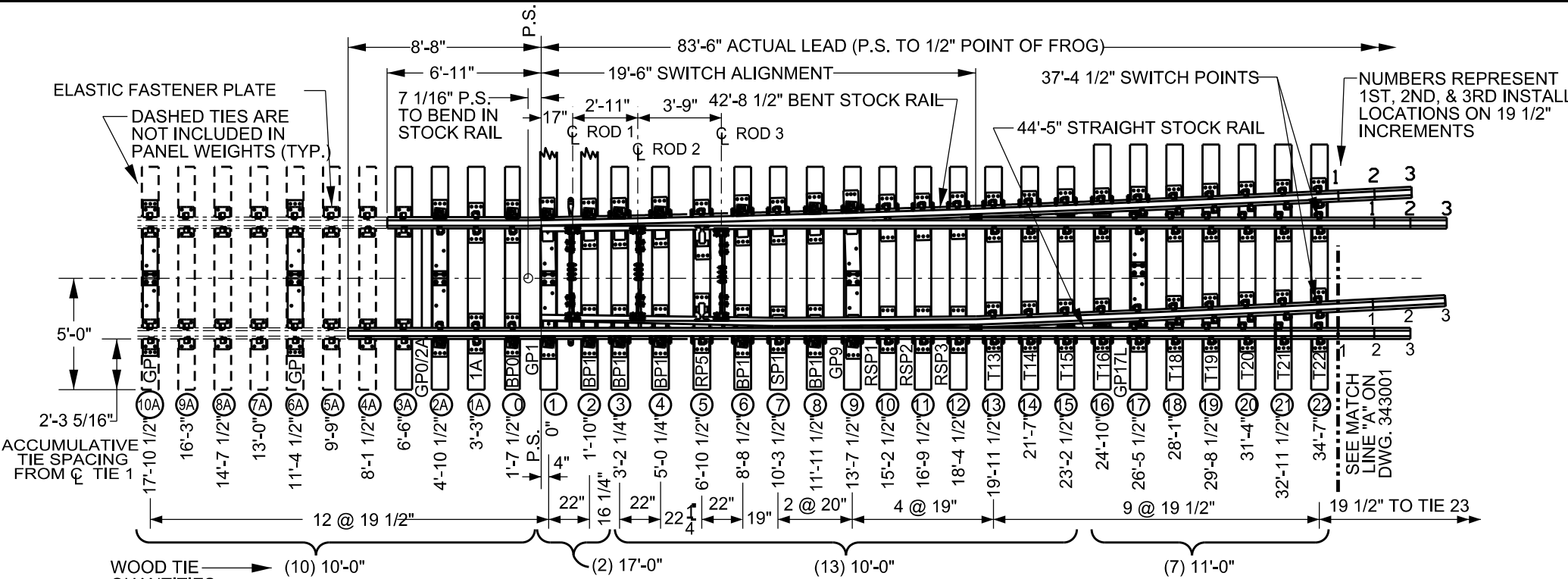
NO. 9 TURNOUT 16-6" STRAIGHT SWITCH TURNOUT GEOMETRY

FILE OWNER: BNSF	DATE: JAN. 8, 2003
REV. NO.: 0	DWG NO: 341100

D= 7° 31' 02"
Δ= 6° 21' 35"
R= 762.75'
T= 42.37'

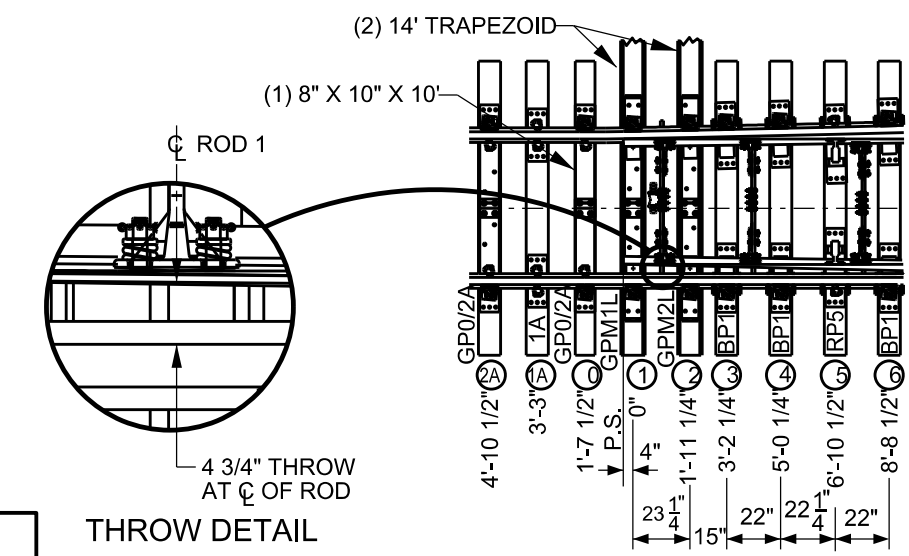


APPROVALS - (NAME - TITLE)		DATE	APPROVALS - (NAME - TITLE)		DATE	<div></div>						
						<div>NUMBER 9 TURNOUT TRACK ALIGNMENT GEOMETRY</div>						
					REVISIONS							
					NO.					DESCRIPTION	DATE	BY
ORIGIN	CHECKED	BNSF RAILWAY COMPANY - ENGINEERING SERVICES			PROJ/TAKE SHEET NO	STATUS PRELIMINARY		FILE: TURNOUTS.DGN		SHEET 1 OF 1	DATE: 05/06/2011	





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.

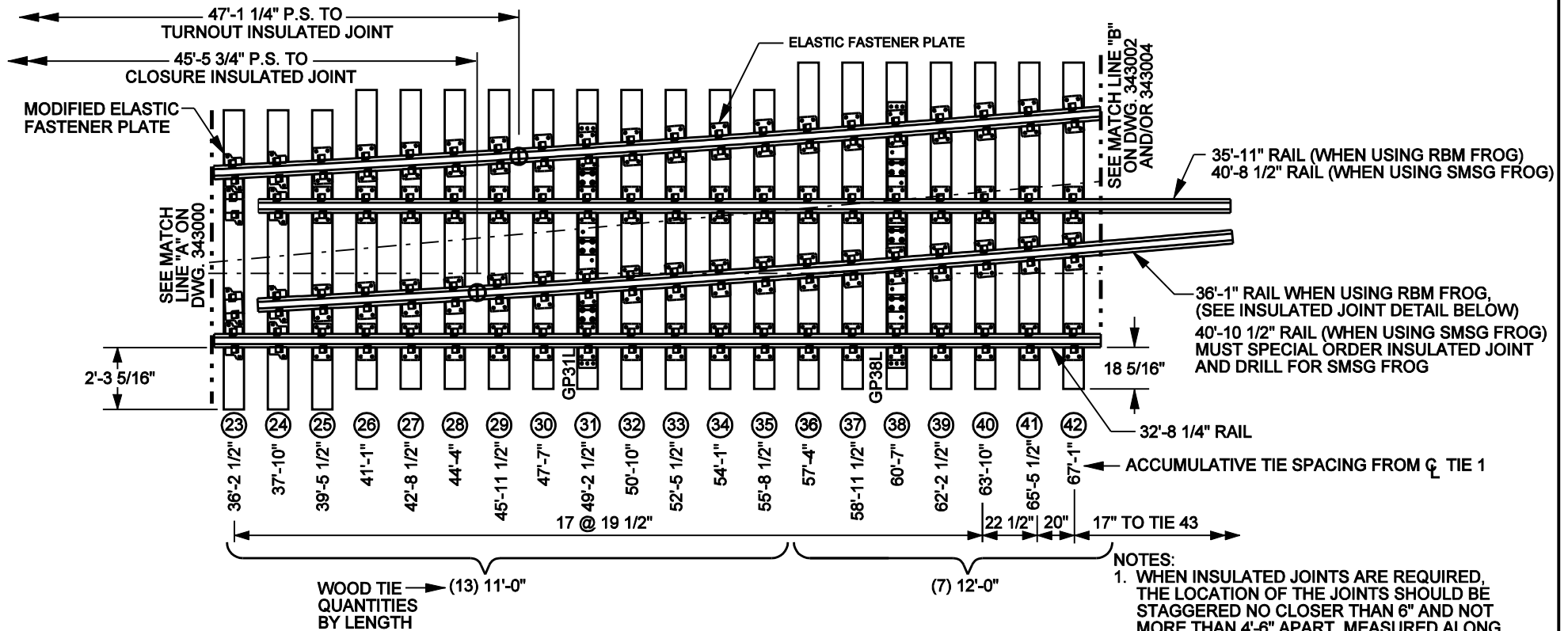
	UPRR	BNSF RH	BNSF LH
136LB. POWER	N/A	004734653	004734810
136LB. MANUAL	N/A	004734828	004734836
136LB. MAN. SPR. SW.	N/A	004734869	004734877
141LB. POWER	N/A	005253505	005253497
141LB. MANUAL	N/A	005253521	005253513
141LB. MAN. SPR. SW.	N/A	005253547	005253539

COMMON STANDARDS

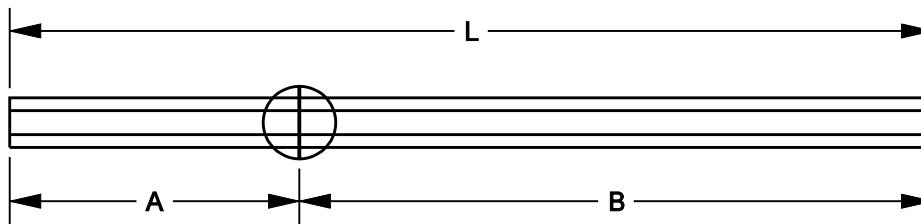
NO. 11 TURNOUT 136/141 LB. PANEL NO. 1

 UPRR VP ENGINEERING BNSF VP ENGINEERING	FILE OWNER: BNSF	DATE: OCT. 5, 2010
	REV. NO.: 6	DWG NO: 343000



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.



INSULATED JOINT DETAIL
(FOR USE WITH RBM FROG ONLY)

	A	B	L
TURNOUT INSULATED JOINT RAIL	11'-4"	21'-5"	32'-9"
CLOSURE INSULATED JOINT RAIL	8'-2"	27'-11"	36'-1"

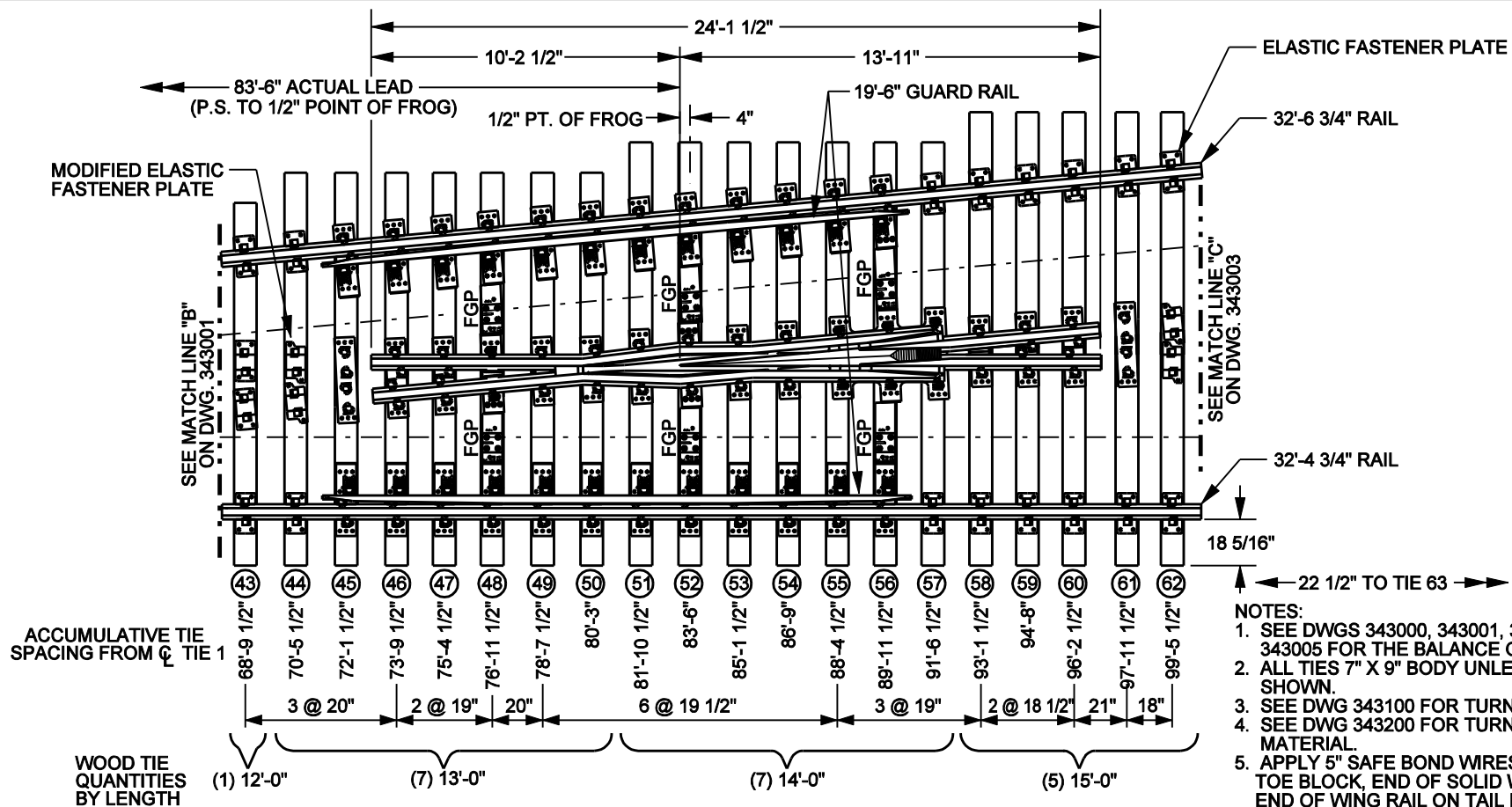
	BNSF STOCK CODE	
	136LB.	141LB.
LH TURNOUT INSULATED JOINT RAIL	005253760	005253554
LH CLOSURE INSULATED JOINT RAIL	005253778	005253562
RH TURNOUT INSULATED JOINT RAIL	005253786	005253570
RH CLOSURE INSULATED JOINT RAIL	005253794	005253588



COMMON STANDARDS

**NO. 11 TURNOUT 136/141 LB.
PANEL NO. 2**

FILE OWNER: BNSF	DATE: AUG. 26, 2009
REV. NO.: 5	DWG NO: 343001



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.

BNSF
RAILWAY

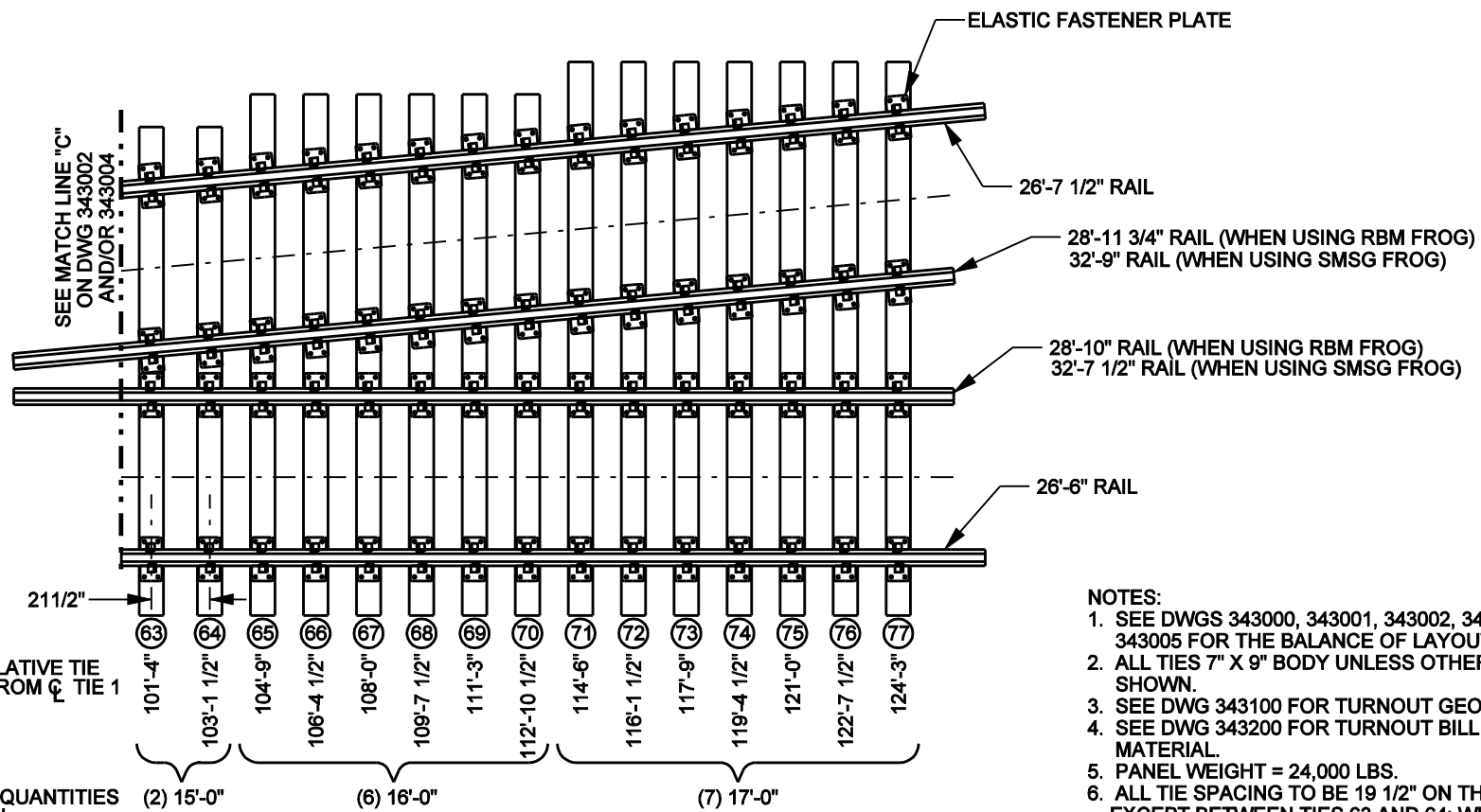

COMMON STANDARDS

**NO. 11 TURNOUT 136/141 LB.
PANEL NO. 3 WITH
OPTIONAL RBM FROG**

	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

FILE OWNER: BNSF DATE: AUG. 26, 2009

REV. NO.: 5 DWG NO: 343002



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".

BNSF
RAILWAY

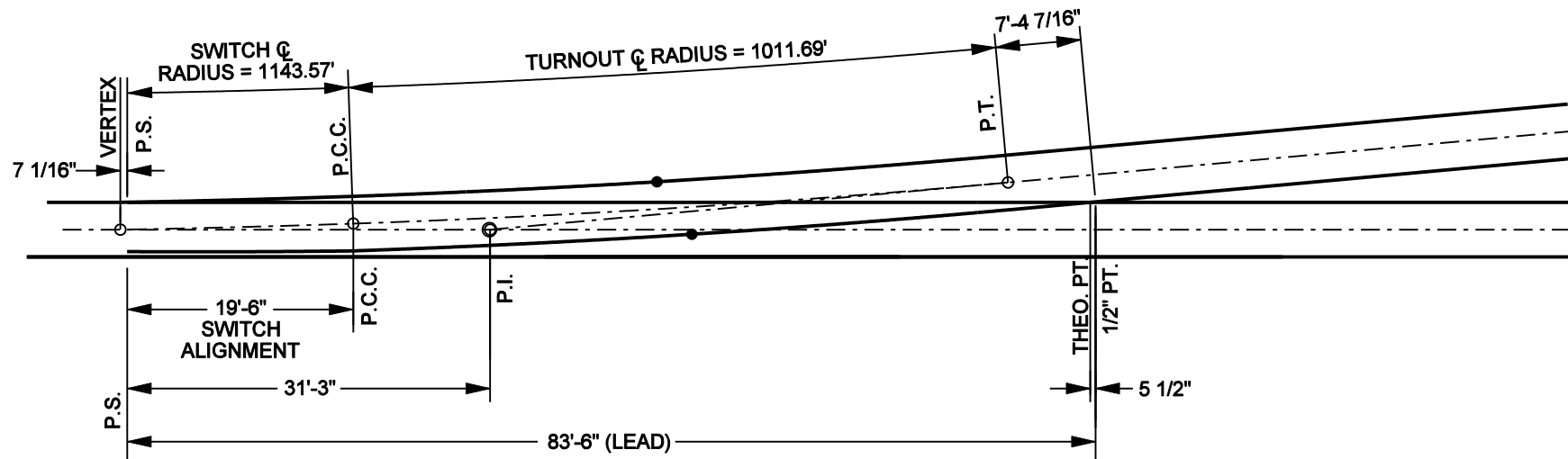


COMMON STANDARDS

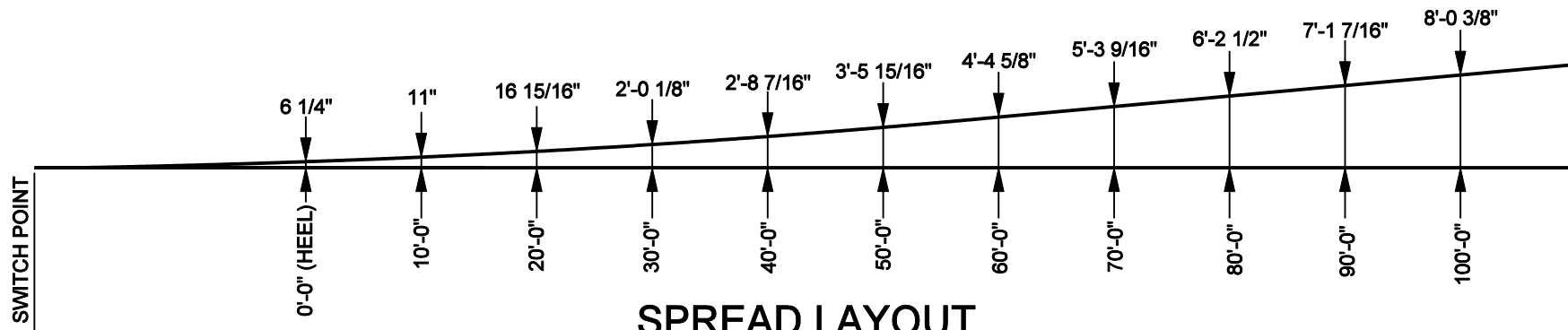
**NO. 11 TURNOUT 136/141 LB.
PANEL NO. 4**

FILE OWNER: BNSF DATE: AUG. 26, 2009

REV. NO.: 3 DWG NO: 343003



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:



COMMON STANDARDS



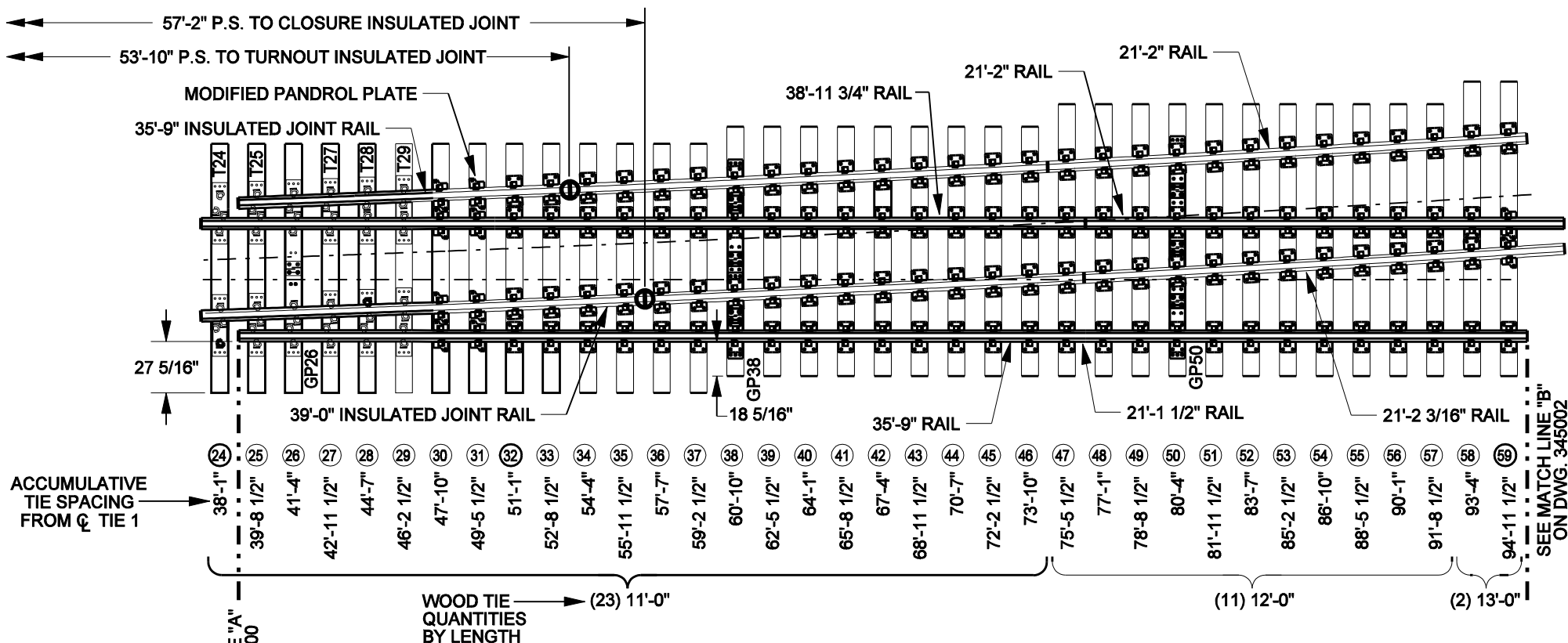
NO. 11 TURNOUT 19'-6" CURVED SWITCH TURNOUT GEOMETRY

FILE OWNER: BNSF DATE: JAN. 9, 2003

REV. NO.: 0 DWG NO: 343100

A-25

22-11



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.



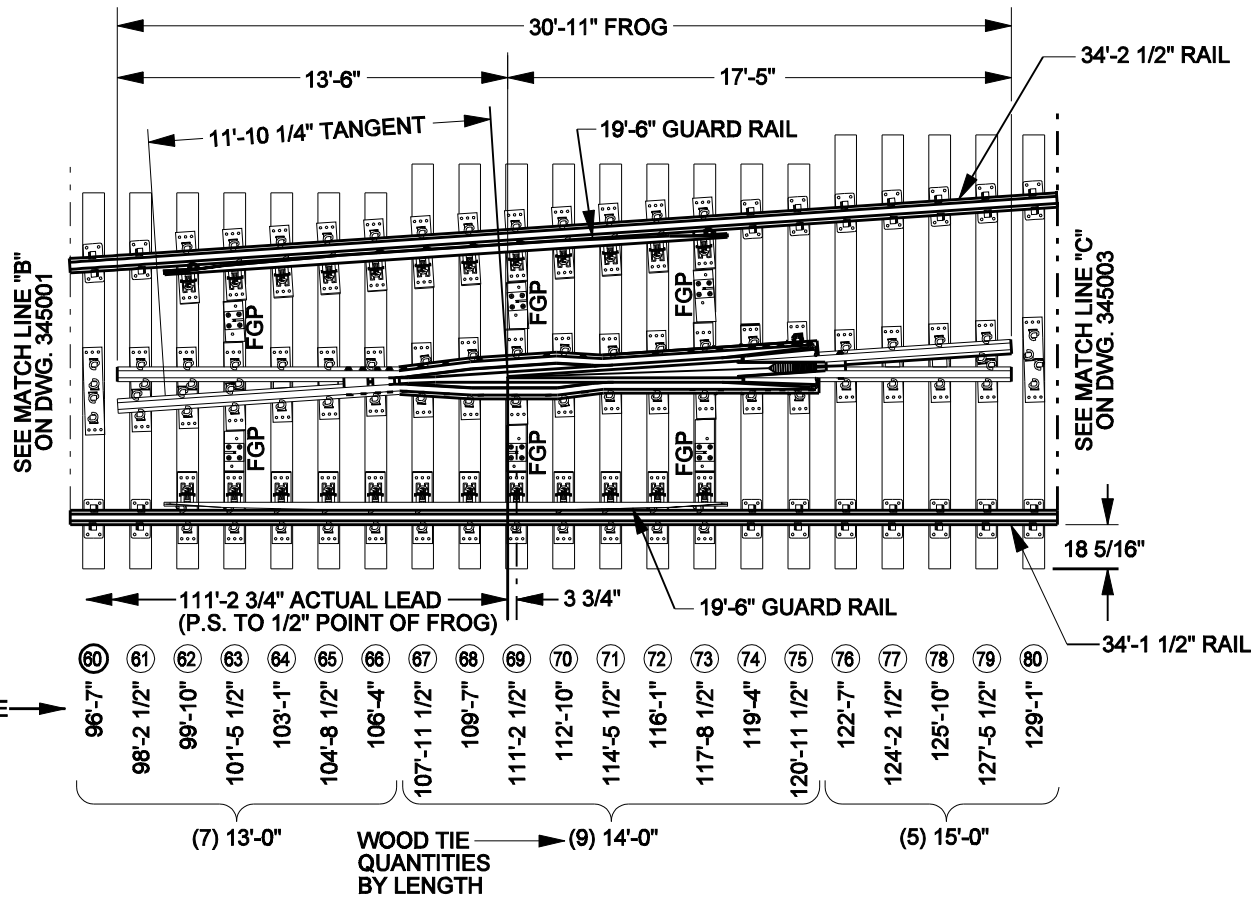
COMMON STANDARDS

NO. 15 TURNOUT 136/141 LB. PANELS NO. 2 AND NO. 3

FILE OWNER: UPRR DATE: MAY 19, 2008
REV. NO.: 3 DWG NO: 345001

	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



ACCUMULATIVE
TIE SPACING
FROM Q TIE 1

- 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.

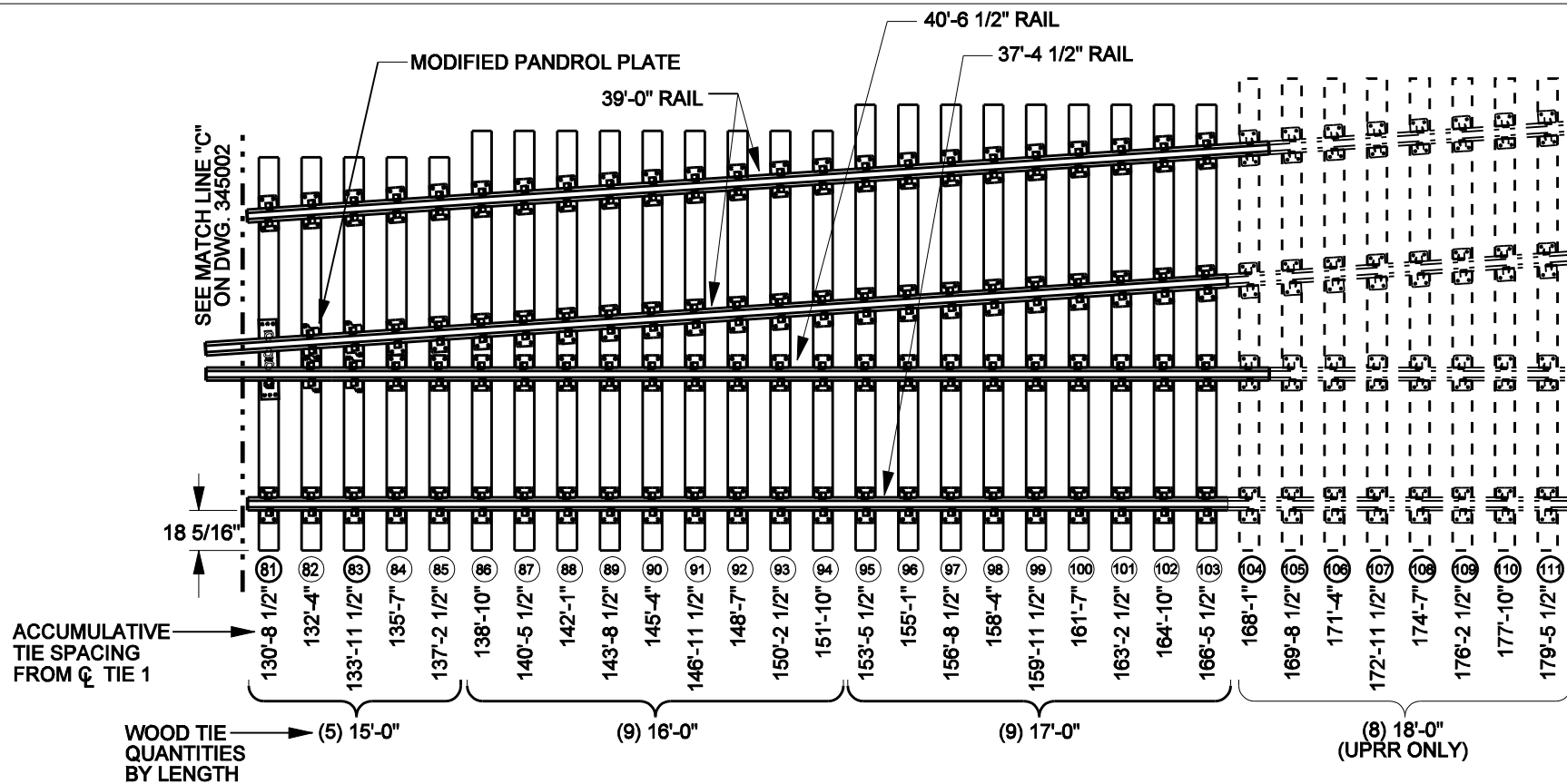


COMMON STANDARDS

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:

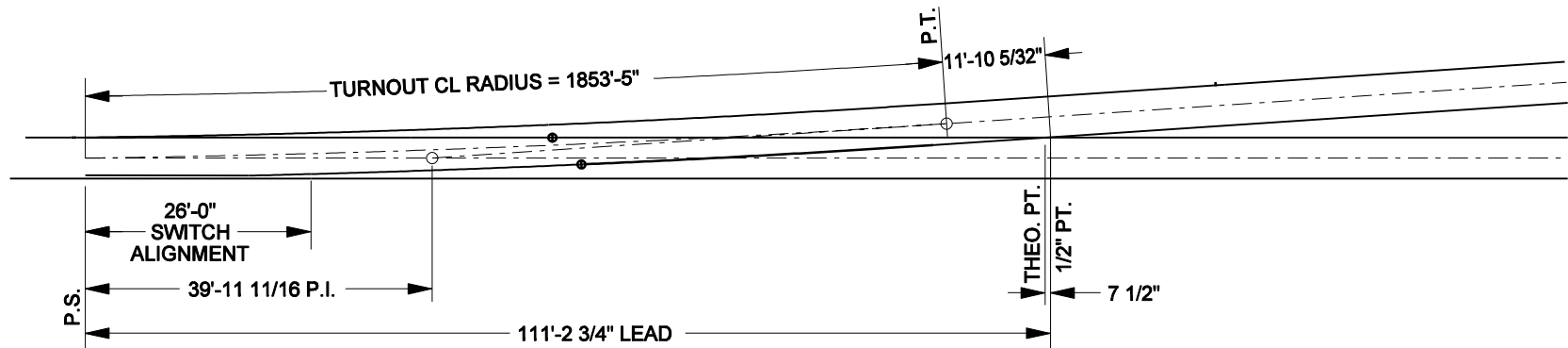
1. SEE DWGS 345000, 345001, AND 345002 FOR THE BALANCE OF LAYOUT PLANS.
2. ALL TIE SPACING IS 19 1/2" ON THIS PANEL.
3. ALL TIES 7" X 9" BODY UNLESS OTHERWISE SHOWN.
4. SEE DWG 345100 FOR TURNOUT GEOMETRY.
5. SEE DWG 345200 FOR TURNOUT BILL OF MATERIAL.
6. PANEL WEIGHT = APPROXIMATELY 23,650 LBS.



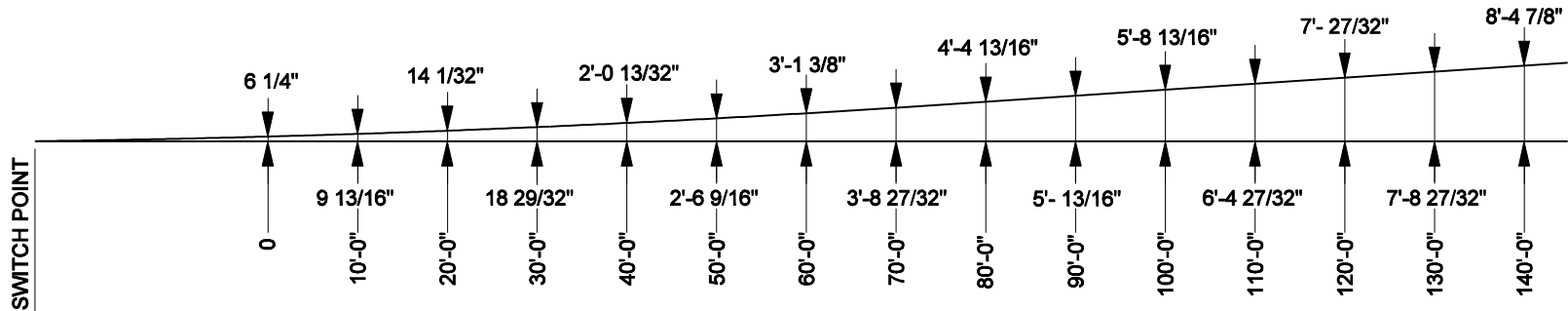
COMMON STANDARDS

**NO. 15 TURNOUT 136/141 LB.
PANEL NO. 5**

FILE OWNER: UPRR	DATE: MAY 2, 2008
REV. NO.: 1	DWG NO: 345003



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

345100



PANEL WEIGHT: 20,000 LBS.
Panel Length 44' 6"

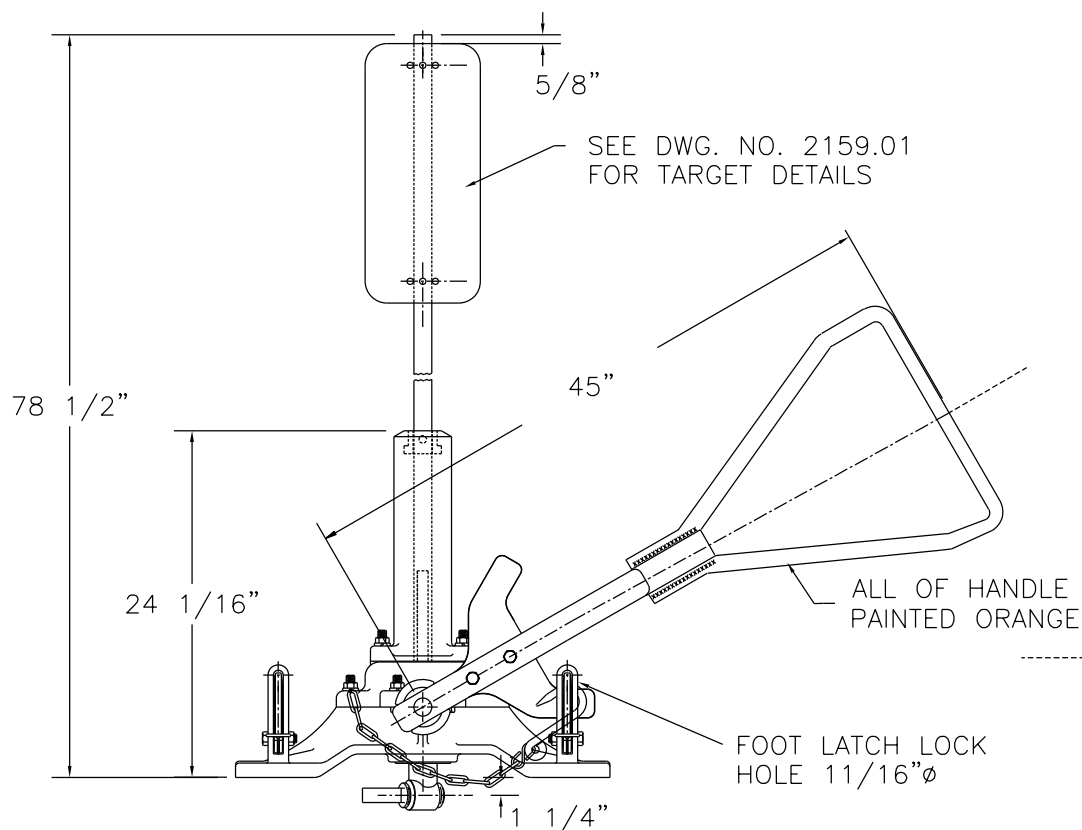


1. ALL TIES 7" X 9" BODY UNLESS OTHERWISE SHOWN ABOVE.
2. SEE DWG 341100 FOR TRACK GEOMETRY.
3. FULLY BOX ANCHOR STOCK RAILS, TIES 3-15 FOR SHIPPING OF PANELS ONLY.
4. SWITCH POINT DERAIL FURNISHED AS A COMPLETE PANEL.
5. WHEN ORDERING SPECIFY LEFT OR RIGHT HAND AND POWER OR MANUAL OPERATION. SUPPLIER 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 RAMPS REQUIRED ON STUB RAIL AND TURNOUT STOCK RAIL.

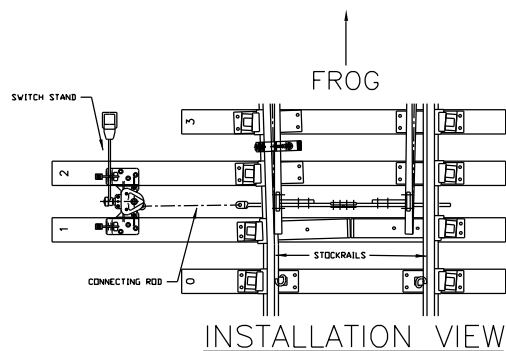


**DOUBLE SWITCH POINT
DERAIL
16' 6" POINTS 136 LB**

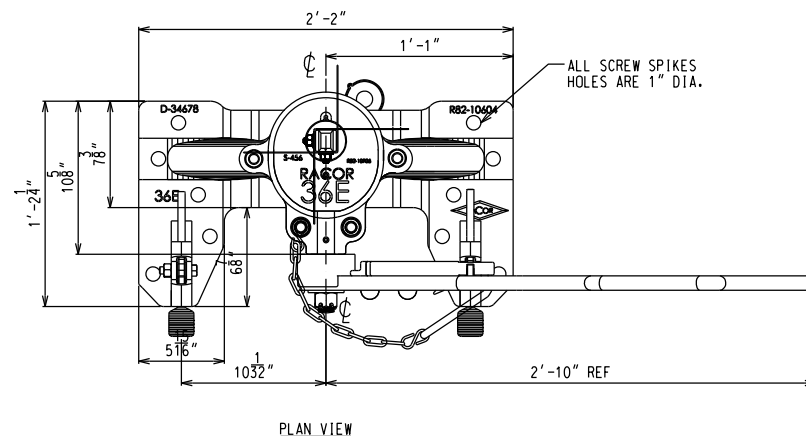
REV NO 04



ELEVATION VIEW
36 EH STANDS,
SHOWN WITH HIGH STAFF
AND TRI-HANDLE.



INSTALLATION 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:

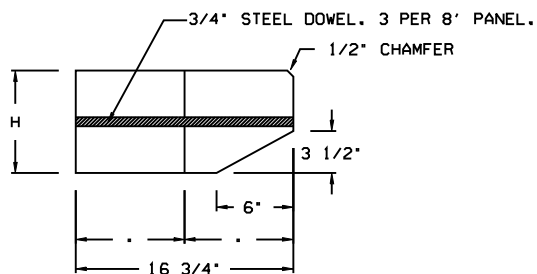
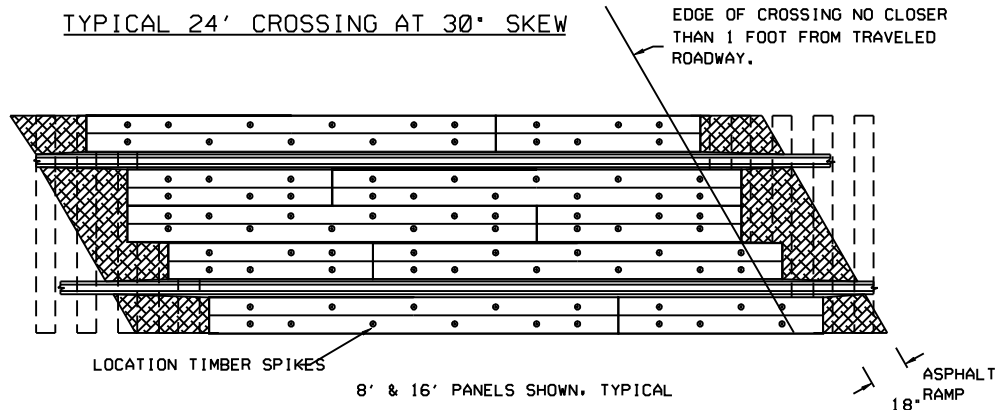
- SEE DWG. 2156 & 2160 FOR SPINDLE AND CRANK EYE DETAILS.
- HANDLE KITS (STRAIGHT OR TRI-HANDLE) ARE AVAILABLE FOR FIELD RETRO FIT OF EXISTING 36 STYLE SWITCH STANDS.
- STAND 36EH IS FOR MAIN LINE USE ONLY. FURNISHED WITH NO. 1.2 STAFF, SEE DWG. 2160.01.
- STAND 36E IS FOR MAIN LINE OR YARD USE, FURNISHED WITH NO. 2 STAFF, SEE DWG. 2160.01.
- 16:1 MECHANICAL ADVANTAGE.
- SWITCH STANDS ARE TO BE INSTALLED WITH HANDLE DIRECTED TOWARDS FROG WHEN LINED TO THE STRAIGHT SIDE OF SWITCH.
- STAND INCLUDES 1/2" DIAMETER HOOK ON 19" CHAIN

BNSF
RAILWAY

STANDARD PLAN
RACOR STYLE 36E & 36EH
SWITCH STAND
WITH 45" TRI-HANDLE

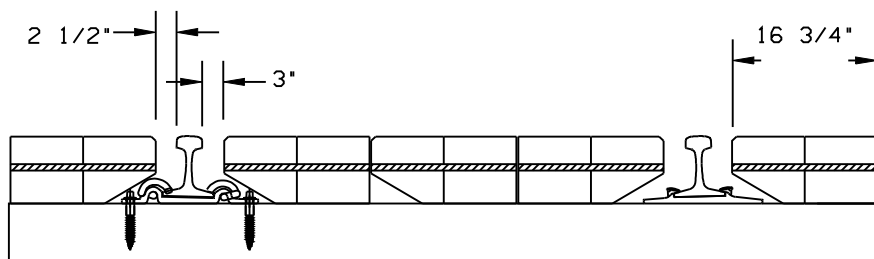
FILE OWNER BNSF DATE: DECEMBER 10, 2010
REV. NO.: 13 DWG NO: 215301

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 WORKPAGE.
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

BNSF
RAILWAY

STANDARD PLAN

TIMBER CROSSING PANELS FOR LOW DENSITY RAIL TRAFFIC ON 8'6" WOOD TIES

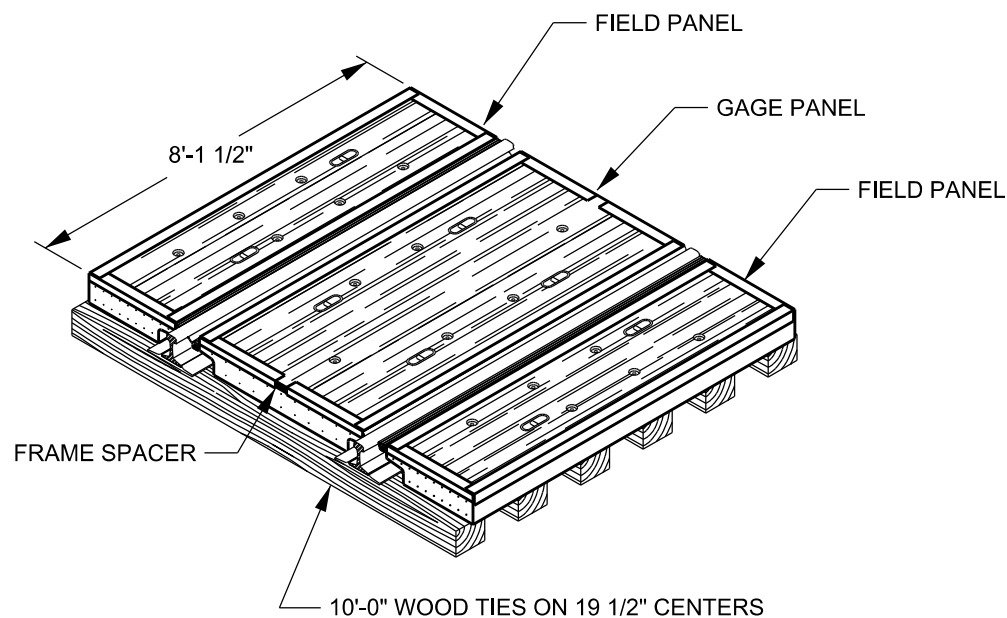
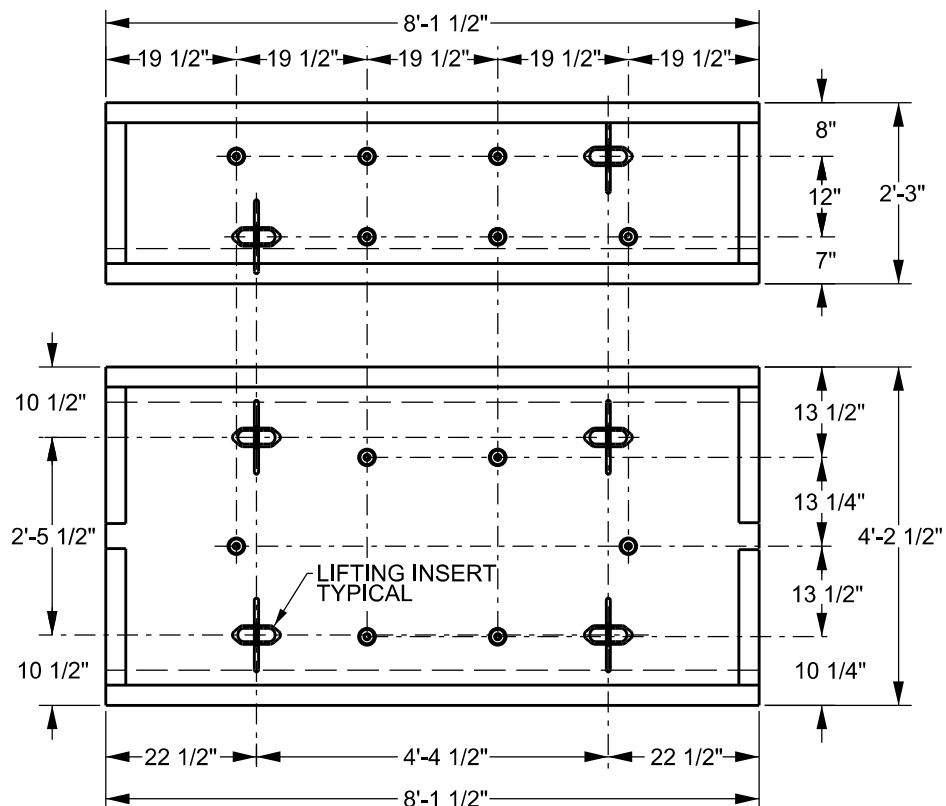
SCALE: NONE

FILE OWNER BNSF

DATE: MAY 11, 2010

REV. NO.: 07

DWG NO: 225302





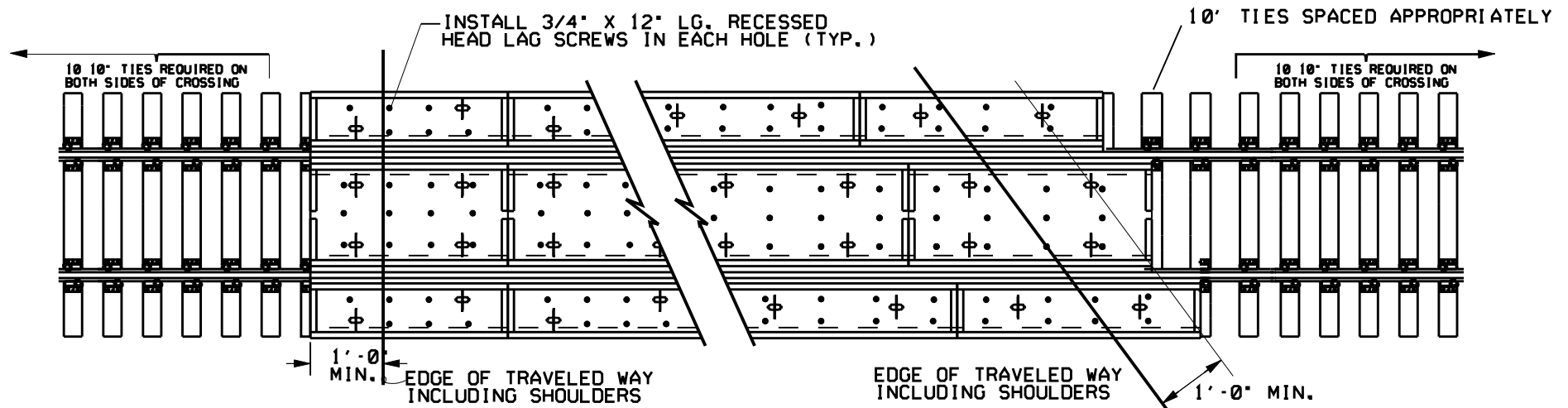
NOTES:
1/4" RUBBER INTERFACE PAD TO BE PLACED BETWEEN PANEL AND TIES FOR 141 LB. RAIL SECTION. PAD TO BE NAILED TO TIES,

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.

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

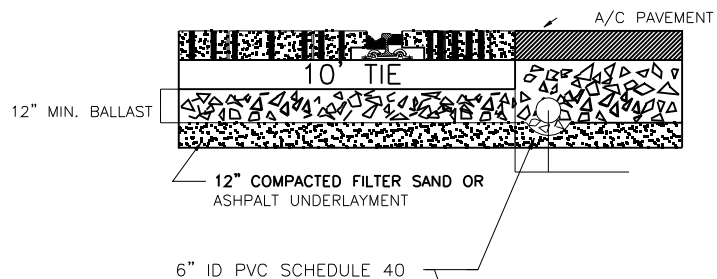
		
COMMON STANDARDS		
LAYOUT FOR CONCRETE PANELS ON 10'-0" LONG WOOD TIES (10W)		
FILE OWNER: UPRR		DATE: DEC. 6, 2010
REV. NO.: 2		DWG NO: 200100



PLAN VIEW OF PANEL ON TIMBER TIES
WITH ELASTIC FASTENERS

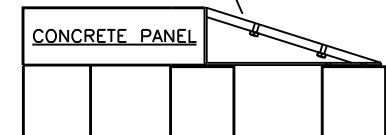


ENDS OF CONCRETE PANELS
MUST BE SUPPORTED BY TIES
AS SHOWN.

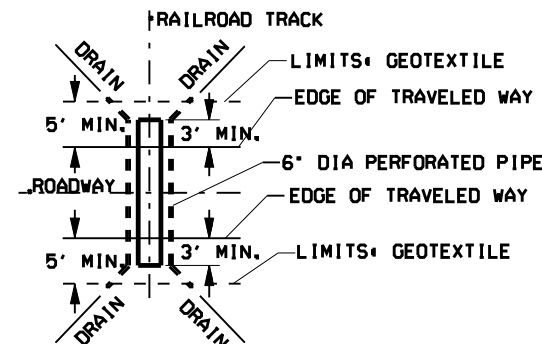


INSTALL PIPE SO THAT WEEP
HOLES ARE TOWARDS BOTTOM

MANUFACTURED OR ASPHALT
END RAMP REQUIRED.



SIDE VIEW
FIELD RAMP BASE
REFER TO PLAN
22580301 FOR
END RAMP RESTRAINT
SYSTEM



TYPICAL PIPE LAYOUT

NOTE:
GEOTEXTILE & PIPE TO BE INSTALLED ONLY
AT LOCATIONS WHERE REQUIRED BY STATE OR LOCAL
AGENCIES OR WHERE DESIGNATED BY CHIEF ENGINEER.

SEE ENGINEERING INSTRUCTIONS SECTION 10
FOR INSTALLATION AND MAINTENANCE DETAILS.

BNSF
RAILWAY

STANDARD PLAN

MINIMUM INSTALLATION
REQUIREMENTS FOR STANDARD
ROAD CROSSINGS AT GRADE

SHEET NO. 01

FILE OWNER BNSF DATE: MAR 07, 2007

REV. NO.: 05 DWG NO: 2259

STATE	REGULATION REFERENCE	YEAR OF LATEST AMENDMENT	TRACK CENTERS									VERTICAL						HORIZONTAL																				
			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	LEAD REPAIR AND 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	HEIGHT (MAX)	CLEARANCE	HEIGHT (MAX)	CLEARANCE							
																							V ₁	H ₁	V ₂	H ₂						V ₃	H ₃					
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		
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- ³ ₀	18- ³ ₀	8-6	8-0	8-6	8-0	7- ² ₈	8-6	0-8	4-8	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		
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- ³ ₀	18- ³ ₀	8-6	8-0	8-6	8-0	7- ⁰ ₀ ²	7- ⁰ ₀	0-8	5-0	4-0	5- ⁶ 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- ³ ₀	8-6	8-0	8-6	8-0	8-6	8-6	0-8	4-8	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		
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	12	4-0	12	8-4 1/4	3-0	8-4 1/4	NR	NR	NR	NR	NR	NR
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- ³ ₀	18- ³ ₀	8-6	8-0	8-6	8-0	7-0	8- ³ ₀	0-8	5-0	4-0	5- ⁶ 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- ³ ₀	18- ³ ₀	8-6	8-0	8-6	8-0	8- ² ₆	8- ² ₆	0-8	4-8	4-0	7-3	4-0	8- ² 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 ₀	13-6	15-0	17- ³ ₀	19- ⁶ ₀	NR	13-6	13-6	21-6	21-3	21-6	21- ⁶ ₀	H	21-6	8-0	8-0	8-0	8- ⁰ ₀	7- ² ₀	8-0	0-4	4-6	0-8	5- ⁷ ₁	CFH	6-2	8-6	NR	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	
KANSAS	ART. 5 -RSR	1987	14-0	14-0	14-0	17-0	20-0	14-0	13-0	13-6	22-6	22-6	22-6	23-0	17-0	18-0	8-6	8-6	8-6	8-0	7- ¹ ₀	7- ¹ ₀	0-8	5-0	4-0	6- ² 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	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 ₀	22-0	8-6	8-6	8-6	8-6	8- ² 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	
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	8-6	8-0	8-0	8-6	8- ² ₆	8-6	0-4	4-6	0-8	5- ⁷ ₁	CFH	8-6	8-6	4-0	5- ⁰ ₀ ¹⁰	0-3	4-2	8-6	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- ³ ₀	18- ³ ₀	8-6	8-0	8-6	8-0	8- ² ₆	8-6	0-8	4-8	4-0	5- ⁹ ₉	4-0	8- ² 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- ³ ₀	18- ³ ₀	8-6	8-0	8-6	8-0	7- ⁰ ₀	8- ⁶ ₆	0-8	5-0	4-0	5- ⁹ ₉	4-0	8-6	8-6	3-0	6-0	0-4	3-0	8-6	8-6	8-6		
NEW MEXICO	ORDER 2202	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- ³ ₀	18- ³ ₀	8-6	8-0	8-6	8-0	7- ⁰ ₀	7- ⁰ ₀	0-8	4-8	4-0	5- ⁹ ₉	4-0	8-6	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 ₀	21-0	21-0	21-0	21-0	8- ⁰ ₀	8- ⁰ ₀	8-0	8- ⁰ ₀	8-0	8-0	NR	NR	NR	NR	4-0	8-0	8-0	NR	NR	NR	NR	NR	8-0	8-0	8-0	
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- ³ ₀	18- ³ ₀	8-6	8-0	8-6	8-0	7- ⁰ ₀ ⁴	7- ⁰ ₀	0-8	4-8	4-0	5- ⁹ 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- ³ ₀	18- ³ ₀	8-6	8-0	8-6	8-0	8-6	8-6	0-8	4-8	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
SOUTH DAKOTA	ORDER F2465	1957	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	22-6	22- ⁶ ₆	22-6	17-0	22-6	8-6	8-0	8- ⁰ ₀	8-6	7-0	8-6	0-8	4-8	CFH	5- ⁹ ₉	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- ³ 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 ₀	22-0	8-6	7-6	8-6	NR	8- ² ₆	8-6	1-0	4-6	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		
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- ³ ₀	18- ³ ₀	8-6	8-0	8-6	8-0	8- ² ₆	8-6	0-8	4-8	4-0	7- ³ ₃	4-0	8- ⁶ 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 ₀	22-0	22- ⁰ ₀	22-0	22-0	8-6	E	8-6	8- ⁶ ₆	8-6	8-6	0- ⁴ ₈	4- ⁶ ₁	1-9	6- ⁰ 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- ³ ₀	18- ³ ₀	8-6	8-0	8-6	8-0	7- ⁰ ₀ ⁴	7- ⁰ ₀	0-8	5-0	4-0	5- ⁹ 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	25- ⁰ ₀	14-0	25-0	20-0	20-0	14-0	14-0	20	23-0	23-0	21	23-0	20	20	8- ¹ ₆	8-6	21	8-6	20	20	20	20	20	20	20	20	20	8-6	20	6- ¹ ₀	20	20	8-6	8-6	8-6	

THIS CHART FOR INFORMATION ONLY - NO LIABILITY CAN BE ASSUMED ABBREVIATIONS

ARCHITECTS, CONTRACTORS, ETC., SHOULD CHECK WITH STATE INVOLVED.

DIMENSIONS:
SHOWN IN FEET AND INCHES.
ARE FOR TANGENT TRACK - MOST LAWS SPECIFY INCREASES FOR CURVED AND SUPERELEVATED TRACK.
VERTICAL - MEASURED FROM TOP OF RAIL EXCEPT CANADA BASE OF RAIL FOR OTHER THAN PLATFORMS.
HORIZONTAL - MEASURED FROM CENTER LINE OF TRACK.
APPLY TO NEW CONSTRUCTION, SOME RECONSTRUCTION AND SOME EXTENSIONS SOME CAN BE VARIED UPON APPROVAL OF APPLICATION BY GOVERNING BODY.
ARE BASED ON MAXIMUM CAR SIZE FOR CALIFORNIA, IDAHO, MINNESOTA, MONTANA, NORTH DAKOTA, OREGON AND WASHINGTON.
ALL ARE MINIMUM EXCEPT COLUMNS 24, 26, 28, 31 AND 33 WHICH ARE MAXIMUM.

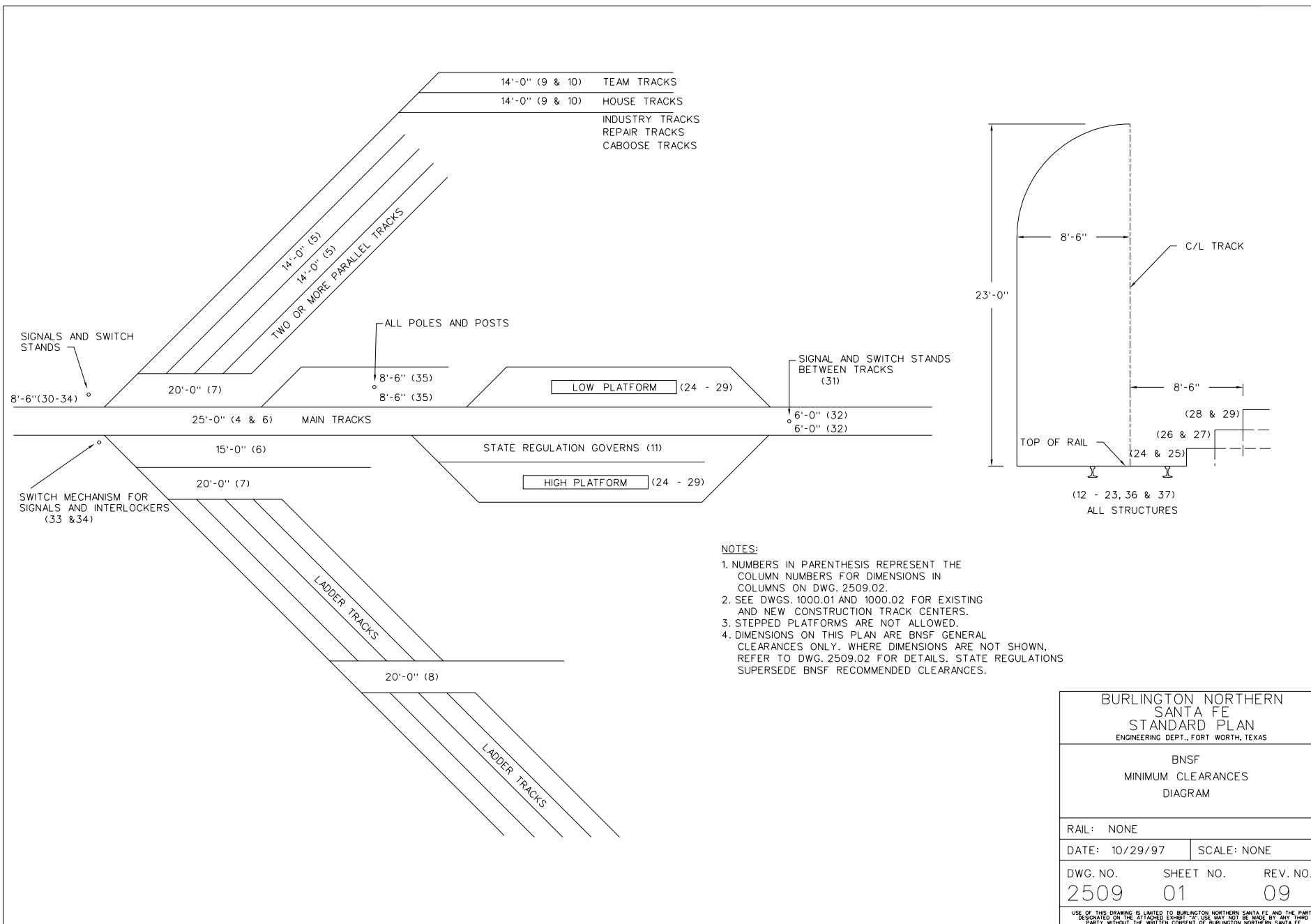
CFH - CAR FLOOR HEIGHT
E - EXEMPT
H - HEIGHT OF CAR GOVERNS
NR - NO CURRENT REGULATION TO COVER

COLUMN HEADINGS
2 SHOWS BASIC REGULATION
3 SHOWS EFFECTIVE YEAR OR YEAR OF LATEST AMENDMENT
7 & 8 APPLY TO HAND AND MECHANICALLY OPERATED SWITCHES EXCEPT AS NOTED
12 & 18 PREVAILS FOR ALL ITEMS NOT OTHERWISE PROVIDED FOR
13 & 19 BRIDGES SUPPORTING TRACKS
14 & 20 BRIDGES SPANNING TRACKS
24 & 25 PASSENGER PLATFORMS
26 & 27 PASSENGER/FREIGHT PLATFORMS ON SIDE TRACKS EXCEPT AS NOTED.
28 & 29 FREIGHT PLATFORMS ON SIDE TRACKS
STEPPED PLATFORMS ARE NOT ALLOWED.
OTHER THAN TROLLEY CONTACT POLES.
36 TO CENTER OF STAND EXCEPT AS NOTED.
37 APPLIES TO BOTH SUPPORTS AND PLATFORMS EXCEPT AS NOTED.

FOOTNOTES:
1 LESSER CLEARANCES NOT PERMITTED IN QUADRANTS
2 ENGINE HOUSES AND SHOP BUILDINGS EXEMPT OR 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 SIDE
5 MAY BE REDUCED TO 5-9 IF 8-0 (8-6 FOR NE, MO & WY) PROVIDED ON OPPOSITE 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 TO ENDS OF ARMS IN OPERATING POSITION.
10 FOR PLATFORMS AT CAR EAVE HEIGHT - SUPPORTS TO BE 8-0 (8-6 FOR TEXAS).
11 FOR FREIGHT TRACKS - CAN BE 13-0 FOR PASSENGER TRACKS.
12 REGARDING CANADA - CHECK STANDARD CLEARANCE DIAGRAM APPROVED BY BOARD OF TRANSPORT COMMISSIONERS FOR CANADA FOR RAILWAY INVOLVED.
13 MAY BE REDUCED TO 6-2 IF 8-3 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 1/2 INCH PER DEGREE OF CURVATURE.
18 IF NO FIGURE IS GIVEN USE STATUARY CLEARANCE.
19 NEW CONSTRUCTION 25-0 CENTER TO CENTER MAIN TRACK/CONTROL SIDING.
20 STATE REGULATION GOVERNS.
21 CENTER LINE OF TRACK TO CLOSEST EDGE OF PIER: MAIN LINE - 25'-0", OTHERS - 18'-0".

BURLINGTON NORTHERN SANTA FE STANDARD PLAN ENGINEERING DEPT., FORT WORTH, TEXAS	CLEARANCE REQUIREMENTS BY STATE AND RECOMMENDED BNSF CLEARANCE	DATE: 10/29/97	DWG. NO. 2509	SHEET NO. 02	REV. NO. 01
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USE OF THIS DRAWING IS LIMITED TO BURLINGTON NORTHERN SANTA FE AND THE PARTY DESIGNATED ON THE ATTACHED ENDS - "A" USER MAY NOT BE MADE BY ANY THIRD PARTY WITHOUT THE WRITTEN CONSENT OF BURLINGTON NORTHERN SANTA FE.

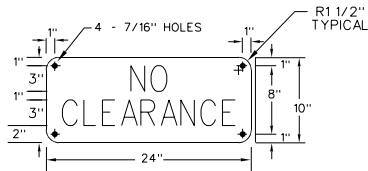


NOTES:

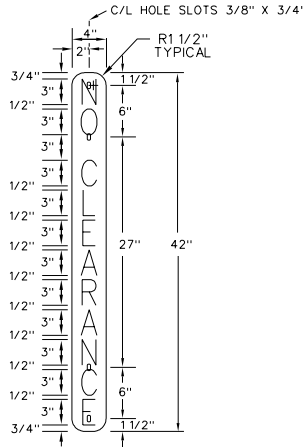
1. NUMBERS IN PARENTHESIS REPRESENT THE COLUMN NUMBERS FOR DIMENSIONS IN COLUMNS ON DWG. 2509.02.
2. SEE DWGS. 1000.01 AND 1000.02 FOR EXISTING AND NEW CONSTRUCTION TRACK CENTERS.
3. STEPPED PLATFORMS ARE NOT ALLOWED.
4. DIMENSIONS ON THIS PLAN ARE BNSF GENERAL CLEARANCES ONLY. WHERE DIMENSIONS ARE NOT SHOWN, REFER TO DWG. 2509.02 FOR DETAILS. STATE REGULATIONS SUPERSEDE BNSF RECOMMENDED CLEARANCES.

BURLINGTON NORTHERN SANTA FE STANDARD PLAN ENGINEERING DEPT., FORT WORTH, TEXAS		
BNSF MINIMUM CLEARANCES DIAGRAM		
RAIL: NONE		
DATE: 10/29/97	SCALE: NONE	
DWG. NO. 2509	SHEET NO. 01	REV. NO. 09
USE OF THIS DRAWING IS LIMITED TO BURLINGTON NORTHERN SANTA FE AND THE PARTY DESIGNATED ON THE ATTACHED EXHIBIT "A". USE MAY NOT BE MADE BY ANY THIRD PARTY WITHOUT THE WRITTEN CONSENT OF BURLINGTON NORTHERN SANTA FE.		

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	REV. NO. 04
<small>USE OF THIS DRAWING IS LIMITED TO BURLINGTON NORTHERN SANTA FE AND THE PARTY DESIGNATED ON THE ATTACHED ORDER. IT MAY NOT BE MADE BY ANY THIRD PARTY WITHOUT THE WRITTEN CONSENT OF BURLINGTON NORTHERN SANTA FE.</small>		

Vertical Curves

- a. Vertical curves should be used to round off all intersecting grades.
- b. The length of a vertical curve is determined by the grades to be connected and the speed of the traffic.
- c. 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).
- d. 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.
- e. 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.
- f. 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.
- g. The rate of change per station is calculated as follows: $R = D/L$ Where:

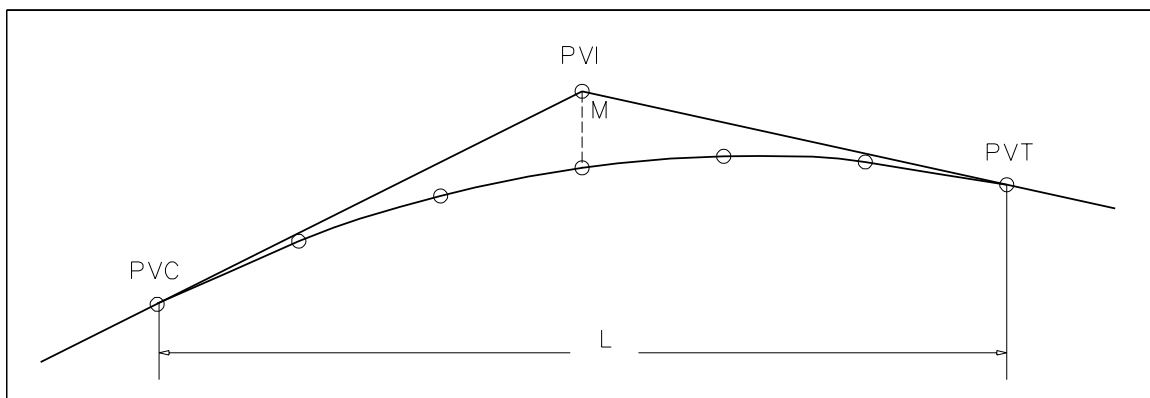
R = Rate of change per station

D = Algebraic difference of the two intercepting 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.

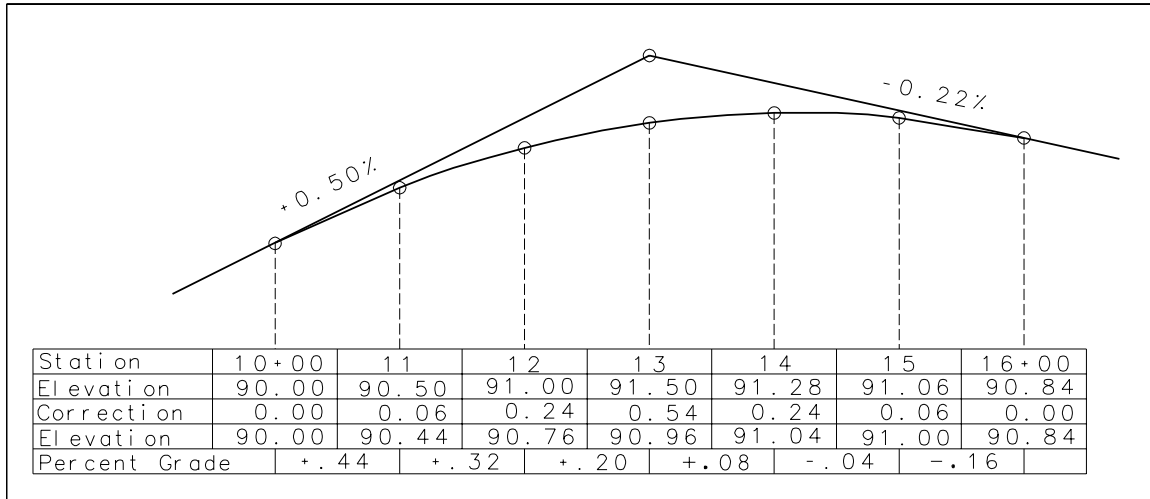


For example:

Assume length = 600 feet (6 stations)

$D = 0.50$ 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 a 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	

(PROJECT NAME – STATION, ST)

I acknowledge that I have received the internet link and/or hard copy of BNSF's "Design Guidelines for Industrial Track Projects" dated May 2011. 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.

http://www.bnsf.com/customers/pdf/IndyTrkStds_1007a.pdf

Owner Representative

Signature

Printed

Kirk Tarver

10-19-20

Date

Shelby Railroad Service, Inc.
Company Name

BNSF Project Engineer