

Sam Page
County Executive



Daniel W. Dreisewerd, P.E., PTOE
Acting Director

Stephanie Leon Streeter, P.E.
Deputy Director

September 3, 2019

ADDENDUM NO. 3

Notice to All Persons and Firms Proposing
to Submit a Bid or Furnish Materials for
Allen Road Bridge No. 329
St. Louis County Project No. CR-1274
Federal Project No. STP-4900(634)

The construction contract for this project has been revised as follows:

No. 1

Replace the existing Notice to Contractors with the attached Notice to Contractors, which revises the letting date to **October 9, 2019** and adds a mandatory Pre-Bid meeting at the following time and location:

September 17, 2019
2:15 p.m. CDT
MoDOT St. Louis District Office
Conference Room 325
1590 Woodlake Drive
Chesterfield, MO 63017

For those who wish to join the meeting remotely, the following link may be used:

<https://modot.webex.com/modot/j.php?MTID=m9ce2c5357d6b324c00e5574bb66846de>

Meeting number: 793 144 546

For those who are only able to join the meeting by phone, please call:

1 (573) 526-3993
Passcode: 22252#

No. 2

Note the updated schedule:

Milestone	Date
Pre-Bid Meeting (mandatory)	September 17, 2019
Contractor questions due to St. Louis County	No later than September 24, 2019
St. Louis County responds to questions	No later than October 1, 2019
Bid Opening	October 9, 2019

No. 3

Remove and Replace the following:

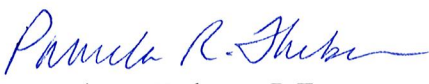
- JSP No. 100.70.5 “Railroad Permits, Agreements, and Licenses” with the attached JSP 100.70.5 “Railroad Permits, Agreements, and Licenses”.
- Itemized Bid Sheets – see attached
- Construction Plan Sheet 2 of 84 – see attached

No. 4

Add attached “Public Highway Overpass Agreement” and “Guidelines for Railroad Grade Separation Project Manual” to the supplemental documents section.

ATTENTION BIDDERS: THE FOLLOWING MUST BE COMPLETED:

- **ADDENDUM ACKNOWLEDGEMENT IN THE BID DOCUMENTS MUST BE COMPLETED AND SUBMITTED WITH ALL BID PROPOSALS.**
- **REVISED ITEMIZED BID SHEETS MUST BE INCLUDED WITH ALL BID PROPOSALS.**
- **ATTACHED PRE-BID MEETING REGISTRATION FORM MUST BE COMPLETED AND RETURNED TO THE PROJECT MANAGER, AS INSTRUCTED ON THE FORM.**

for 
Joseph W. Kulesa, P.E.
Division Manager, Design

JWK/WAS/JAB/

Attachments: Notice to Contractors; JSP 100.70.5 “Railroad Permits, Agreements, and Licenses”; Public Highway Overpass Agreement; Guidelines for Railroad Grade Separation Project Manual; Revised Itemized Bid Sheets; Revised construction plan sheet 2 of 84; Pre-bid meeting registration form

NOTICE TO CONTRACTORS

Sealed bids for the Allen Road Bridge No. 329 will be received at the **Office of the Director of Procurement for the County of St. Louis, County Government Center Administration Building, 41 South Central Avenue, 8th Floor, Clayton, Missouri 63105**, until 11:00 a.m. on **October 9, 2019**, and at that time will be publicly opened and read.

St. Louis County Project No. CR-1274, Federal Project No. STP-4900(634) consists of clearing, grading, excavation, removal of improvements, bituminous pavement, paved approach, new bridge, and other incidental items within St. Louis County.

The successful Bidder or Bidders shall be required to comply with the most current applicable Federal (Davis-Bacon Act) and State statutory provisions concerning the payment of prevailing wages on public works, Section 290.210 through 290.340 R.S. Mo. 1959, as amended. All contractors must be on the Missouri Department of Transportation's approved contractor listing, seven (7) days prior to bid opening.

Contractors and sub-contractors who sign a contract to work on a public works project shall provide a ten (10) hour OSHA construction safety program, or similar program approved by the Department of Labor and Industrial Relations, to be completed by their on-site employees within sixty (60) days of beginning work on the construction project.

St. Louis County hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, businesses owned and controlled by socially and economically disadvantaged individuals will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, religion, creed, sex, age, ancestry, or national origin in consideration for an award.

Plans and specifications will be available on **August 5, 2019** from the St. Louis County Web Site (www.stlouisco.com), or by contacting County Blue Reprographics, Inc., 1449 Strassner Drive, St. Louis, Missouri 63144, (314) 961-3800. There will be no refunds on any documents purchased.

All bidders must attend the Pre-Bid Meeting which will be held on September 17, 2019 at 2:15 p.m. Bidders who neglect to attend will be considered non-responsive and their bid will not be considered.

Select the following link to view/purchase plans and specifications for this project:

http://countyblue.boxlake.com/viewJobs.asp?action=list&group_id=9999

Bids must be accompanied by a certified check or bidder's bond in an amount equal to 5% of the total bid. All checks shall be made payable to "Treasurer, St. Louis County."

The right is reserved by the St. Louis County to reject any or all bids.

The DBE Goal for this project is 14%.

No 2nd tier subcontracting will be allowed on this project.

100.70.5 RAILROAD PERMITS, AGREEMENTS, AND LICENSES

- A. The Contractor (Sub-Contractor) shall obtain all necessary permits, agreements, and licenses for work within railroad right-of-way at the railroad crossing(s) listed below.

DOT CROSSING NO. 442721V

- Railroad Name: Union Pacific Railroad Company
- Contact Name: Jordon Albers (Manager of Special Projects)
- Contact Phone Number: 314-402-890-4754
- Contact Name: Daniel Peters (Real Estate – Public Projects)
- Contact Phone Number: 402-544-8549
- DOT Crossing Number: 442721V
- RR Milepost: 26.03 – Jefferson City Subdivision
- City/Municipality: Eureka, St. Louis County, Missouri

- B. All railroad permit, agreement or license application submittals shall require the approval of St. Louis County Department of Transportation before submitting to the railroad company or agent of the railroad company. Review submittals shall be made to:

- Contact Name: James Brown (Utility Coordinator-STLC)
- Contact Phone Number: 314-615-8199
- Contact Email: Jabrown@stlouisco.com

The Contractor (Sub-Contractor) shall allow three (3) business days for Saint Louis County to complete the review for all submittals.

The Contractor (Sub-Contractor) shall submit to the railroad company or agent of the railroad company necessary permit, agreement, and/or license applications at least sixty (60) days in advance of any work within the railroad's right-of-way.

It will be the responsibility of the Contractor to ensure that all Sub-Contractors obtain necessary permits, agreements and/or licenses to work within the railroad's right-of-way. No direct payment will be made for any Sub-Contractor securing a railroad permit, agreement and/or license.

No work shall be performed within the railroad's right-of-way until all approvals have been secured from the railroad company or agent of the railroad company.

No work shall be performed within the railroad's right-of-way until an approved copy of each permit, agreement, and license; as applicable; is provided to Saint Louis County.

- C. Railroad Protective Liability Insurance (RPLI) may be obtained from any insurance company which offers such coverage. Union Pacific Railroad Company has worked with the national broker, Marsh USA, to make available RPLI to contractors. Additional information, premium quotes and application forms can be found at uprr.marsh.com.
- D. Union Pacific Railroad Company (UP) has informed the Department that twenty-eight (28) trains operate on the tracks within a twenty-four (24) hour period. The Contractor (Sub-Contractor) will be required to work between trains to complete any work for the demolition and erection of the bridge structure(s) within the railroad's right-of-way. Conditional work windows for the project shall be coordinated by the Contractor (Sub-Contractor) with the railroad project representative, all working windows will be subject to the UP's local operating unit review and approval. No work will be permitted within UP's right-of-way until the conditional work window has been approved by UP.

In event of a disaster, such as flooding or a derailment, it is possible contractors will not be allowed on the tracks while Union Pacific Railroad Company is fleeing trains.

- E. All work performed by the Contractor (Sub-Contractor) within the railroad's right-of-way shall be in accordance with the provisions as set out within any executed railroad permit, agreement and/or license and "Guidelines for Railroad Grade Separation Projects" manual.

The Department has executed a "Public Highway Overpass Agreement" with Union Pacific Railroad Company. Both the "Public Highway Overpass Agreement" and "Guidelines for Railroad Grade Separation Projects" manual have been attached in the supplemental documents section of the project contract book.

- F. Payment for permits, agreements, and licenses shall be made under Bid Item Number 107-02.01, "Railroad Permits, Agreements, and Licenses". Payment under this item shall include application fees, administrative labor, and compliance with any railroad requirement, permit, agreement and/or license conditions, flagging services, and insurance requirements of the railroad permit, agreement and/or license. It is anticipated several railroad submittals will be required to facilitate the completion of the project.

The County shall not provide additional compensation for any resubmittals for railroad permits, agreements and/or license due to contractor's actions and/or delays. If the Contractor (Sub-Contractor) cost the County additional fees and/or fines due to non-compliance with any railroad permit, agreement and/or license; the fees and/or fines shall be accessed to the Contractor as liquidated damages.

PUBLIC HIGHWAY OVERPASS AGREEMENT

ALLEN ROAD
DOT NO. 442721V
MILEPOST 26.03 – JEFFERSON CITY SUBDIVISION
EUREKA, ST. LOUIS COUNTY, MISSOURI

THIS PUBLIC HIGHWAY OVERPASS AGREEMENT (this "**Agreement**") is made and entered into as of the 4th day of June, 2017 (the "**Effective Date**"), by and between **UNION PACIFIC RAILROAD COMPANY**, a Delaware corporation, to be addressed at Real Estate Department, 1400 Douglas Street, Mail Stop 1690, Omaha, Nebraska 68179 (the "**Railroad**") and the County of St. Louis, a municipal corporation or political subdivision of the State of Missouri, to be addressed at 1050 N. Lindbergh Boulevard, Creve Coeur, Missouri 63132 (the "**County**"), 16

RECITALS

A. The existing Allen Road overpass ("**Existing Overpass**") carries vehicular traffic on Allen Road (DOT No. 442721V) over the Railroad's tracks at or near Milepost 26.03 on the Railroad's Jefferson City Subdivision near Eureka, St. Louis County, Missouri (the "**Existing Overpass Area**"), as generally depicted on **Exhibit A**.

B. The County currently uses the Existing Overpass.

C. The Existing Overpass has been determined by the County to be beyond its useful life and inadequate to meet the County's needs.

D. The County now desires to undertake a project (the "**Project**") to reconstruct and widen the Existing Overpass (the "**New Overpass Area**"). The type, size and location prints of the New Overpass are attached hereto and made a part hereof as **Exhibit C**.

E. The Existing Overpass Area is not sufficient to allow for the construction of the New Overpass as currently contemplated by the parties, and the County requires use of an additional portion of the Railroad's property in connection with the New Overpass (together with the Existing Overpass Area, collectively, the "**Crossing Area**"); **Exhibit A**, attached hereto, depicts the Crossing Area, together with the legal description of the additional Railroad property required for the New Overpass. As part of the Project, the County will construct a temporary bridge (the "**Temporary Bridge**") located adjacent to the Existing Overpass and vehicular traffic will be redirected to such Temporary Bridge during the construction of the New Overpass. Pursuant to the terms and conditions of this Agreement, the Railroad is agreeable to granting the County: (i) license rights on, over, under and across the Crossing Area for the purpose of constructing, reconstructing, owning, repairing, maintaining, using and replacing the New Overpass; and (ii) temporary license rights on, over, under and across the portion of the Railroad's property generally depicted as: (a) Temporary Bridge Footprint on **Exhibit A** for the purpose of constructing, using and removing the Temporary Bridge as well as using such area as a construction and staging area for equipment and materials in connection with the Project; and (b) Temporary Area on **Exhibit A** for the purpose of using such construction area as a construction staging area for equipment and materials in connection with construction of the New Overpass and construction and demolition of the Temporary Bridge.

F. The County intends to undertake all maintenance, repair and replacement for the New Overpass upon completion of the Project.

G. The Railroad and the County are entering into this Agreement to cover the above.

36-721

AGREEMENT

NOW, THEREFORE, it is mutually agreed by and between the parties hereto as follows:

Section 1. EXHIBITS B and D

The general terms and conditions marked **Exhibit B**, and the Railroad's Coordination Requirements marked **Exhibit D**, are attached hereto and hereby made a part hereof.

Section 2. PROJECT COSTS

The parties acknowledge and the County agrees that the County shall bear all Project costs and that the Railroad shall not be obligated to provide any funding for the Project, except as expressly provided in this Section 2. The Railroad shall contribute a total of TWO HUNDRED SIXTEEN THOUSAND EIGHT HUNDRED FOUR DOLLARS AND NO/100 (\$216,804.00) (the "**Railroad's Contribution**") to the Project, which shall be due and payable to the County upon the satisfaction of the following conditions precedent: (i) the County shall have completed, or shall have caused to be completed, construction of the New Overpass; (ii) the County shall have removed, or shall have caused to be removed, the Temporary Structure, as defined below; (iii) the Railroad shall have conducted a final inspection of the Crossing Area and shall have issued its approval of the Project pursuant to this Agreement; and (iv) the Railroad shall have received from the County an invoice reflecting the amount of the Railroad's Contribution.

Section 3. DEFINITION OF CONTRACTOR

For purposes of this Agreement, the term "**Contractor**" shall mean the contractor or contractors hired by the County to perform any Project work on any portion of the Railroad's property and shall also include the Contractor's subcontractors and the Contractor's and subcontractor's respective employees, officers and agents, and others acting under its or their authority.

Section 4. RAILROAD GRANTS RIGHTS

A. For and in consideration of THIRTEEN THOUSAND FOUR HUNDRED DOLLARS (\$13,400.00) to be paid by the County to the Railroad upon the execution and delivery of this Agreement and in further consideration of the County's agreement to perform and comply with the terms of this Agreement, the Railroad hereby grants to the County the non-exclusive right to construct, reconstruct, own, repair, maintain, use and replace the New Overpass on, along and over the Crossing Area.

B. For and in consideration of SIXTY ONE THOUSAND TWO HUNDRED DOLLARS (\$61,200.00), the Railroad hereby grants to the County temporary rights on, over, under and across the Temporary Bridge Footprint and Temporary Construction Area (collectively, the "**Temporary License Area**") for the purposes previously contemplated in the recitals of this Agreement as to each respective area and for no other purpose. The County's use of the Temporary License Area shall be subject to the terms and conditions of this Agreement and the obligation of the County and its Contractor to comply with such provisions. The rights to the Temporary License Area granted herein shall commence as of the Effective Date and continue for three (3) years after the Effective Date, or until the Project has been completed, whichever occurs earlier.

Section 5. FEDERAL AID POLICY GUIDE

If the County will be receiving any federal funding for the Project, the current rules, regulations and provisions of the Federal Aid Policy Guide as contained in 23 CFR 140, Subpart I and 23 CFR 646, Subparts A and B are incorporated into this Agreement by reference.

Section 6. PLANS

A. The County, at its expense, shall prepare, or cause to be prepared, the detailed plans and specifications for the Project, which includes the New Overpass and the Temporary Bridge, and shall submit such plans and specifications to the Railroad's Assistant Vice President Engineering-Design, or such person's authorized representative, for prior review and approval. Approval by the Railroad of any plans and specifications shall not be deemed to have been given until the Railroad's Assistant Vice President Engineering-Design (or such person's authorized representative) has initialed or signed such designs, plans and/or specifications. The plans and specifications shall include all appurtenances, associated drainage, shoring, sheeting and excavations for bents and/or abutments next to or adjacent to the Railroad's tracks and, if applicable, all demolition and removal plans for the Existing Overpass.

B. The final one hundred percent (100%) completed plans that are approved in writing by the Railroad's Assistant Vice President Engineering-Design, or such person's authorized representative, are hereinafter referred to as the "**Plans**". The Plans are hereby made a part of this Agreement by reference.

C. No changes in the Plans shall be made unless the Railroad has consented to such changes in writing.

D. Upon completion of the New Overpass, the County, at its expense, shall furnish to the Railroad two (2) sets of reproducible "as constructed" Plans of the New Overpass.

E. The Railroad's review and approval of the Plans in no way relieves the County or the Contractor of their responsibilities, obligations and/or liabilities under this Agreement, and will be given with the understanding that the Railroad makes no representations or warranty as to the validity, accuracy, legal compliance or completeness of the Plans and that any reliance by the County or Contractor on the Plans is at the risk of the County and Contractor.

Section 7. NON-RAILROAD IMPROVEMENTS

A. Submittal of plans and specifications for protecting, encasing, reinforcing, relocation, replacing, removing and abandoning in place all non-railroad owned facilities (the "**Non Railroad Facilities**") affected by the Project including, without limitation, utilities, fiber optics, pipelines, wirelines, communication lines and fences is required under Section 6. The Non Railroad Facilities plans and specifications shall comply with the Railroad's standard specifications and requirements, including, without limitation, American Railway Engineering and Maintenance-of-Way Association ("**AREMA**") standards and guidelines. The Railroad has no obligation to supply additional land for any Non Railroad Facilities and does not waive its right to assert preemption defenses, challenge the right-to-take, or pursue compensation in any condemnation action, regardless if the submitted Non Railroad Facilities plans and specifications comply with the Railroad's standard specifications and requirements. The Railroad has no obligation to permit any Non Railroad Facilities to be abandoned in place or relocated on the Railroad's property.

B. Upon the Railroad's approval of submitted Non Railroad Facilities plans and specifications, Railroad will attempt to incorporate them into new agreements or supplements of existing agreements with Non Railroad Facilities owners or operators. The Railroad may use its standard terms and conditions, including, without limitation, its standard license fee and administrative charges when requiring supplements or new agreements for Non Railroad Facilities. Non Railroad Facilities work shall not commence before a supplement or new agreement has been fully executed by the Railroad and the Non Railroad Facilities owner or operator, or before the Railroad and County mutually agree in writing to (i) deem the approved Non Railroad Facilities plans and specifications to be Plans pursuant to Section 6(B), (ii) deem the Non Railroad Facilities part of the New Overpass, and (iii) supplement this Agreement with terms and conditions covering the Non Railroad Facilities.

Section 8. CONTRACTOR'S RIGHT OF ENTRY AGREEMENT - INSURANCE

A. Prior to Contractor's performing any work within the Crossing Area and/or the Temporary License Area involving the Project, and any subsequent maintenance or repair work, the County shall require the Contractor to:

1. execute the Railroad's then current Contractor's Right of Entry Agreement, substantially in the form attached hereto as **Exhibit E**;
2. obtain the then current insurance required under the Contractor's Right of Entry Agreement; and
3. provide such insurance policies, certificates, binders and/or endorsements to the Railroad.

B. The County confirms that it will inform its Contractor that Contractor is required to execute the Contractor's Right of Entry Agreement and obtain and provide evidence of the required insurance as set forth therein prior to entering the Railroad's property and performing any Project work.

C. All insurance correspondence, binders, policies, certificates and/or endorsements shall be sent to:

Manager - Contracts
Union Pacific Railroad Company
Real Estate Department
1400 Douglas Street, Mail Stop 1690
Omaha, NE 68179-1690
UP File Folder No. 3033-96

D. If the County's own employees will be performing any of the Project work, the County may self-insure all or a portion of the insurance coverage, subject to the Railroad's prior review and approval.

Section 9. WORK TO BE PERFORMED BY RAILROAD; BILLING; PAYMENT BY COUNTY

A. The work to be performed by the Railroad, at the County's sole cost and expense, is described in the Railroad's Material and Force Account Estimate, marked **Exhibit F**, attached hereto and hereby made a part hereof (the "**Estimate**"). As set forth in the Estimate, the Railroad's estimated cost for the Railroad's work associated with the Project is ONE HUNDRED SIXTEEN THOUSAND THREE HUNDRED SIXTY AND NO/DOLLARS (\$116,360.00).

B. The Railroad, if it so elects, may recalculate and update the Estimate submitted to the County in the event the County does not commence construction on the portion of the Project located on the Railroad's property within six (6) months after the Effective Date.

C. The County acknowledges that the Estimate may or may not include any estimate of flagging or other protective service costs that are to be paid by the County or the Contractor in connection with flagging or other protective services provided by the Railroad in connection with the Project. All of such costs incurred by the Railroad are to be paid by the County or the Contractor as determined by the Railroad and the County. If it is determined that the Railroad will be billing the Contractor directly for such costs, the County agrees that it will pay the Railroad for any flagging costs that have not been paid by any Contractor within thirty (30) days after the Contractor's receipt of billing.

D. The Railroad shall send progressive billing to the County during the Project, and final billing to the County within one hundred eighty (180) days after receiving written notice from the County that all Project work affecting the Railroad's property has been completed.

E. The County agrees to reimburse the Railroad within thirty (30) days after its receipt of billing from the Railroad for one hundred percent (100%) of all actual costs incurred by the Railroad in connection with the Project including, but not limited to, all actual costs of engineering review (including preliminary engineering review costs incurred by Railroad prior to the Effective Date), construction, inspection, flagging, procurement of materials, equipment rental, manpower and deliveries to the job site and all direct and indirect overhead labor/construction costs including the Railroad's standard additive rates. The standard additive rates shall be subject to upward or downward adjustment based on industry standards and practices, and the parties acknowledge and agree that any such adjustments to standard additive rates may be made retroactively.

Section 10. RAILROAD'S COORDINATION REQUIREMENTS

The County, at its expense, shall ensure that the Contractor complies with all of the terms and conditions contained in the Railroad's Coordination Requirements described in **Exhibit D** and other special guidelines and/or requirements the Railroad may provide to the County for this Project.

Section 11. EFFECTIVE DATE; TERM; TERMINATION

A. This Agreement is effective as of the Effective Date first herein written and shall continue in full force and effect for as long as the New Overpass remains on the Railroad's property.

B. The Railroad, if it so elects, may terminate this Agreement effective upon delivery of written notice to the County in the event the County does not commence construction on the portion of the Project located on the Railroad's property within twelve (12) months after the Effective Date.

C. If the Agreement is terminated as provided above, or for any other reason, the County shall pay to the Railroad all actual costs incurred by the Railroad in connection with the Project up to the date of termination, including, without limitation, all actual costs incurred by the Railroad in connection with reviewing any preliminary or final plans (including the Plans).

Section 12. CONDITIONS TO BE MET BEFORE COUNTY CAN COMMENCE WORK

Neither the County nor the Contractor may commence any work within the Crossing Area, the Temporary License Area or on any other Railroad property until:

- (i) The Railroad and the County have executed this Agreement.
- (ii) The Railroad has provided to the County the Railroad's written approval of the Plans.
- (iii) Each Contractor has executed Railroad's Contractor's Right of Entry Agreement and has obtained and/or provided to the Railroad the insurance policies, certificates, binders, and/or endorsements required under the Contractor's Right of Entry Agreement.
- (iv) Each Contractor has given the advance notice(s) required under the Contractor's Right of Entry Agreement to the Railroad Representative (as such terms is defined in the Contractor's Right of Entry Agreement).

Section 13. FUTURE PROJECTS

Future projects involving substantial maintenance, repair, reconstruction, renewal and/or demolition of the New Overpass shall not commence until the Railroad and County agree on the plans for such future projects, cost allocations, right of entry terms and conditions and temporary construction rights, terms and conditions.

Section 14. ASSIGNMENT; SUCCESSORS AND ASSIGNS

A. The County shall not assign this Agreement without the prior written consent of the Railroad.

B. Subject to the provisions of Paragraph A above, this Agreement shall inure to the benefit of and be binding upon the successors and assigns of the Railroad and County.

Section 15. FEDERAL FUNDING

If the County will be receiving any federal funds for the Project, the County agrees that it is solely responsible for performing and completing all requirements, including, without limitation, reporting requirements, in connection with the Project and receipt of such funding and that the Railroad shall not have any responsibility in connection with the same. The County also confirms and acknowledges that (A) the Railroad shall provide to the County the Railroad's standard and customary billing for expenses incurred by the Railroad for the Project including the Railroad's standard and customary documentation to support such billing, and (B) such standard and customary billing and documentation from the Railroad provides the information needed by the County to perform and complete any such reporting requirements in connection with any federal funding. The Railroad confirms that the County shall have the right to audit the Railroad's billing and documentation for the Project as provided in Section 9 of **Exhibit B** of this Agreement.

IN WITNESS WHEREOF, the parties have caused this Agreement to be duly executed as of the Effective Date.

UNION PACIFIC RAILROAD COMPANY
(Federal Tax ID #94-6001323)

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By _____ Date _____

Name and Title _____

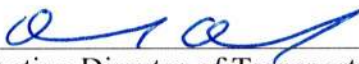
ATTEST:


Administrative Director

ST. LOUIS COUNTY, MISSOURI


County Executive

APPROVED:


Acting Director of Transportation
and Public Works

APPROVED AS TO LEGAL FORM:


Acting County Counselor 5-31-19

I hereby certify that unencumbered balances sufficient to pay the estimated contract sum of
\$74,600.00 remain in the appropriate accounts against which this obligation is to charged.


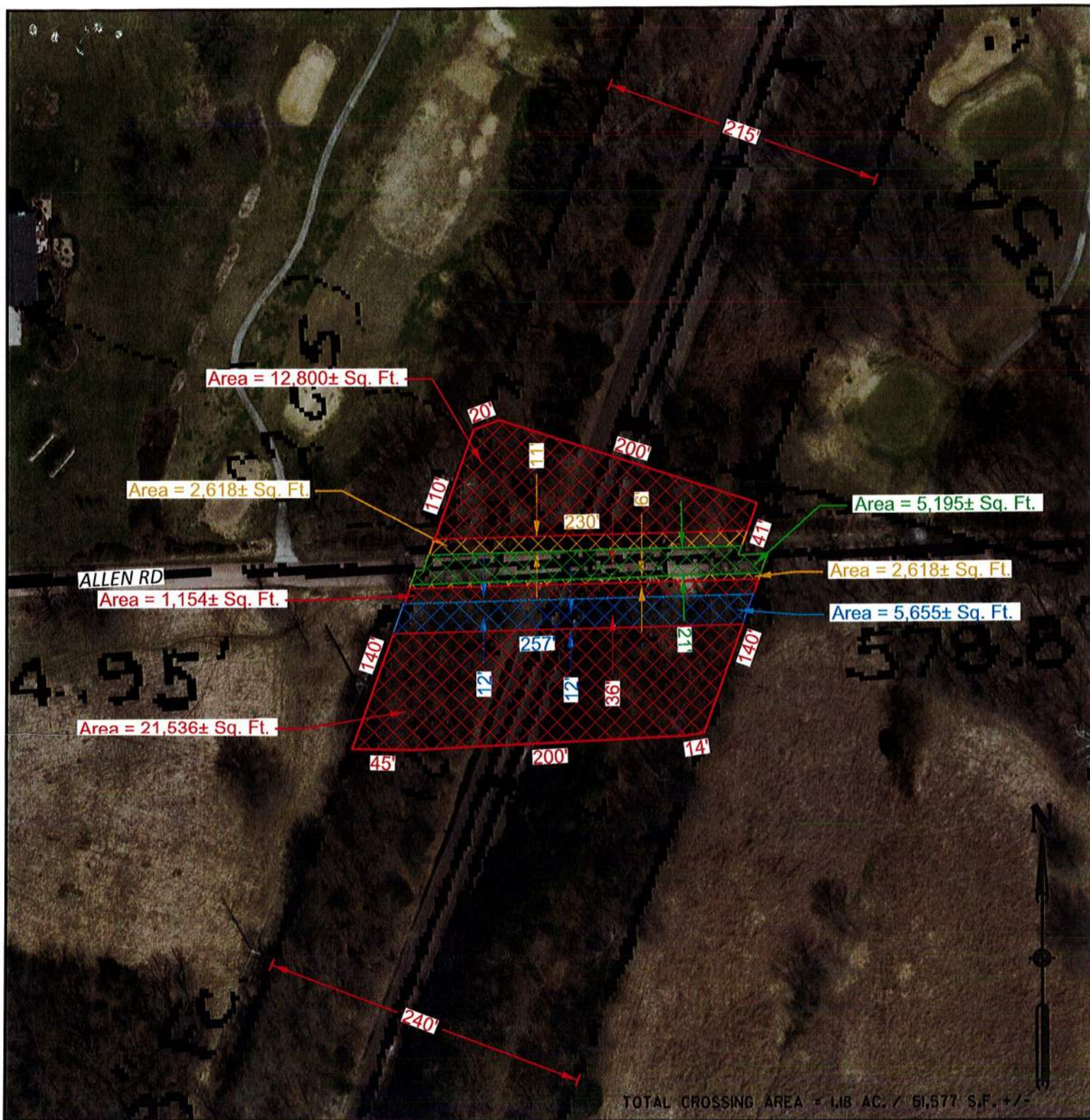

Accounting Officer

EXHIBIT A
CROSSING AREA



TOTAL CROSSING AREA = 1.18 AC. / 51,577 S.F. +/-

LEGEND:

- TEMPORARY CONSTRUCTION AREA
- EXISTING OVERPASS AREA
- New Overpass Area
- TEMPORARY BRIDGE AREA
- UPRRCO. R/W OUTLINED

NOTE: BEFORE YOU BEGIN ANY WORK, SEE AGREEMENT FOR FIBER OPTIC PROVISIONS.

EXHIBIT "A-1"

UNION PACIFIC RAILROAD COMPANY

EUREKA, ST. LOUIS COUNTY, MO
M.P. 26.03 - JEFFERSON CITY SUB.

TO ACCOMPANY AGREEMENT WITH
COUNTY OF ST. LOUIS
MP MO V-2A / 3A
SCALE: 1" = 100'

OFFICE OF REAL ESTATE
OMAHA, NEBRASKA DATE: 3-31-2017
COB FILE: 3033-96

CADD FILENAME	0303396.DGN
SCAN FILENAME	0303396-M00014.TIF

EXHIBIT B

GENERAL TERMS AND CONDITIONS

SECTION 1 - CONDITIONS AND COVENANTS

A. The Railroad makes no covenant or warranty of title for quiet possession or against encumbrances. The County shall not use or permit use of the Crossing Area and/or the Temporary License Area for any purposes other than those described in this Agreement. Without limiting the foregoing, the County shall not use or permit use of the Crossing Area and/or the Temporary License Area for railroad purposes, or for gas, oil or gasoline pipe lines. Any lines constructed on the Railroad's property by or under authority of the County for the purpose of conveying electric power or communications incidental to the County's use of the property for highway purposes shall be constructed in accordance with specifications and requirements of the Railroad, and in such manner as not adversely to affect communication or signal lines of the Railroad or its licensees now or hereafter located upon said property. No nonparty shall be admitted by the County to use or occupy any part of the Railroad's property without the Railroad's written consent. Nothing herein shall obligate the Railroad to give such consent.

B. The Railroad reserves the right to cross the Crossing Area with such railroad tracks as may be required for its convenience or purposes.

C. The right hereby granted is subject to any existing encumbrances and rights (whether public or private), recorded or unrecorded, and also to any renewals thereof. The County shall not damage, destroy or interfere with the property or rights of nonparties in, upon or relating to the Railroad's property, unless the County at its own expense settles with and obtains releases from such nonparties.

D. The Railroad reserves the right to use and to grant to others the right to use the Crossing Area and/or the Temporary License Area for any purpose not inconsistent with the right hereby granted, including, but not by way of limitation, the right to construct, reconstruct, maintain, operate, repair, alter, renew and replace tracks, facilities and appurtenances on the property and the right to cross the Crossing Area and/or the Temporary License Area with all kinds of equipment. The Railroad further reserves the right to attach signal, communication or power lines to the New Overpass, provided that such attachments shall comply with County's specifications and will not interfere with the County's use of the Crossing Area.

E. So far as it lawfully may do so, the County will assume, bear and pay all taxes and assessments of whatsoever nature or kind (whether general, local or special) levied or assessed upon or against the Crossing Area and/or the Temporary License Area, excepting taxes levied upon and against the property as a component part of the Railroad's operating property.

F. If any property or rights other than the right hereby granted are necessary for constructing, reconstructing, owning, repairing, maintaining, using and replacing the New Overpass and its appurtenances, or for the performance of any work in connection with the Project, the County will acquire all such other property and rights at its own expense and without expense to the Railroad.

SECTION 2 - CONSTRUCTION OF NEW OVERPASS

A. The County, at its expense, will apply for and obtain all public authority required by law, ordinance, rule or regulation for the Project, and will furnish the Railroad upon request with satisfactory evidence that such authority has been obtained.

B. Except as may be otherwise specifically provided herein, the County, at its expense, will furnish all necessary labor, material and equipment, and shall construct and complete the Temporary Bridge and the New Overpass and all appurtenances thereof. The appurtenances shall include, without limitation, all necessary and proper drainage facilities, guard rails or barriers, and right of way fences, as applicable,

between the New Overpass (or the Temporary Bridge) and the railroad tracks. Upon completion of the Project, the County shall remove from the Railroad's property all temporary structures (including the Temporary Bridge) and false work, and will leave the Crossing Area and the Temporary License Area in a condition satisfactory to the Railroad.

C. All construction work of the County upon the Railroad's property (including, but not limited to, construction of the New Overpass and all appurtenances and all related and incidental work) shall be performed and completed in a manner satisfactory to the Assistant Vice President Engineering-Design of the Railroad or such person's authorized representative and in compliance with the Plans, the Railroad's Coordination Requirements set forth in **Exhibit D** and other guidelines furnished by the Railroad.

D. All construction work of the County shall be performed diligently and completed within a reasonable time. No part of the Project shall be suspended, discontinued or unduly delayed without the Railroad's written consent, and subject to such reasonable conditions as the Railroad may specify. It is understood that the Railroad's tracks at and in the vicinity of the work will be in constant or frequent use during progress of the work and that movement or stoppage of trains, engines or cars may cause delays in the work of the County. The County hereby assumes the risk of any such delays and agrees that no claims for damages on account of any delay shall be made against the Railroad by the County and/or the Contractor.

SECTION 3 - INJURY AND DAMAGE TO PROPERTY

If the County, in the performance of any work contemplated by this Agreement or by the failure to do or perform anything for which the County is responsible under the provisions of this Agreement, shall injure, damage or destroy any property of the Railroad or of any other person lawfully occupying or using the property of the Railroad, such property shall be replaced or repaired by the County at the County's own expense, or by the Railroad at the expense of the County, and to the satisfaction of the Railroad's Assistant Vice President Engineering-Design.

SECTION 4 - RAILROAD MAY USE CONTRACTORS TO PERFORM WORK

The Railroad may contract for the performance of any of its work by other than railroad forces. The Railroad shall notify the County of the contract price within ninety (90) days after it is awarded. Unless the Railroad's work is to be performed on a fixed price basis, the County shall reimburse the Railroad for the amount of the contract.

SECTION 5 - MAINTENANCE AND REPAIRS

A. The County, at its expense, shall maintain, repair and renew, or cause to be maintained, repaired and renewed, the entire New Overpass, including, but not limited to, the superstructure, structure, piers, abutments, walls, approaches and all backfill, grading and drainage required by reason of the New Overpass, as well as all graffiti removal or overpainting involving the New Overpass.

B. The Railroad, at its expense, will maintain, repair and renew, or cause to be maintained, repaired and renewed, the rails, ties, ballast and communication and signal facilities owned by the Railroad beneath the New Overpass.

SECTION 6 - SAFETY MEASURES; PROTECTION OF RAILROAD COMPANY OPERATIONS

It is understood and recognized that safety and continuity of the Railroad's operations and communications are of the utmost importance; and in order that the same may be adequately safeguarded, protected and assured, and in order that accidents may be prevented and avoided, it is agreed with respect to all of said work of the County that the work will be performed in a safe manner and in conformity with the following standards:

A. **Definitions.** All references in this Agreement to the County shall also include the Contractor and their respective officers, agents and employees, and others acting under its or their authority; and all references in this Agreement to work of the County shall include work both within and outside of the Railroad's property.

B. **Entry on to Railroad's Property by County.** If the County's employees need to enter the Railroad's property in order to perform an inspection of the New Overpass, minor maintenance or other activities, the County shall first provide at least ten (10) working days advance notice to the Railroad Representative. With respect to such entry on to Railroad's property, the County, to the extent permitted by law, agrees to release, defend and indemnify the Railroad from and against any loss, damage, injury, liability, claim, cost or expense incurred by any person including, without limitation, the County's employees, or damage to any property or equipment (collectively the "Loss") that arises from the presence or activities of County's employees on the Railroad's property, except to the extent that any Loss is caused by the sole direct negligence of the Railroad.

C. **Flagging.**

(i) If the County's employees need to enter the Railroad's property as provided in Paragraph B above, the County agrees to notify the Railroad Representative at least thirty (30) working days in advance of proposed performance of any work by County in which any person or equipment will be within twenty-five (25) feet of any track, or will be near enough to any track that any equipment extension (such as, but not limited to, a crane boom) will reach to within twenty-five (25) feet of any track. No work of any kind shall be performed, and no person, equipment, machinery, tool(s), material(s), vehicle(s), or thing(s) shall be located, operated, placed, or stored within twenty-five (25) feet of any of the Railroad's track(s) at any time, for any reason, unless and until a Railroad flagman is provided to watch for trains. Upon receipt of such thirty- (30) day notice, the Railroad Representative will determine and inform County whether a flagman need be present and whether County needs to implement any special protective or safety measures. If flagging or other special protective or safety measures are performed by the Railroad, the Railroad will bill County for such expenses incurred by the Railroad. If the Railroad performs any flagging, or other special protective or safety measures are performed by the Railroad, County agrees that County is not relieved of any of its responsibilities or liabilities set forth in this Agreement.

(ii) The rate of pay per hour for each flagman will be the prevailing hourly rate in effect for an eight-hour day for the class of flagmen used during regularly assigned hours and overtime in accordance with Labor Agreements and Schedules in effect at the time the work is performed. In addition to the cost of such labor, a composite charge for vacation, holiday, health and welfare, supplemental sickness, Railroad Retirement and unemployment compensation, supplemental pension, Employees Liability and Property Damage and Administration will be included, computed on actual payroll. The composite charge will be the prevailing composite charge in effect at the time the work is performed. One and one-half times the current hourly rate is paid for overtime, Saturdays and Sundays, and two and one-half times current hourly rate for holidays. Wage rates are subject to change, at any time, by law or by agreement between the Railroad and its employees, and may be retroactive as a result of negotiations or a ruling of an authorized governmental agency. Additional charges on labor are also subject to change. If the wage rate or additional charges are changed, County shall pay on the basis of the new rates and charges.

(iii) Reimbursement to the Railroad will be required covering the full eight-hour day during which any flagman is furnished, unless the flagman can be assigned to other Railroad work during a portion of such day, in which event reimbursement will not be required for the portion of the day during which the flagman is engaged in other Railroad work. Reimbursement will also be required for any day not actually worked by the flagman following the flagman's assignment to work on the project for which the Railroad is required to pay the flagman and which could not reasonably be avoided by the Railroad by assignment of such flagman to other work, even though County may not be working during such time. When it becomes necessary for the Railroad to bulletin and assign an employee to a flagging position in compliance with union collective bargaining agreements, County must provide the Railroad a minimum of five (5) days' notice prior to the cessation of the need for a flagman. If five (5) days' notice of cessation is not given, the County will still be required to pay flagging charges for the five (5) day notice period.

required by union agreement to be given to the employee, even though flagging is not required for that period. An additional thirty (30) days' notice must then be given to the Railroad if flagging services are needed again after such five day cessation notice has been given to the Railroad.

D. **Compliance With Laws.** The County shall comply with all applicable federal, state and local laws, regulations and enactments affecting the work. The County shall use only such methods as are consistent with safety, both as concerns the County, the County's agents and employees, the officers, agents, employees and property of the Railroad and the public in general. The County (without limiting the generality of the foregoing) shall comply with all applicable state and federal occupational safety and health acts and regulations. All Federal Railroad Administration regulations shall be followed when work is performed on the Railroad's premises. If any failure by the County to comply with any such laws, regulations, and enactments, shall result in any fine, penalty, cost or charge being assessed, imposed or charged against the Railroad, the County shall reimburse and, to the extent it may lawfully do so, indemnify the Railroad for any such fine, penalty, cost, or charge, including without limitation attorney's fees, court costs and expenses. The County further agrees in the event of any such action, upon notice thereof being provided by the Railroad, to defend such action free of cost, charge, or expense to the Railroad.

E. **No Interference or Delays.** The County shall not do, suffer or permit anything which will or may obstruct, endanger, interfere with, hinder or delay maintenance or operation of the Railroad's tracks or facilities, or any communication or signal lines, installations or any appurtenances thereof, or the operations of others lawfully occupying or using the Railroad's property or facilities.

F. **Supervision.** The County, at its own expense, shall adequately police and supervise all work to be performed by the County, and shall not inflict injury to persons or damage to property for the safety of whom or of which the Railroad may be responsible, or to property of the Railroad. The responsibility of the County for safe conduct and adequate policing and supervision of the Project shall not be lessened or otherwise affected by the Railroad's approval of plans and specifications, or by the Railroad's collaboration in performance of any work, or by the presence at the work site of the Railroad's representatives, or by compliance by the County with any requests or recommendations made by such representatives. If a representative of the Railroad is assigned to the Project, the County will give due consideration to suggestions and recommendations made by such representative for the safety and protection of the Railroad's property and operations.

G. **Suspension of Work.** If at any time the County's engineers or the Vice President-Engineering Services of the Railroad or their respective representatives shall be of the opinion that any work of the County is being or is about to be done or prosecuted without due regard and precaution for safety and security, the County shall immediately suspend the work until suitable, adequate and proper protective measures are adopted and provided.

H. **Removal of Debris.** The County shall not cause, suffer or permit material or debris to be deposited or cast upon, or to slide or fall upon any property or facilities of the Railroad; and any such material and debris shall be promptly removed from the Railroad's property by the County at the County's own expense or by the Railroad at the expense of the County. The County shall not cause, suffer or permit any snow to be plowed or cast upon the Railroad's property during snow removal from the Crossing Area and/or the Temporary License Area.

I. **Explosives.** The County shall not discharge any explosives on or in the vicinity of the Railroad's property without the prior consent of the Railroad's Vice President-Engineering Services, which shall not be given if, in the sole discretion of the Railroad's Vice President-Engineering Services, such discharge would be dangerous or would interfere with the Railroad's property or facilities. For the purposes hereof, the "vicinity of the Railroad's property" shall be deemed to be any place on the Railroad's property or in such close proximity to the Railroad's property that the discharge of explosives could cause injury to the Railroad's employees or other persons, or cause damage to or interference with the facilities or operations on the Railroad's property. The Railroad reserves the right to impose such conditions,

restrictions or limitations on the transportation, handling, storage, security and use of explosives as the Railroad, in the Railroad's sole discretion, may deem to be necessary, desirable or appropriate.

J. **Excavation**. The County shall not excavate from existing slopes nor construct new slopes that are excessive and may create hazards of slides or falling rock, or impair or endanger the clearance between existing or new slopes and the tracks of the Railroad. The County shall not do or cause to be done any work which will or may disturb the stability of any area or adversely affect the Railroad's tracks or facilities. The County, at its own expense, shall install and maintain adequate shoring and cribbing for all excavation and/or trenching performed by the County in connection with construction, maintenance or other work. The shoring and cribbing shall be constructed and maintained with materials and in a manner approved by the Railroad's Assistant Vice President Engineering-Design to withstand all stresses likely to be encountered, including any stresses resulting from vibrations caused by the Railroad's operations in the vicinity.

K. **Drainage**. The County, at the County's own expense, shall provide and maintain suitable facilities for draining the New Overpass and its appurtenances, and shall not suffer or permit drainage water therefrom to flow or collect upon property of the Railroad. The County, at the County's own expense, shall provide adequate passageway for the waters of any streams, bodies of water and drainage facilities (either natural or artificial, and including water from the Railroad's culvert and drainage facilities), so that said waters may not, because of any facilities or work of the County, be impeded, obstructed, diverted or caused to back up, overflow or damage the property of the Railroad or any part thereof, or property of others. The County shall not obstruct or interfere with existing ditches or drainage facilities.

L. **Notice**. Before commencing any work, the County shall provide the advance notice that is required under the Contractor's Right of Entry Agreement.

M. **Fiber Optic Cables**. Fiber optic cable systems may be buried on the Railroad's property. Protection of the fiber optic cable systems is of extreme importance since any break could disrupt service to users resulting in business interruption and loss of revenue and profits. County shall telephone the Railroad during normal business hours (7:00 a.m. to 9:00 p.m. Central Time, Monday through Friday, except holidays) at 1-800-336-9193 (also a 24-hour, 7-day number for emergency calls) to determine if fiber optic cable is buried anywhere on the Railroad's premises to be used by the County. If it is, County will telephone the telecommunications company(ies) involved, arrange for a cable locator, and make arrangements for relocation or other protection of the fiber optic cable prior to beginning any work on the Railroad's premises.

SECTION 7 - INTERIM WARNING DEVICES

If at anytime it is determined by a competent authority, by the County, or by agreement between the parties, that new or improved train activated warning devices should be installed at the Crossing Area, the County shall install adequate temporary warning devices or signs and impose appropriate vehicular control measures to protect the motoring public until the construction or reconstruction of the New Overpass has been completed.

SECTION 8 - OTHER RAILROADS

All protective and indemnifying provisions of this Agreement shall inure to the benefit of the Railroad and any other railroad company lawfully using the Railroad's property or facilities.

SECTION 9 - BOOKS AND RECORDS

The books, papers, records and accounts of the Railroad, so far as they relate to the items of expense for the materials to be provided by the Railroad under this Project, or are associated with the work to be performed by the Railroad under this Project, shall be open to inspection and audit at the Railroad's offices in Omaha, Nebraska, during normal business hours by the agents and authorized

representatives of County for a period of three (3) years following the date of the Railroad's last billing sent to the County.

SECTION 10 - REMEDIES FOR BREACH OR NONUSE

A. If the County shall fail, refuse or neglect to perform and abide by the terms of this Agreement, the Railroad, in addition to any other rights and remedies, may perform any work which in the judgment of the Railroad is necessary to place the New Overpass and appurtenances in such condition as will not menace, endanger or interfere with the Railroad's facilities or operations or jeopardize the Railroad's employees; and the County will reimburse the Railroad for the expenses thereof.

B. Nonuse by the County of the Crossing Area for public highway purposes continuing at any time for a period of eighteen (18) months shall, at the option of the Railroad, work a termination of this Agreement and of all rights of the County hereunder.

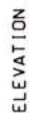
C. The County will surrender peaceable possession of the Crossing Area and New Overpass upon termination of this Agreement. Termination of this Agreement shall not affect any rights, obligations or liabilities of the parties, accrued or otherwise, which may have arisen prior to termination.

SECTION 11 - MODIFICATION - ENTIRE AGREEMENT

No waiver, modification or amendment of this Agreement shall be of any force or effect unless made in writing, signed by the County and the Railroad and specifying with particularity the nature and extent of such waiver, modification or amendment. Any waiver by the Railroad of any default by the County shall not affect or impair any right arising from any subsequent default. This Agreement and Exhibits attached hereto and made a part hereof constitute the entire understanding between the County and the Railroad and cancel and supersede any prior negotiations, understandings or agreements, whether written or oral, with respect to the work or any part thereof.

EXHIBIT C

NEW OVERPASS TYPE, SIZE AND LOCATION PRINTS

[illegible]

91'-4" (Total Bridge Length)

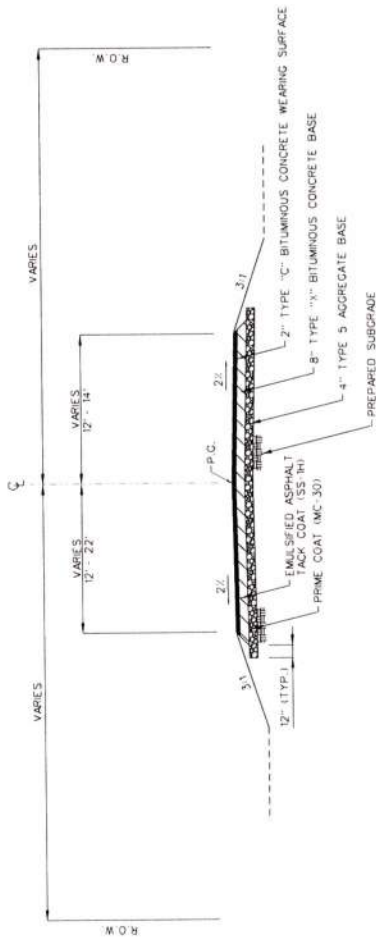


NOT FOR CONSTRUCTION

ST. LOUIS COUNTY BRIDGE NO.
329

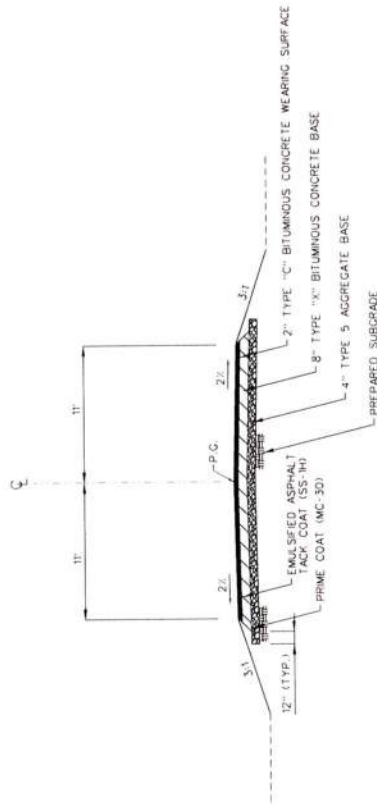
MODOT BRIDGE NO.

COUNTY PROJECT NO. CR-12716		FEDERAL PROJECT NO. N/A		STATE PROJECT NO. N/A		E-W DATE/REV N/A		WSD P-000000-00		WSD BASE MAP 250		TYPICAL SECTIONS BRIDGE NO. 329 OVER UNION PACIFIC RAILROAD		DESIGNED BY D. HUEBNER		DRAWN BY D. HUEBNER		CHECKED BY D. BAUM		SHEET NO. 3 OF 7	
DATE 28-JUN-2016		PROJECT NAME NOT FOR CONSTRUCTION		DESIGNED BY D. HUEBNER		DRAWN BY D. HUEBNER		CHECKED BY D. BAUM		SHEET NO. 3 OF 7		TYPICAL SECTIONS BRIDGE NO. 329 OVER UNION PACIFIC RAILROAD		DESIGNED BY D. HUEBNER		DRAWN BY D. HUEBNER		CHECKED BY D. BAUM		SHEET NO. 3 OF 7	



TYPICAL SECTION - ALLEN ROAD

STA 94+76.57 TO STA 99+07.05
STA 100+82.19 TO STA 101+38.13



TYPICAL SECTION - ALLEN ROAD TEMPORARY DETOUR

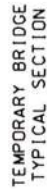
STA 4+20.13 TO STA 9+27.97
STA 10+57.97 TO STA 13+23.85

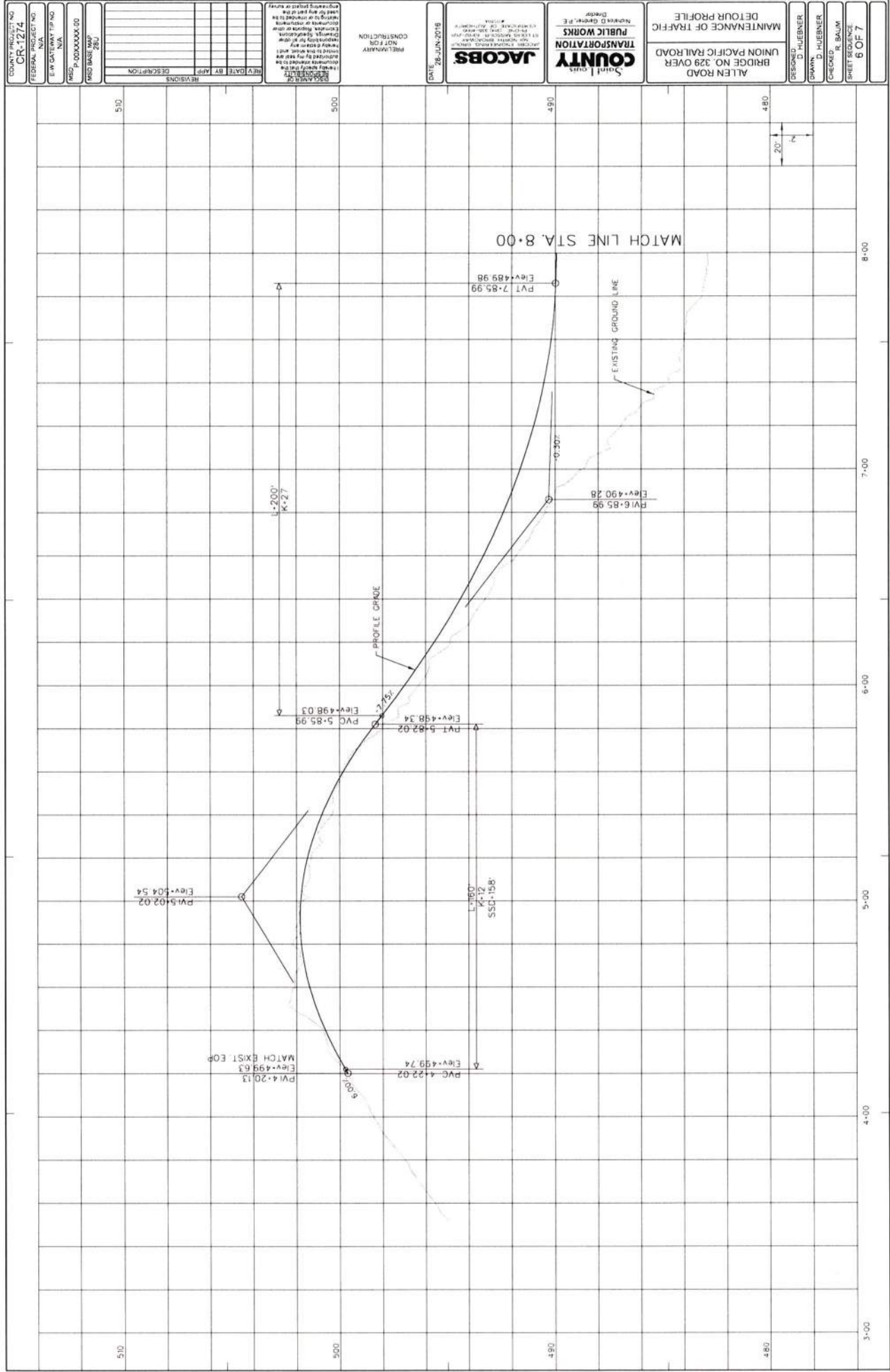
130'-0" (Temporary Bridge)

deck drains or deck joints

NOT FOR CONSTRUCTION

ST. LOUIS COUNTY BRIDGE NO. 329	MODOT BRIDGE NO.
------------------------------------	------------------





COUNTY PROJECT NO.
CR-1274

FEDERAL PROJECT NO.
N/A

E-W GATEWAY TIP NO.
N/A

PROJ. NO.
P-000A000-00

PROJ. NAME
28U

REVISIONS

REV	DATE	BY	APP	DESCRIPTION

DESIGNED BY
D. HUEBNER

CHECKED BY
R. BAUM

SHEET NUMBER
60-7

ALLEN ROAD
BRIDGE NO. 329 OVER
UNION PACIFIC RAILROAD

MAINTENANCE OF TRAFFIC
DETOUR PROFILE

JACOBS
COUNTY PUBLIC WORKS
TRANSPORTATION

DATE
28-JUN-2016

[illegible]

COUNTY PROJECT NO. CR-1274	FEDERAL PROJECT NO. N/A	E-W GATEWAY TIP NO. N/A	MISO P-00XXXXXX-00	MISO BASE MAP 9801
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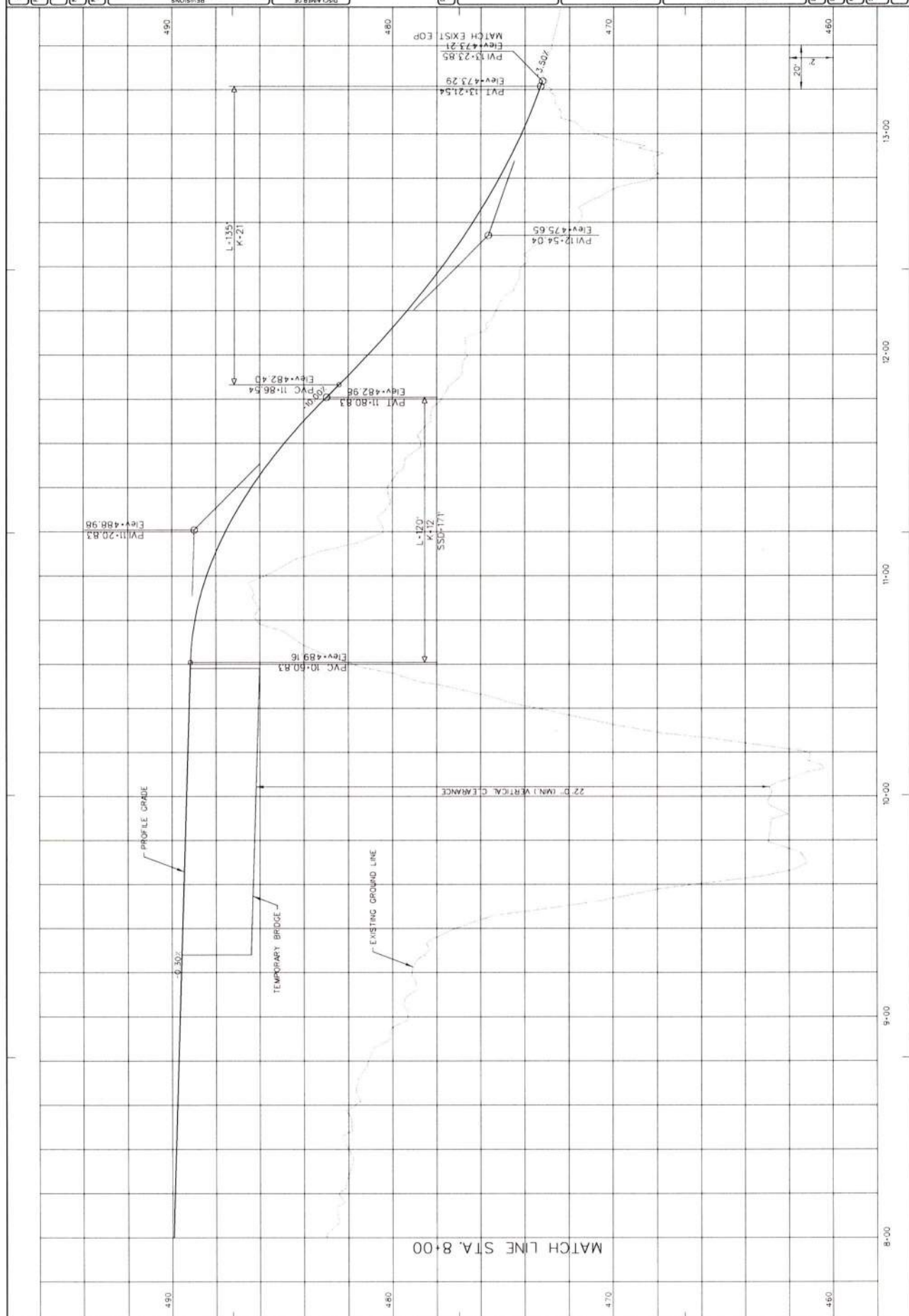


EXHIBIT D

RAILROAD COORDINATION REQUIREMENTS

1.01 DEFINITIONS

Agreement: Agreement that has been signed, or will be signed, between the Railroad and Agency related to the construction and maintenance of the Project.

Agency: County of St. Louis

AREMA: American Railway Engineering and Maintenance-of-way Association

Contractor: The contractor or contractors hired by the Agency to perform any project work on any portion of the Railroad's property and shall also include the Contractor's subcontractors and the Contractor's and subcontractor's respective employees, officers and agents, and others acting under its or their authority.

MUTCD: Manual on Uniform Traffic Control Devices

Project: Lewis Road Project

Railroad: Union Pacific Railroad Company

Railroad Project Representative: Railroad's Manager of Industry and Public Projects for this Project (see Section 1.03)

Railroad MTM Representative: Railroad's Manager of Track Maintenance for this Project (see Section 1.03)

Requirements: The Railroad Coordination Requirements set forth in this Exhibit.

1.02 DESCRIPTION

This Project includes construction work within the Railroad's right-of-way. These Requirements describe coordination with the Railroad when work by the Contractor will be performed upon, over or under the Railroad right-of-way or may impact current or future Railroad operations. The Contractor will coordinate with the Railroad while performing the work outlined in this Agreement and shall afford the same cooperation with the Railroad as it does with the Agency. All submittals and work shall be completed in compliance with these Requirements, Railroad guidelines and requirements, AREMA recommendations and/or as directed by the Railroad Local Representative and/or the Railroad MTM Representative.

1.03 UPRR CONTACTS

The Railroad Project Representative for this project is:

JORDON ALBERS
314-331-0682

For Railroad flagging services and track work, contact the following Railroad MTM Representative:

PRATT, James R.
MANAGER OF TRACK MAINTENANCE
402/8 233-1701
jrpratt@up.com
1848 Wayne Lanter Ave
Madison, IL 62060

1.04 PLANS / SPECIFICATIONS

The plans and specifications for this Project, affecting the Railroad, are subject to the written approval by the Railroad. Changes in the plans made after the execution of the Agreement and/or the awarding of the Project to the Contractor are subject to the prior review and written approval of the Agency and the

Railroad. No construction work shall commence until final stamped plans and/or changes to final stamped plans have been reviewed and approved by the Railroad in writing. The Railroad's review and approval of the Agency's and/or Contractor's plans in no way relieves the Agency and Contractor from their responsibilities, obligations and/or liabilities under this Agreement, Agency's agreement with the Contractor for the Project and/or in the separate Contractor's Right of Entry Agreement referenced in Section 1.08. The Railroad's approval will be given with the understanding that the Railroad makes no representations or warranty as to the validity, accuracy, legal compliance or completeness of Agency's and/or Contractor's plans and that any reliance by the Agency or the Contractor with respect to such plans is at the risk of the Agency and the Contractor.

1.05 UTILITIES AND FIBER OPTICS

A. All installations shall be constructed in accordance with current AREMA recommendations and Railroad specifications and requirements. Railroad general guidelines and the required application forms for utility installations can be found on the Railroad website at <http://www.uprr.com/reus/pipeline/install.shtml>.

B. It shall be the responsibility of the Contractor, at its expense, to make arrangements directly with utility companies involving the protection, encasement, reinforcement, relocation, replacement, removing or abandonment in place of non-railroad facilities affected by the Project. The Railroad has no obligation to supply additional Railroad property for non-railroad facilities affected by this Project, nor does the Railroad have any obligation to permit non railroad facilities to be abandoned in place or relocated on the Railroad's property. Any facility and/or utility that crosses Railroad right of way must be covered under an agreement with the Railroad including, without limitation, any relocations of an existing facility and/or utility.

C. Any longitudinal fiber optic lines on the Railroad right of way shall be treated as Railroad facilities. Project design may need to be altered to accommodate such facilities.

D. Any fiber optic relocations or protections that are required due to this Project will be at the Agency's expense.

1.06 GENERAL

A. It is essential that the proposed construction shall be performed without interference to Railroad operations and in compliance with all applicable Railroad and Federal Railroad Administration rules and regulations. The Railroad shall be reimbursed by the Contractor or Agency for train delay costs and lost revenue claims due to any delays or interruption of train operations resulting from the Contractor's construction or other activities.

B. Track protection is required for all work equipment (including rubber tired equipment) operating within 25 feet from nearest rail. All work shall be designed and executed outside the temporary construction clearance envelope defined in Section 1.12.

C. The Contractor is also advised that new facilities within the Project may be scheduled to be built by the Railroad and that certain Contractor's activities cannot proceed until that work is complete. The Contractor shall be aware of the limits of responsibilities, allow sufficient time in the schedule for that work to be accomplished and shall coordinate its efforts with the Railroad.

1.07 RAILROAD OPERATIONS

A. The Contractor shall be advised that trains and/or equipment should be expected on any track, at any time, and in either direction. The Contractor shall communicate with the Railroad MTM Representative to improve the Contractor's understanding of Railroad traffic volume and operation at the Project site. The Contractor's bid shall be structured assuming intermittent track windows as defined in Section 1.07 C.

- B. All Railroad tracks within and adjacent to the Project site are to be assumed as active and rail traffic over these facilities shall be maintained throughout the Project. Activities may include both through moves and switching moves to local customers. Railroad traffic and operations can occur continuously throughout the day and night on these tracks and shall be maintained at all times as defined herein. The Contractor shall coordinate and schedule the work so that construction activities do not interfere with the Railroad's operations.
- C. Work windows for this Project shall be coordinated with the Agency or Contractor and the Railroad Project Representative and the Railroad MTM Representative. Types of work windows include Conditional Work Windows and Absolute Work Windows, as defined below:
 - 1. Conditional Work Window: A period of time in which the Railroad's operations have priority over construction activities. When construction activities may occur on and adjacent to the railroad tracks within 25 feet of the nearest track, a Railroad flag person will be required. At the direction of the flag person, upon approach of a train and when trains are present on the tracks, the tracks must be cleared (i.e., no construction equipment, materials or personnel within 25 feet from the nearest active track or as directed by the Railroad MTM Representative). Conditional Work Windows are available for the project subject to the Railroad's local operating unit review and approval.
 - 2. Absolute Work Window: A period of time in which construction activities are given priority over the Railroad's operations. During this time the designated Railroad track(s) will be inactive for train movements and may be fouled by the Contractor. Before the end of an Absolute Work Window, all Railroad tracks and signals must be completely operational for normal train operations. Also, all Railroad, Public Utilities Commission and Federal Railroad Administration requirements, codes and regulations for operational tracks must be complied with. Should the operating tracks and/or signals be affected, the Railroad will perform inspections of the work prior to placing the affected track back into service. Railroad flag persons will be required for construction activities requiring an Absolute Work Window. **Absolute Work Windows will generally not be granted. Any request will require a detailed written explanation for Railroad review and approval.**

1.08 RIGHT OF ENTRY, ADVANCE NOTICE AND WORK STOPPAGES

- A. Prior to beginning any work within the Railroad right-of-way, the Contractor shall enter into an agreement with the Railroad in the form of the Contractor's Right of Entry Agreement, attached as **Exhibit E** or latest version thereof provided by the Railroad. There is a fee for processing of the agreement which shall be borne by the Contractor. The right of entry agreement shall specify working time frames, flagging, inspection and insurance requirements and any other items specified by the Railroad.
- B. The Contractor shall give advance notice to the Railroad as required in the Contractor's Right of Entry Agreement before commencing work in connection with construction upon or over Railroad's right-of-way and shall observe the Railroad rules and regulations with respect thereto.
- C. All work upon the Railroad right-of-way shall be done at such times and in such a manner as not to interfere with or endanger the operations of the Railroad. Whenever work may affect the operations or safety of trains, the method of doing such work shall first be submitted to the Railroad MTM Representative for approval, but such approval shall not relieve the Contractor from liability. Any work to be performed by the Contractor, which requires flagging service or inspection service, shall be deferred until the flagging protection required by the Railroad is available at the job site. See Section 1.21 for railroad flagging requirements.
- D. The Contractor shall make requests in writing to both the Railroad Project Representative and the Railroad MTM Representative for both Absolute and Conditional Work Windows, at least two weeks

in advance of any work. The written request must include:

1. Description of work to be done.
2. The days and hours that work will be performed.
3. The exact location of the work and proximity to the tracks.
4. The type of window and amount of time requested.
5. The designated contact person for the Contractor.

- E. Should a condition arise from, or in connection with, the work which requires immediate and unusual actions to be made to protect operations and property of the Railroad, the Contractor shall undertake such actions. If, in the judgment of the Railroad MTM Representative, such actions are insufficient, the Railroad MTM Representative may require or provide such actions as deemed necessary. In any event, such actions shall be at the Contractor's expense and without cost to the Railroad. The Railroad or Agency have the right to order the Contractor to temporarily cease operations in the event of an emergency or if, in the opinion of the Railroad MTM Representative, the Contractor's operations may inhibit the Railroads operations. In the event such an order is given, the Contractor shall immediately notify the Agency of the order.

1.09 INSURANCE

The Contractor shall not begin work within the Railroad's right-of-way until the Railroad has been furnished the insurance policies, binders, certificates and endorsements required by the Contractor's Right-of-Entry Agreement, and the Railroad Project Representative has advised the Agency that such insurance is in accordance with such Agreement. The required insurance shall be kept in full force and effect during the performance of work and thereafter until the Contractor removes all tools, equipment, and material from Railroad property and cleans the premises in a manner reasonably satisfactory to the Railroad.

1.10 RAILROAD SAFETY ORIENTATION

All personnel employed by the Agency, Contractor and all subcontractors must complete the Railroad's course "Orientation for Contractor's Safety" and be registered prior to working on Railroad property. This orientation is available at www.contractororientation.com. This course is required to be completed annually. The preceding training does not apply for longitudinal fiber optic installations.

1.11 COOPERATION

The Railroad shall cooperate with the Contractor in the scheduling of Project work with the understanding that the Railroad's train operations at the job site shall have priority over the Contractor's activities.

1.12 CONSTRUCTION CLEARANCES

The Contractor shall abide by the twenty-one (21) foot temporary vertical construction clearance defined in section 4.4.1.1 and twelve (12) foot temporary horizontal construction clearance defined in section 4.4.1.2 of BNSF and UPRR Guidelines for Railroad Grade Separation Projects. It shall be the Contractor's responsibility to obtain such guidelines from the Agency or the Railroad.

Reduced temporary construction clearances, which are less than construction clearances defined above, will require special review and approval by the Railroad.

Any proposed variance on the specified minimum clearances due to the Contractor's operations shall be submitted to the Railroad Project Representative through the Agency at least thirty (30) days in advance of the work. No work shall be undertaken until the variance is approved in writing by the Railroad Project Representative.

1.13 SUBMITTALS

- A. Construction submittals and Requests for Information (RFI) shall be submitted per Section 3.5 of BNSF and UPRR Guidelines for Railroad Grade Separation Projects.
- B. The minimum review times, as indicated in tables 3-1 and 3-2 of Section 3.5 of the BNSF and UPRR Guidelines for Railroad Grade Separation Projects, should be anticipated for review of all submittals. The details of the construction affecting the Railroad tracks and property, not already included in the contract plans, shall be submitted by the Agency to the Railroad Project Representative for the Railroad's review and written approval before such construction is undertaken. The Railroad shall not be liable to Agency, Contractor, and or any other person or entity if the Railroad's review exceeds a four-week review time.
- C. As Built Submittals shall be submitted per Section 3.6 of BNSF and UPRR Guidelines for Railroad Grade Separation Projects.

1.14 MAINTENANCE OF PROPER DRAINAGE AND DAMAGE TO RAILROAD FACILITIES

- A. The Contractor, at its expense, shall be required to maintain all ditches and drainage structures free of silt or other obstructions which may result from the Contractor's operations and to repair and restore any Railroad property, tracks and facilities of the Railroad and/or its tenants.
- B. The Contractor must submit a proposed method of erosion control and have the method reviewed and approved by the Railroad prior to beginning any grading on the project site. Erosion control methods must comply with all applicable local, state and federal regulations.

1.15 SITE INSPECTIONS BY RAILROAD PROJECT REPRESENTATIVE, RAILROAD MTM REPRESENTATIVE OR RAILROAD'S CONTRACTOR

- A. In addition to the office reviews of construction submittals, site observations will be performed by the Railroad Project Representative, Railroad MTM Representative or Railroad's Contractor at significant points during construction per Section 4.11 of BNSF and UPRR Guidelines for Railroad Grade Separation Projects.
- B. Site inspections are not limited to the milestone events listed in the guidelines. Site visits to check the progress of work may be performed at any time throughout the construction process as deemed necessary by the Railroad.
- C. A detailed construction schedule, including the proposed temporary horizontal and vertical clearances and construction sequence for all work to be performed, shall be provided by the Contractor to the Agency for submittal to the Railroad's Project Representative for review and approval prior to commencement of work. This schedule shall also include the anticipated dates on which the above listed events will occur. This schedule shall be updated for all critical listed events as necessary but at least monthly so that site visits may be scheduled.

1.16 RAILROAD REPRESENTATIVES

- A. Railroad representatives, conductors, flag persons or watch persons will be provided by the Railroad at the expense of the Agency or Contractor (as stated elsewhere in these bid documents) to protect Railroad facilities, property and movements of its trains and engines. In general, the Railroad will furnish such personnel or other protective services as follows:
 - 1. When any part of any equipment or object, such as erection or construction activities, is standing or being operated within 25 feet, measured horizontally from centerline, of any track on which trains may operate.

2. For any excavation below the elevation of track subgrade when, in the opinion of the Railroad MTM Representative, the track or other Railroad facilities may be subject to settlement or movement.
3. During any clearing, grubbing, excavation or grading in proximity to Railroad facilities which, in the opinion of the Railroad MTM Representative, may affect Railroad facilities or inhibit operations.
4. During any Contractor's operations when, in the opinion of the Railroad MTM Representative, the Railroad facilities, including, but not limited to, tracks, buildings, signals, wire lines or pipe lines, may be endangered.

B. The Contractor shall arrange with the Railroad Local Representative to provide the adequate number of flag persons to accomplish the work.

1.17 WALKWAYS REQUIRED

Parallel to the outer side of each exterior track of multiple operated track and on each side of single operated track, an unobstructed continuous space suitable for trainman's use in walking along trains, extending in width not less than twelve feet (12') perpendicular from centerline of track, shall be maintained. Any temporary impediments to walkways and track drainage encroachments or obstructions allowed during working hours must be covered, guarded and/or protected as soon as practical. Walkways with railings shall be constructed by the Contractor over open excavation areas when in close proximity of track, and railings shall not be closer than 9' perpendicular from the center line of tangent track or 9' - 6" horizontal from curved track.

1.18 COMMUNICATIONS AND SIGNAL LINES

If required, the Railroad, at Agency's expense, will rearrange its communications and signal lines, grade crossing warning devices, train signals, tracks and facilities that are in use and maintained by Railroad forces in connection with its operation. This work by the Railroad will be done by its own forces or by contractors under a continuing contract and may or may not be a part of the work under this contract.

1.19 TRAFFIC CONTROL

The Contractor's operations which control traffic across or around Railroad facilities shall be coordinated with and approved by the Railroad MTM Representative and shall be in compliance with the MUTCD.

1.20 CONSTRUCTION EXCAVATIONS; CALL BEFORE YOU DIG NUMBER

- A. The Contractor shall be required to take special precautions and care in connection with excavating and shoring. Excavations for construction of footings, piers, columns, walls or other facilities that require shoring shall comply with requirements of OSHA, AREMA and Railroad "Guidelines for Temporary Shoring".
- B. In addition to calling the "811" number and/or the local "one call center", the Contractor shall call the Railroad's "Call Before Your Dig" number at least 48 hours prior to commencing work at 1-800-336-9193 during normal business hours (6:30 a.m. to 8:00 p.m. Central Standard Time, Monday through Friday, except holidays - also a 24 hour, 7 day a week number for emergency calls) to determine location of fiber optics. If a telecommunications system is buried anywhere on or near Railroad property, the Contractor will co-ordinate with the Railroad and the Telecommunication Company(ies) to arrange for relocation or other protection of the system prior to beginning any work on or near Railroad property. The determination of whether fiber optics will be affected by the Project shall be made during the initial design phase of the Project.

- C. The Railroad does not allow temporary at grade crossings unless absolutely necessary and there is no alternative route available to contractor to access the project site. Alternative plans should be considered to avoid crossing Railroad tracks at grade.

1.21 RAILROAD FLAGGING

Performance of any work by the Contractor in which person(s) or equipment will be within twenty-five (25) feet of any track, or that any object or equipment extension (such as, but not limited to, a crane boom) will reach within twenty-five (25) feet of any track, require railroad flagging services or other protective measures. The Contractor shall give an advance notice to the Railroad as required in the Contractor's Right of Entry Agreement before commencing any such work, allowing the Railroad to determine the need for flagging or other protective measures which ensure the safety of the Railroad's operations, employees and equipment. Contractor shall comply with all other requirements regarding flagging services covered by the Contractor's Right of Entry Agreement. Any costs associated with failure to abide by these requirements will be borne by the Contractor.

Flagging rates are set by the Railroad and are subject to change due to, but not limited to, travel time, setup plus, per diem and rest time (if work is required at night).

1.22 CLEANING OF RIGHT-OF-WAY

The Contractor shall, upon completion of the work to be performed within the right-of-way and/or properties of the Railroad and adjacent to its tracks, wire lines and other facilities, promptly remove from the Railroad right-of-way all Contractor's tools, implements and other materials whether brought upon the right-of-way by the Contractor or any subcontractors employee or agent of Contractor or of any subcontractor, and leave the right-of-way in a clean and presentable condition to the satisfaction of the Railroad.

1.23 CONTRACTOR'S RESPONSIBILITY OF SUPERVISION

The Contractor, at its expense, shall adequately supervise all work to be performed by the Contractor. Such responsibility shall not be lessened or otherwise affected by the Railroad's approval of plans and specifications, or by the presence at the work site of the Railroad Project Representative, Railroad MTM Representative or any other Railroad representative or Railroad contractor providing inspection services, or by the compliance by the Contractor with any requests or recommendations made by such representatives. The Contractor will give due consideration to suggestions and recommendations made by such representatives for the safety and protection of the Railroad's property and operations.

1.24 USE OF EXPLOSIVES AT PROJECT SITE PROHIBITED

The Contractor's use of explosives at the Project site is expressly prohibited unless authorized in advance in writing by the Railroad Project Representative.

EXHIBIT E

**CONTRACTOR'S
RIGHT OF ENTRY AGREEMENT**

THIS AGREEMENT is made and entered into as of the _____ day of _____, 20_____,
by and between **UNION PACIFIC RAILROAD COMPANY**, a Delaware corporation (the "**Railroad**"); and
_____, a _____ corporation
("Contractor").

RECITALS:

Contractor has been hired by County of St. Louis to perform work relating to bridge reconstruction and temporary construction/bridge (the "**work**"), with all or a portion of such work to be performed on property of the Railroad in the vicinity of the Railroad's Milepost 25.46 on the Railroad's Jefferson City Sub. at or near DOT No. 442720N located at or near Eureka, in Jefferson City County, State of Missouri, as such location is in the general location shown on the print marked **Exhibit A**, attached hereto and hereby made a part hereof, which work is the subject of a contract dated _____ between the Railroad and County of St. Louis.

The Railroad is willing to permit Contractor to perform the work described above at the location described above subject to the terms and conditions contained in this Agreement

AGREEMENT:

NOW, THEREFORE, it is mutually agreed by and between the Railroad and Contractor, as follows:

ARTICLE 1 - DEFINITION OF CONTRACTOR.

For purposes of this Agreement, all references in this agreement to Contractor shall include Contractor's contractors, subcontractors, officers, agents and employees, and others acting under its or their authority.

ARTICLE 2 - RIGHT GRANTED; PURPOSE.

The Railroad hereby grants to Contractor the right, during the term hereinafter stated and upon and subject to each and all of the terms, provisions and conditions herein contained, to enter upon and have ingress to and egress from the property described in the Recitals for the purpose of performing the work described in the Recitals above. The right herein granted to Contractor is limited to those portions of the Railroad's property specifically described herein, or as designated by the Railroad Representative named in Article 4.

ARTICLE 3 - TERMS AND CONDITIONS CONTAINED IN EXHIBITS B, C AND D.

The terms and conditions contained in **Exhibit B**, **Exhibit C** and **Exhibit D**, attached hereto, are hereby made a part of this Agreement.

ARTICLE 4 - ALL EXPENSES TO BE BORNE BY CONTRACTOR; RAILROAD REPRESENTATIVE.

A. Contractor shall bear any and all costs and expenses associated with any work performed by Contractor, or any costs or expenses incurred by the Railroad relating to this Agreement.

B. Contractor shall coordinate all of its work with the following Railroad representative or his or her duly authorized representative (the "**Railroad Representative**");

PRATT, James R.
MANAGER OF TRACK MAINTENANCE
402/8 233-1701
jrpratt@up.com
1848 Wayne Lanter Ave
Madison, IL 62060

C. Contractor, at its own expense, shall adequately police and supervise all work to be performed by Contractor and shall ensure that such work is performed in a safe manner as set forth in Section 7 of **Exhibit B**. The responsibility of Contractor for safe conduct and adequate policing and supervision of Contractor's work shall not be lessened or otherwise affected by Railroad's approval of plans and specifications involving the work, or by the Railroad's collaboration in performance of any work, or by the presence at the work site of a Railroad Representative, or by compliance by Contractor with any requests or recommendations made by the Railroad Representative.

ARTICLE 5 - SCHEDULE OF WORK ON A MONTHLY BASIS.

The Contractor, at its expense, shall provide on a monthly basis a detailed schedule of work to the Railroad Representative named in Article 4B above. The reports shall start at the execution of this Agreement and continue until this Agreement is terminated as provided in this Agreement or until the Contractor has completed all work on the Railroad's property.

ARTICLE 6 - TERM; TERMINATION.

A. The grant of right herein made to Contractor shall commence on the date of this Agreement, and continue until _____, unless sooner terminated as herein provided, or at such time as Contractor has completed its work on the Railroad's property, whichever is earlier. Contractor agrees to notify the Railroad Representative in writing when it has completed its work on the Railroad's property.

B. This Agreement may be terminated by either party on ten (10) days written notice to the other party.

ARTICLE 7 - CERTIFICATE OF INSURANCE.

A. Before commencing any work, Contractor will provide the Railroad with the (i) insurance binders, policies, certificates and endorsements set forth in **Exhibit C** of this Agreement, and (ii) the insurance endorsements obtained by each subcontractor as required under Section 12 of **Exhibit B** of this Agreement.

B. All insurance correspondence, binders, policies, certificates and endorsements shall be sent to:

Union Pacific Railroad Company
1400 Douglas St, Stop 1690
Omaha, NE 68179
Folder 3033-81

ARTICLE 8 - DISMISSAL OF CONTRACTOR'S EMPLOYEE.

At the request of the Railroad, Contractor shall remove from the Railroad's property any employee of Contractor who fails to conform to the instructions of the Railroad Representative in

connection with the work on the Railroad's property, and any right of Contractor shall be suspended until such removal has occurred. Contractor shall indemnify the Railroad against any claims arising from the removal of any such employee from the Railroad's property.

ARTICLE 9- ADMINISTRATIVE FEE.

Upon the execution and delivery of this Agreement, Contractor shall pay to the Railroad Five Hundred Dollars (\$500.00) as reimbursement for clerical, administrative and handling expenses in connection with the processing of this Agreement.

ARTICLE 10 - CROSSINGS; COMPLIANCE WITH MUTCD AND FRA GUIDELINES.

A. No additional vehicular crossings (including temporary haul roads) or pedestrian crossings over the Railroad's trackage shall be installed or used by Contractor without the prior written permission of the Railroad.

B. Any permanent or temporary changes, including temporary traffic control, to crossings must conform to the Manual of Uniform Traffic Control Devices (MUTCD) and any applicable Federal Railroad Administration rules, regulations and guidelines, and must be reviewed by the Railroad prior to any changes being implemented. In the event the Railroad is found to be out of compliance with federal safety regulations due to the Contractor's modifications, negligence, or any other reason arising from the Contractor's presence on the Railroad's property, the Contractor agrees to assume liability for any civil penalties imposed upon the Railroad for such noncompliance.

ARTICLE 11.- EXPLOSIVES.

Explosives or other highly flammable substances shall not be stored or used on the Railroad's property without the prior written approval of the Railroad.

IN WITNESS WHEREOF, the parties hereto have duly executed this agreement in duplicate as of the date first herein written.

UNION PACIFIC RAILROAD COMPANY

By: _____
Title: _____

(Name of Contractor)

By: _____
Title: _____

EXHIBIT A
TO
CONTRACTOR'S RIGHT OF ENTRY AGREEMENT:
GENERAL LOCATION OF PROJECT SITE

EXHIBIT B
TO
CONTRACTOR'S RIGHT OF ENTRY AGREEMENT

Section 1. NOTICE OF COMMENCEMENT OF WORK - FLAGGING.

A. Contractor agrees to notify the Railroad Representative at least ten (10) working days in advance of Contractor commencing its work and at least thirty (30) working days in advance of proposed performance of any work by Contractor in which any person or equipment will be within twenty-five (25) feet of any track, or will be near enough to any track that any equipment extension (such as, but not limited to, a crane boom) will reach to within twenty-five (25) feet of any track. No work of any kind shall be performed, and no person, equipment, machinery, tool(s), material(s), vehicle(s), or thing(s) shall be located, operated, placed, or stored within twenty-five (25) feet of any of the Railroad's track(s) at any time, for any reason, unless and until a Railroad flagman is provided to watch for trains. Upon receipt of such thirty (30)-day notice, the Railroad Representative will determine and inform Contractor whether a flagman need be present and whether Contractor needs to implement any special protective or safety measures. If flagging or other special protective or safety measures are performed by the Railroad, the Railroad will bill Contractor for such expenses incurred by the Railroad, unless the Railroad and a federal, state or local governmental entity have agreed that the Railroad is to bill such expenses to the federal, state or local governmental entity. If the Railroad will be sending the bills to Contractor, Contractor shall pay such bills within thirty (30) days of Contractor's receipt of billing. If the Railroad performs any flagging, or other special protective or safety measures are performed by the Railroad, Contractor agrees that Contractor is not relieved of any of its responsibilities or liabilities set forth in this Agreement.

B. The rate of pay per hour for each flagman will be the prevailing hourly rate in effect for an eight-hour day for the class of flagmen used during regularly assigned hours and overtime in accordance with Labor Agreements and Schedules in effect at the time the work is performed. In addition to the cost of such labor, a composite charge for vacation, holiday, health and welfare, supplemental sickness, Railroad Retirement and unemployment compensation, supplemental pension, Employees Liability and Property Damage and Administration will be included, computed on actual payroll. The composite charge will be the prevailing composite charge in effect at the time the work is performed. One and one-half times the current hourly rate is paid for overtime, Saturdays and Sundays, and two and one-half times current hourly rate for holidays. Wage rates are subject to change, at any time, by law or by agreement between the Railroad and its employees, and may be retroactive as a result of negotiations or a ruling of an authorized governmental agency. Additional charges on labor are also subject to change. If the wage rate or additional charges are changed, Contractor (or the governmental entity, as applicable) shall pay on the basis of the new rates and charges.

C. Reimbursement to the Railroad will be required covering the full eight-hour day during which any flagman is furnished, unless the flagman can be assigned to other Railroad work during a portion of such day, in which event reimbursement will not be required for the portion of the day during which the flagman is engaged in other Railroad work. Reimbursement will also be required for any day not actually worked by the flagman following the flagman's assignment to work on the project for which the Railroad is required to pay the flagman and which could not reasonably be avoided by the Railroad by assignment of such flagman to other work, even though Contractor may not be working during such time. When it becomes necessary for the Railroad to bulletin and assign an employee to a flagging position in compliance with union collective bargaining agreements, Contractor must provide the Railroad a minimum of five (5) days' notice prior to the cessation of the need for a flagman. If five (5) days' notice of cessation is not given, Contractor will still be required to pay flagging charges for the five (5) day notice period required by union agreement to be given to the employee, even though flagging is not required for that period. An additional thirty (30) days' notice must then be given to the Railroad if flagging services are needed again after such five day cessation notice has been given to the Railroad.

Section 2. LIMITATION AND SUBORDINATION OF RIGHTS GRANTED

A. The foregoing grant of right is subject and subordinate to the prior and continuing right and obligation of the Railroad to use and maintain its entire property including the right and power of the Railroad to construct, maintain, repair, renew, use, operate, change, modify or relocate railroad tracks, roadways, signal, communication, fiber optics, or other wirelines, pipelines and other facilities upon, along or across any or all parts of its property, all or any of which may be freely done at any time or times by the Railroad without liability to Contractor or to any other party for compensation or damages.

B. The foregoing grant is also subject to all outstanding superior rights (whether recorded or unrecorded and including those in favor of licensees and lessees of the Railroad's property, and others) and the right of the Railroad to renew and extend the same, and is made without covenant of title or for quiet enjoyment.

Section 3. NO INTERFERENCE WITH OPERATIONS OF RAILROAD AND ITS TENANTS.

A. Contractor shall conduct its operations so as not to interfere with the continuous and uninterrupted use and operation of the railroad tracks and property of the Railroad, including without limitation, the operations of Railroad's lessees, licensees or others, unless specifically authorized in advance by the Railroad Representative. Nothing shall be done or permitted to be done by Contractor at any time that would in any manner impair the safety of such operations. When not in use, Contractor's machinery and materials shall be kept at least fifty (50) feet from the centerline of the Railroad's nearest track, and there shall be no vehicular crossings of the Railroad's tracks except at existing open public crossings.

B. Operations of the Railroad and work performed by Railroad personnel and delays in the work to be performed by Contractor caused by such railroad operations and work are expected by Contractor, and Contractor agrees that the Railroad shall have no liability to Contractor, or any other person or entity for any such delays. The Contractor shall coordinate its activities with those of the Railroad and third parties so as to avoid interference with railroad operations. The safe operation of Railroad train movements and other activities by the Railroad takes precedence over any work to be performed by Contractor.

Section 4. LIENS.

Contractor shall pay in full all persons who perform labor or provide materials for the work to be performed by Contractor. Contractor shall not create, permit or suffer any mechanic's or materialmen's liens of any kind or nature to be created or enforced against any property of the Railroad for any such work performed. Contractor shall indemnify and hold harmless the Railroad from and against any and all liens, claims, demands, costs or expenses of whatsoever nature in any way connected with or growing out of such work done, labor performed, or materials furnished. If Contractor fails to promptly cause any lien to be released of record, the Railroad may, at its election, discharge the lien or claim of lien at Contractor's expense.

Section 5. PROTECTION OF FIBER OPTIC CABLE SYSTEMS.

A. Fiber optic cable systems may be buried on the Railroad's property. Protection of the fiber optic cable systems is of extreme importance since any break could disrupt service to users resulting in business interruption and loss of revenue and profits. Contractor shall telephone the Railroad during normal business hours (7:00 a.m. to 9:00 p.m. Central Time, Monday through Friday, except holidays) at 1-800-336-9193 (also a 24-hour, 7-day number for emergency calls) to determine if fiber optic cable is buried anywhere on the Railroad's property to be used by Contractor. If it is, Contractor will telephone the telecommunications company(ies) involved, make arrangements for a cable locator and, if applicable, for relocation or other protection of the fiber optic cable. Contractor shall not commence any work until all such protection or relocation (if applicable) has been accomplished.

b. In addition to other indemnity provisions in this Agreement, Contractor shall indemnify, defend and hold the Railroad harmless from and against all costs, liability and expense whatsoever (including, without limitation, attorneys' fees, court costs and expenses) arising out of any act or omission of Contractor, its agents and/or employees, that causes or contributes to (1) any damage to or destruction of any telecommunications system on the Railroad's property, and/or (2) any injury to or death of any person employed by or on behalf of any telecommunications company, and/or its contractor, agents and/or employees, on the Railroad's property. Contractor shall not have or seek recourse against the Railroad for any claim or cause of action for alleged loss of profits or revenue or loss of service or other consequential damage to a telecommunication company using the Railroad's property or a customer or user of services of the fiber optic cable on the Railroad's property.

Section 6. PERMITS - COMPLIANCE WITH LAWS.

In the prosecution of the work covered by this Agreement, Contractor shall secure any and all necessary permits and shall comply with all applicable federal, state and local laws, regulations and enactments affecting the work including, without limitation, all applicable Federal Railroad Administration regulations.

Section 7. SAFETY.

A. Safety of personnel, property, rail operations and the public is of paramount importance in the prosecution of the work performed by Contractor. Contractor shall be responsible for initiating, maintaining and supervising all safety, operations and programs in connection with the work. Contractor shall at a minimum comply with the Railroad's safety standards listed in **Exhibit D**, hereto attached, to ensure uniformity with the safety standards followed by the Railroad's own forces. As a part of Contractor's safety responsibilities, Contractor shall notify the Railroad if Contractor determines that any of the Railroad's safety standards are contrary to good safety practices. Contractor shall furnish copies of **Exhibit D** to each of its employees before they enter the job site.

B. Without limitation of the provisions of paragraph A above, Contractor shall keep the job site free from safety and health hazards and ensure that its employees are competent and adequately trained in all safety and health aspects of the job.

C. Contractor shall have proper first aid supplies available on the job site so that prompt first aid services may be provided to any person injured on the job site. Contractor shall promptly notify the Railroad of any U.S. Occupational Safety and Health Administration reportable injuries. Contractor shall have a nondelegable duty to control its employees while they are on the job site or any other property of the Railroad, and to be certain they do not use, be under the influence of, or have in their possession any alcoholic beverage, drug or other substance that may inhibit the safe performance of any work.

D. If and when requested by the Railroad, Contractor shall deliver to the Railroad a copy of Contractor's safety plan for conducting the work (the "Safety Plan"). The Railroad shall have the right, but not the obligation, to require Contractor to correct any deficiencies in the Safety Plan. The terms of this Agreement shall control if there are any inconsistencies between this Agreement and the Safety Plan.

Section 8. INDEMNITY.

A. To the extent not prohibited by applicable statute, Contractor shall indemnify, defend and hold harmless the Railroad, its affiliates, and its and their officers, agents and employees (individually an "Indemnified Party" or collectively "Indemnified Parties") from and against any and all loss, damage, injury, liability, claim, demand, cost or expense (including, without limitation, attorney's, consultant's and expert's fees, and court costs), fine or penalty (collectively, "Loss") incurred by any person (including, without limitation, any Indemnified Party, Contractor, or any employee of Contractor or of any Indemnified Party) arising out of or in any manner connected with (i) any work performed by Contractor, or (ii) any act or omission of Contractor, its officers, agents or employees, or (iii) any breach of this Agreement by Contractor.

b. The right to indemnity under this Section 8 shall accrue upon occurrence of the event giving rise to the Loss, and shall apply regardless of any negligence or strict liability of any Indemnified Party, except where the Loss is caused by the sole active negligence of an Indemnified Party as established by the final judgment of a court of competent jurisdiction. The sole active negligence of any Indemnified Party shall not bar the recovery of any other Indemnified Party.

c. Contractor expressly and specifically assumes potential liability under this Section 8 for claims or actions brought by Contractor's own employees. Contractor waives any immunity it may have under worker's compensation or industrial insurance acts to indemnify the Indemnified Parties under this Section 8. Contractor acknowledges that this waiver was mutually negotiated by the parties hereto.

d. No court or jury findings in any employee's suit pursuant to any worker's compensation act or the Federal Employers' Liability Act against a party to this Agreement may be relied upon or used by Contractor in any attempt to assert liability against any Indemnified Party.

e. The provisions of this Section 8 shall survive the completion of any work performed by Contractor or the

termination or expiration of this Agreement. In no event shall this Section 8 or any other provision of this Agreement be deemed to limit any liability Contractor may have to any Indemnified Party by statute or under common law.

Section 9. RESTORATION OF PROPERTY.

In the event the Railroad authorizes Contractor to take down any fence of the Railroad or in any manner move or disturb any of the other property of the Railroad in connection with the work to be performed by Contractor, then in that event Contractor shall, as soon as possible and at Contractor's sole expense, restore such fence and other property to the same condition as the same were in before such fence was taken down or such other property was moved or disturbed. Contractor shall remove all of Contractor's tools, equipment, rubbish and other materials from the Railroad's property promptly upon completion of the work, restoring the Railroad's property to the same state and condition as when Contractor entered thereon.

Section 10. WAIVER OF DEFAULT.

Waiver by the Railroad of any breach or default of any condition, covenant or agreement herein contained to be kept, observed and performed by Contractor shall in no way impair the right of the Railroad to avail itself of any remedy for any subsequent breach or default.

Section 11. MODIFICATION - ENTIRE AGREEMENT.

No modification of this Agreement shall be effective unless made in writing and signed by Contractor and the Railroad. This Agreement and the exhibits attached hereto and made a part hereof constitute the entire understanding between Contractor and the Railroad and cancel and supersede any prior negotiations, understandings or agreements, whether written or oral, with respect to the work to be performed by Contractor.

Section 12. ASSIGNMENT - SUBCONTRACTING.

Contractor shall not assign or subcontract this Agreement, or any interest therein, without the written consent of the Railroad. Contractor shall be responsible for the acts and omissions of all subcontractors. Before Contractor commences any work, the Contractor shall, except to the extent prohibited by law; (1) require each of its subcontractors to include the Contractor as "Additional Insured" in the subcontractor's Commercial General Liability policy and Business Automobile policies with respect to all liabilities arising out of the subcontractor's performance of work on behalf of the Contractor by endorsing these policies with ISO Additional Insured Endorsements CG 20 26, and CA 20 48 (or substitute forms providing equivalent coverage; (2) require each of its subcontractors to endorse their Commercial General Liability Policy with "Contractual Liability Railroads" ISO Form CG 24 17 10 01 (or a substitute form providing equivalent coverage) for the job site; and (3) require each of its subcontractors to endorse their Business Automobile Policy with "Coverage For Certain Operations In Connection With Railroads" ISO Form CA 20 70 10 01 (or a substitute form providing equivalent coverage) for the job site.

EXHIBIT C
TO
CONTRACTOR'S
RIGHT OF ENTRY AGREEMENT

UNION PACIFIC RAILROAD COMPANY
INSURANCE PROVISIONS FOR
CONTRACTOR'S RIGHT OF ENTRY AGREEMENT

Contractor shall, at its sole cost and expense, procure and maintain during the course of the Project and until all Project work on the Railroad's property has been completed and the Contractor has removed all equipment and materials from the Railroad's property and has cleaned and restored the Railroad's property to the Railroad's satisfaction, the following insurance coverage:

- A. Commercial General Liability insurance.** Commercial general liability (CGL) with a limit of not less than \$5,000,000 each occurrence and an aggregate limit of not less than \$10,000,000. CGL insurance must be written on ISO occurrence form CG 00 01 12 04 (or a substitute form providing equivalent coverage).

The policy must also contain the following endorsement, which must be stated on the certificate of insurance:

- Contractual Liability Railroads ISO form CG 24 17 10 01 (or a substitute form providing equivalent coverage) showing "Union Pacific Railroad Company Property" as the Designated Job Site.
- Designated Construction Project(s) General Aggregate Limit ISO Form CG 25 03 03 97 (or a substitute form providing equivalent coverage) showing the project on the form schedule.

- B. Business Automobile Coverage insurance.** Business auto coverage written on ISO form CA 00 01 10 01 (or a substitute form providing equivalent liability coverage) with a combined single limit of not less \$5,000,000 for each accident and coverage must include liability arising out of any auto (including owned, hired and non-owned autos).

The policy must contain the following endorsements, which must be stated on the certificate of insurance:

- Coverage For Certain Operations In Connection With Railroad's ISO form CA 20 70 10 01 (or a substitute form providing equivalent coverage) showing "Union Pacific Property" as the Designated Job Site.
- Motor Carrier Act Endorsement - Hazardous materials clean up (MCS-90) if required by law.

- C. Workers' Compensation and Employers' Liability insurance.** Coverage must include but not be limited to:
- Contractor's statutory liability under the workers' compensation laws of the state where the work is being performed.
 - Employers' Liability (Part B) with limits of at least \$500,000 each accident, \$500,000 disease policy limit \$500,000 each employee.

If Contractor is self-insured, evidence of state approval and excess workers compensation coverage must be provided. Coverage must include liability arising out of the U. S. Longshoremen's and Harbor Workers' Act, the Jones Act, and the Outer Continental Shelf Land Act, if applicable.

The policy must contain the following endorsement, which must be stated on the certificate of insurance:

- Alternate Employer endorsement ISO form WC 00 03 01 A (or a substitute form providing equivalent coverage) showing Railroad in the schedule as the alternate employer (or a substitute form providing equivalent coverage).

- D. Railroad Protective Liability insurance.** Contractor must maintain "Railroad Protective Liability" (RPL) insurance written on ISO occurrence form CG 00 35 12 04 (or a substitute form providing equivalent coverage) on behalf of Railroad as named insured, with a limit of not less than \$2,000,000 per occurrence and an aggregate of \$6,000,000. The definition of "JOB LOCATION" and "WORK" on the declaration page of the policy shall refer to this Agreement and shall describe all WORK or OPERATIONS performed under this agreement. Contractor shall

provide this Agreement to Contractor's insurance agent(s) and/or broker(s) and Contractor shall instruct such agent(s) and/or broker(s) to procure the insurance coverage required by this Agreement. A BINDER STATING THE POLICY IS IN PLACE MUST BE SUBMITTED TO THE RAILROAD BEFORE THE WORK MAY COMMENCE AND UNTIL THE ORIGINAL POLICY IS FORWARDED TO UNION PACIFIC RAILROAD.

- E. **Umbrella or Excess** insurance. If Contractor utilizes umbrella or excess policies, these policies must "follow form" and afford no less coverage than the primary policy.
- F. **Pollution Liability** insurance. Pollution liability coverage must be included when the scope of the work as defined in the Agreement includes installation, temporary storage, or disposal of any "hazardous" material that is injurious in or upon land, the atmosphere, or any watercourses; or may cause bodily injury at any time.

If required, coverage may be provided in separate policy form or by endorsement to Contractors CGL or RPL. Any form coverage must be equivalent to that provided in ISO form CG 24 15 "Limited Pollution Liability Extension Endorsement" or CG 28 31 "Pollution Exclusion Amendment" with limits of at least \$5,000,000 per occurrence and an aggregate limit of \$10,000,000.

If the scope of work as defined in this Agreement includes the disposal of any hazardous or non-hazardous materials from the job site, Contractor must furnish to the Railroad evidence of pollution legal liability insurance maintained by the disposal site operator for losses arising from the insured facility accepting the materials, with coverage in minimum amounts of \$1,000,000 per loss, and an annual aggregate of \$2,000,000.

Other Requirements

- G. All policy(ies) required above (except worker's compensation and employers liability) must include the Railroad as "Additional Insured" using ISO Additional Insured Endorsements CG 20 26, and CA 20 48 (or substitute forms providing equivalent coverage). The coverage provided to the Railroad as additional insured shall, to the extent provided under ISO Additional Insured Endorsement CG 20 26, and CA 20 48 provide coverage for the Railroad's negligence whether sole or partial, active or passive, and shall not be limited by Contractor's liability under the indemnity provisions of this Agreement.
- H. Punitive damages exclusion, if any, must be deleted (and the deletion indicated on the certificate of insurance), unless the law governing this Agreement prohibits all punitive damages that might arise under this Agreement.
- I. Contractor waives all rights of recovery, and its insurers also waive all rights of subrogation of damages against the Railroad and its agents, officers, directors and employees. This waiver must be stated on the certificate of insurance.
- J. Prior to commencing the work, Contractor shall furnish the Railroad with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements in this Agreement.
- K. All insurance policies must be written by a reputable insurance company acceptable to the Railroad or with a current Best's Insurance Guide Rating of A- and Class VII or better, and authorized to do business in the state where the work is being performed.
- L. The fact that insurance is obtained by Contractor or by the Railroad on behalf of Contractor will not be deemed to release or diminish the liability of Contractor, including, without limitation, liability under the indemnity provisions of this Agreement. Damages recoverable by the Railroad from Contractor or any third party will not be limited by the amount of the required insurance coverage.

EXHIBIT D
TO
CONTRACTOR'S RIGHT OF ENTRY AGREEMENT

MINIMUM SAFETY REQUIREMENTS

The term "employees" as used herein refer to all employees of Contractor as well as all employees of any subcontractor or agent of Contractor.

I. Clothing

- A. All employees of Contractor will be suitably dressed to perform their duties safely and in a manner that will not interfere with their vision, hearing, or free use of their hands or feet.

Specifically, Contractor's employees must wear:

- (i) Waist-length shirts with sleeves.
- (ii) Trousers that cover the entire leg. If flare-legged trousers are worn, the trouser bottoms must be tied to prevent catching.
- (iii) Footwear that covers their ankles and has a defined heel. Employees working on bridges are required to wear safety-toed footwear that conforms to the American National Standards Institute (ANSI) and FRA footwear requirements.

- B. Employees shall not wear boots (other than work boots), sandals, canvas-type shoes, or other shoes that have thin soles or heels that are higher than normal.

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

II. Personal Protective Equipment

Contractor shall require its employees to wear personal protective equipment as specified by Railroad rules, regulations, or recommended or requested by the Railroad Representative.

- (i) Hard hat that meets the American National Standard (ANSI) Z89.1 – latest revision. Hard hats should be affixed with Contractor's company logo or name.
- (ii) Eye protection that meets American National Standard (ANSI) for occupational and educational eye and face protection, Z87.1 – latest revision. Additional eye protection must be provided to meet specific job situations such as welding, grinding, etc.
- (iii) Hearing protection, which affords enough attenuation to give protection from noise levels that will be occurring on the job site. Hearing protection, in the form of plugs or muffs, must be worn when employees are within:

- 100 feet of a locomotive or roadway/work equipment
- 15 feet of power operated tools
- 150 feet of jet blowers or pile drivers
- 150 feet of retarders in use (when within 10 feet, employees must wear dual ear protection – plugs and muffs)
-

- (iv) Other types of personal protective equipment, such as respirators, fall protection equipment, and face shields, must be worn as recommended or requested by the Railroad Representative.

III. On Track Safety

Contractor is responsible for compliance with the Federal Railroad Administration's Roadway Worker Protection regulations – 49CFR214, Subpart C and the Railroad's On-Track Safety rules. Under 49CFR214, Subpart C, railroad contractors are responsible for the training of their employees on such regulations. In addition to the instructions contained in Roadway Worker Protection regulations, all employees must:

- (i) Maintain a distance of twenty-five (25) feet to any track unless the Railroad Representative is present to authorize movements.
- (ii) Wear an orange, reflectorized workwear approved by the Railroad Representative.
- (iii) Participate in a job briefing that will specify the type of On-Track Safety for the type of work being performed. Contractor must take special note of limits of track authority, which tracks may or may not be fouled, and clearing the track. Contractor will also receive special instructions relating to the work zone around machines and minimum distances between machines while working or traveling.

IV. Equipment

- A. It is the responsibility of Contractor to ensure that all equipment is in a safe condition to operate. If, in the opinion of the Railroad Representative, any of Contractor's equipment is unsafe for use, Contractor shall remove such equipment from the Railroad's property. In addition, Contractor must ensure that the operators of all equipment are properly trained and competent in the safe operation of the equipment. In addition, operators must be:
 - Familiar and comply with the Railroad's rules on lockout/tagout of equipment.
 - Trained in and comply with the applicable operating rules if operating any hy-rail equipment on-track.
 - Trained in and comply with the applicable air brake rules if operating any equipment that moves rail cars or any other railbound equipment.
- B. All self-propelled equipment must be equipped with a first-aid kit, fire extinguisher, and audible back-up warning device.
- C. Unless otherwise authorized by the Railroad Representative, all equipment must be parked a minimum of twenty-five (25) feet from any track. Before leaving any equipment unattended, the operator must stop the engine and properly secure the equipment against movement.
- D. Cranes must be equipped with three orange cones that will be used to mark the working area of the crane and the minimum clearances to overhead powerlines.

V. General Safety Requirements

- A. Contractor shall ensure that all waste is properly disposed of in accordance with applicable federal and state regulations.
- B. Contractor shall ensure that all employees participate in and comply with a job briefing conducted by the Railroad Representative, if applicable. During this briefing, the Railroad Representative will specify safe work procedures, (including On-Track Safety) and the potential hazards of the job. If any employee has any questions or concerns about the work, the employee must voice them during the job briefing. Additional job briefings will be conducted during the work as conditions, work procedures, or personnel change.
- C. All track work performed by Contractor meets the minimum safety requirements established by the Federal Railroad Administration's Track Safety Standards 49CFR213.

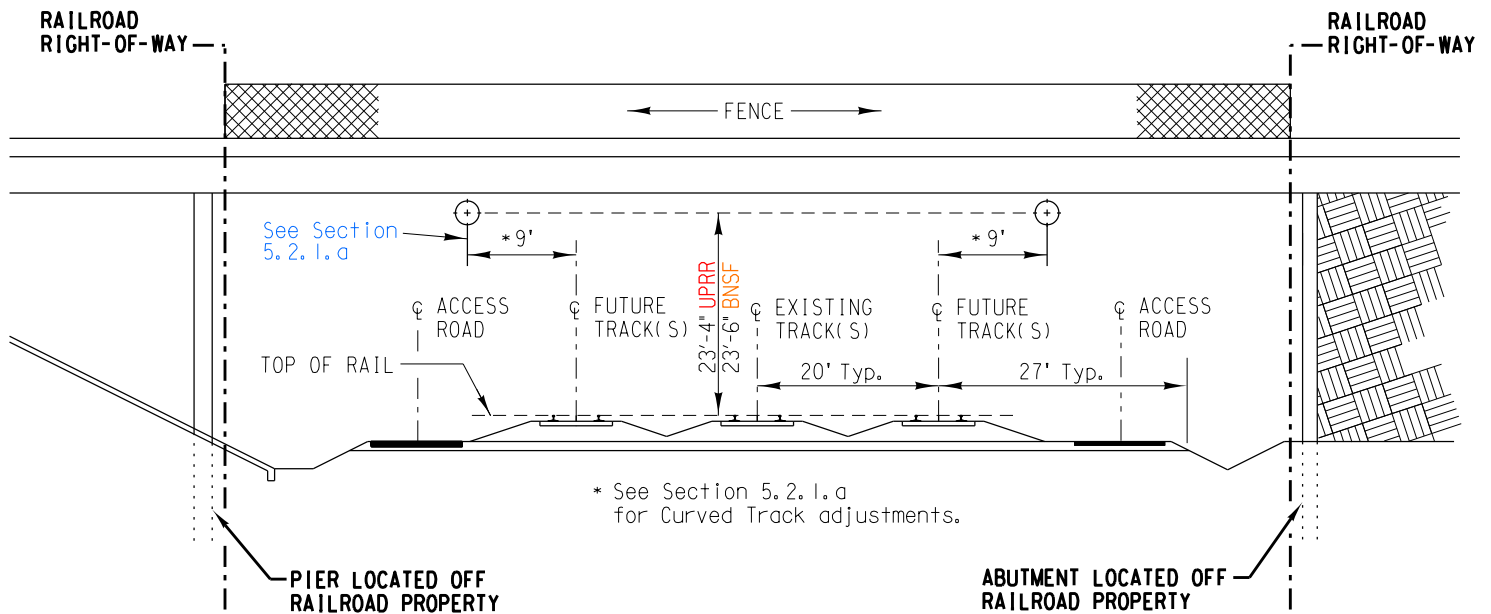
- D. All employees comply with the following safety procedures when working around any railroad track:
- (i) Always be on the alert for moving equipment. Employees must always expect movement on any track, at any time, in either direction.
 - (ii) Do not step or walk on the top of the rail, frog, switches, guard rails, or other track components.
 - (iii) In passing around the ends of standing cars, engines, roadway machines or work equipment, leave at least 20 feet between yourself and the end of the equipment. Do not go between pieces of equipment if the opening is less than one car length (50 feet).
 - (iv) Avoid walking or standing on a track unless so authorized by the employee in charge.
 - (v) Before stepping over or crossing tracks, look in both directions first.
 - (vi) Do not sit on, lie under, or cross between cars except as required in the performance of your duties and only when track and equipment have been protected against movement.
- E. All employees must comply with all federal and state regulations concerning workplace safety.

EXHIBIT F

RAILROAD'S MATERIAL AND FORCE ACCOUNT ESTIMATE

UNION PACIFIC RAILROAD - BNSF RAILWAY

GUIDELINES FOR RAILROAD GRADE SEPARATION PROJECTS



The above depiction is for example purposes only. The individual dimensions are the minimum required. Project specific design plans require the review and prior approval by the Railroad.

It is the intent of the Railroad to maintain the right-of-way free of permanent obstructions such as overhead bridge piers, earth fills and drainage facilities which do not support Railroad infrastructure. Permanent obstructions restrict the Railroad's ability to perform maintenance and expand service to existing and future customers. Keeping the right-of-way unobstructed is not a betterment for the Railroad, it is a necessity.



BRIDGE STANDARDS

GRADE SEPARATION GUIDELINES

COVER PAGE

FILE OWNER: UPRR	DATE: 1/05/16
AUTHORED BY: R. FRIESEN	CHECKED BY: A. HURST

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1. INTRODUCTION

1.1 Purpose

The purpose of these Guidelines is to inform Applicants, Contractors and other parties concerned with Railroad policies of the requirements and standards for the design and construction of Grade Separation Projects. Compliance with these Guidelines is required to expedite the review and approval of design and construction submittals by the Railroad.

Railroad review is limited exclusively to potential impacts on existing and future Railroad operations. The Railroad accepts no responsibility for errors or omissions in the design of grade separation projects by others.

1.2 Definitions

Access Road:

A road used and controlled by the Railroad for maintenance, inspection and repair.

Applicant:

Any party proposing a grade separation project on Railroad right-of-way or other Railroad operating location, regardless of track being active or out of service.

AREMA:

The current edition of the American Railway Engineering and Maintenance-of-Way Association Manual for Railway Engineering.

AASHTO:

The current edition of the American Association of State Highway and Transportation Officials Standard Specifications for Highway Bridges.

BNSF:

Burlington Northern Santa Fe Railway

C & M Agreement:

A Construction and Maintenance Agreement that has been negotiated between the Railroad and the Applicant that addresses all the duties and responsibilities of each party regarding the construction of the proposed grade separation and the maintenance requirements after construction of the said structure.

Construction Documents:

Design plans and calculations, project and/or standard specifications, geotechnical report and drainage report.

Construction Window:

A timeframe in which construction or maintenance can be performed by the Contractor with the required presence of a Flagman.

Contractor:

The individual, partnership, corporation or joint venture and all principals and representatives (including Applicant's subcontractors) with whom the contract is made by the Applicant for the construction of the Grade Separation Project.

Crossover:

A track connection which allows trains and on-track equipment to cross from one track to another.

Engineer-of-Record:

The Professional Engineer that develops the criteria and concept for the project and is responsible for the preparation of the Plans and Specifications.

Final Plans:

100% plans signed & stamped by the Engineer-of-Record.

Flagman:

A qualified employee of the Railroad providing protection to and from Railroad operations per Railroad requirements.

Guidelines:

Information contained in this document or referenced in AREMA or AASHTO.

Grade Separation Project:

A project that includes an Overhead or Underpass Structure that crosses the Railroad right-of-way or other Railroad operating location regardless of track status being active or out of service.

Main Track:

A principle track, designated by Timetable or special instructions, upon which train movements are generally authorized and controlled by the train dispatcher. Main Track must not be occupied without proper authority.

Multiple Main Tracks:

Two or more parallel or adjacent Main Tracks.

Overhead Structure:

A Roadway and/or Trail Structure over the Railroad right-of-way.

Railroad Local Representative:

The individual designated by the Railroad as the primary point of contact for the project.

Railroad:

Refers to BNSF Railway and/or Union Pacific Railroad.

Railroad Manager of Track Maintenance (MTM):

Railroad representative responsible for maintenance of the track and supporting subgrade.

Railroad Right-of-Entry Agreement:

An agreement between the Railroad and an Applicant or a Contractor allowing access to Railroad property.

Railroad Right-of-Way:

The private property limits owned by the Railroad.

Shoofly:

A temporary track built to bypass an obstruction or construction site.

Siding:

A track connected to the Main Track used for storing or passing trains.

Timetable:

A Railroad publication with instructions on train, engine or equipment movement. It also contains other essential Railroad information.

Trail:

A pathway impacting Railroad right-of-way or other Railroad operating locations regardless of track status being active or out of service. This includes pedestrian, bicycle, approved motorized recreational equipment and equestrian uses.

Underpass Structure:

Railroad Structure over a Roadway and/or Trail.

UPRR:

Union Pacific Railroad

Yard:

A system of tracks of defined limits, other than main tracks and sidings, for storing and sorting cars and other purposes.

Yard Limits:

A portion of main track designated by "yard limit" signs and included in the timetable special instructions or a track bulletin.

1.3 Guidelines and References

These Guidelines are provided for reference only and are subject to revision without notice. These Guidelines cannot be taken as authority to construct. Railroad approval of construction documents, execution of a C & M Agreement and Railroad Right-of-Entry Agreement (if applicable) are required prior to beginning construction.

These Guidelines supplement the current (AREMA) Manual for Railway Engineering, AASHTO and State Railroad Regulatory Body requirements.

The AREMA Manual is available from:

American Railway Engineering and Maintenance-of-Way Association

4501 Forbes Boulevard, Suite 130

Lanham, MD 20706

Phone: (301) 459-3200

FAX: (301) 459-8077

www.arema.org

The specific Railroad requirements for a Grade Separation Project, as addressed in this document, shall be followed at all locations where the Railroad operates, regardless of track ownership or track status, either active or out of service.

Any items affecting Railroad property not covered in these Guidelines shall be subject to the Railroad's prior review and approval.

All new or modified Overhead Structures or Underpass Structures shall be designed in accordance with the most current policies, requirements and standards of the Railroad. These guidelines do not apply to existing structures which are not impinged upon by the proposed project.

2. AGREEMENTS

2.1 Applicant and Contractor Responsibility

- a. The Applicant, at its expense, shall be solely responsible for all costs, design, construction, future replacement, maintenance and serviceability of the proposed Grade Separation Project, except as noted otherwise in the C & M Agreement with the Railroad. The Applicant shall develop design plans, including, without limitation, all procedures necessary to construct and maintain the proposed Grade Separation Project, which cause no interruption to Railroad operations during and after construction. The Applicant must verify with the Railroad Local Representative their receipt of the latest version of these guidelines prior to developing Construction Documents.
- b. The Applicant shall be responsible for obtaining all Federal, State, Local and other permits for construction of the Grade Separation Project.
 1. The Engineer-of-Record shall be registered in the state of the project location. The Engineer-of-Record may be Applicant's in-house staff or a consultant retained by the Applicant. The Contractor shall not employ the Engineer-of-Record as the Contractor's Engineer-of-Record or as a specialty engineer, with the exception of design build projects.
- c. The Applicant and/or the Engineer-of-Record have the ultimate responsibility and liability for the Construction Documents and liability for damages to Railroad property during and after construction of the project.
- d. The Contractor is responsible to comply with the construction documents prepared by the Applicant. The Contractor shall comply with Railroad requirements stated in the C & M Agreement prior to the commencement of any construction. The Contractor shall develop work plans that ensure the track(s) remain open to train traffic per Railroad requirements as stated in the C & M Agreement and meet the requirements of the Railroad Right-of-Entry Agreement (if applicable).
- e. The Applicant is responsible for the security and safety of all people including the general public and trespassers, and the protection of Railroad infrastructure within the limits of the proposed Grade Separation

Project. Any damage to Railroad property such as track, signal equipment or structure could result in a train derailment. All damages must be reported immediately to the Railroad Local Representative and to the local Railroad Manager of Track Maintenance (MTM).

- f. The Applicant and Contractor are required to meet all safety standards as defined by the Railroad, Federal Railroad Administration (FRA), Division of Occupational Safety and Health Administration (OSHA), Local, State and Federal Governments and the State Railroad Regulatory Body.

2.2 Railroad Right-of-Way

- a. The Railroad right-of-way accommodates existing tracks, drainage systems, multiple utilities, Access Roads, Railroad support facilities and space for future track(s).
- b. The proposed Grade Separation Project shall not limit existing or future Railroad operating capacity and utility accommodations within the Railroad right-of-way.
- c. Limits of Railroad right-of-way are to be located by the Applicant and identified on the plans.

2.3 Railroad Right-of-Entry Agreement

The Applicant, Contractor or their representatives must sign the Railroad's Contractor's Right-of-Entry Agreement (if applicable) and/or obtain a valid Right-of-Entry permit from the Railroad and comply with all Railroad requirements when working within the Railroad right-of-way limits.

2.4 Construction and Maintenance Agreement

- a. Any Overhead Structure or Underpass Structure impacting the Railroad will require the Applicant to execute a C & M Agreement prior to any construction on Railroad right-of-way.
- b. The C & M agreement shall include a funding source, cost estimate, insurance and indemnification requirements, method of payment, responsibility for design, construction, ownership, maintenance and future replacement.
- c. The Applicant shall own, maintain and replace the proposed Overhead Structure or Underpass Structure at no cost to the Railroad and with no interruption to Railroad operations during construction, maintenance and future replacement of the Structure.
- d. The Railroad shall, at its own expense, be responsible for ownership and maintenance of ballast and track components only.
- e. The Applicant shall provide, at no cost to the Railroad, traffic control and/or detours to allow occupation of the roadway by the Railroad or its Contractor to perform periodic inspections as required.
- f. The Applicant is responsible for performing the work in accordance with the terms specified in the C & M Agreement. This responsibility includes, without limitation, compliance with all Railroad requirements, Federal, State and Local Laws and applicable county or municipal ordinances and regulations.

2.5 Railroad Review of Submittals and Construction Observation

- a. Prior to any review, the Railroad Local Representative shall receive written notice from the Applicant agreeing to pay all costs associated with the Railroad's, or its consultant's, review of the design plans, construction documents and construction monitoring phase.
- b. The estimated costs shall not be the upper limit of the costs but will provide a guideline for budgeting purposes. Regardless, all actual costs incurred by the Railroad, or its consultants, during the review of design plans, construction documents, and construction monitoring phase shall be fully recoverable from the Applicant.

2.6 Approval Expiration

Written approval of Final Plans will be valid for two years from the date of approval by the Railroad unless otherwise provided in the C&M Agreement. If construction of the approved structure has not begun within this period, the Railroad shall have the right to perform a design review, at the cost of the Applicant, to confirm compliance with the Railroad's then-current Guidelines before a Railroad Right-of-Entry Agreement is issued to begin construction.

3. SUBMITTALS

3.1 Railroad Review Process

All design and construction submittals shall be transmitted to the Railroad Local Representative. The submittal will then be forwarded to the Railroad's engineering department. The engineering department shall have the option of reviewing the project documents in-house or by using an outside consultant. During the review process, the Railroad Local Representative shall be the point of contact for resolving outstanding issues.

It should be noted that the Railroad's review and approval of construction documents does not relieve the Applicant and/or Engineer-of-Record from the ultimate responsibility and liability for damages to Railroad property during and after construction of the proposed Grade Separation Project, nor does it relieve the Applicant and the Contractor from their responsibilities, obligations and/or liabilities under the C & M agreement and the Contractor's Right-of-Entry Agreement (if applicable). Railroad's approval of construction documents will be given with the understanding that the Railroad makes no representations or warranty as to the validity, accuracy, legal compliance or completeness of such documents and that any reliance by the Applicant, Engineer-of-Record or Contractor on such documents is at the risk of Applicant, Engineer-of-Record and Contractor.

3.2 Requests for Exception

- a. Requests for exception to Railroad requirements shall be submitted to the Railroad for review. The Railroad may approve or reject any request for exception. Approval from the Railroad is required prior to proceeding with an exception.
- b. Provide written engineering justification for proposed requests for exception
- c. The request should succinctly describe the geometric, structural and other constraints which justify the request. Cost alone should not be the determining factor.

3.3 Contractor Review

The Contractor must review all construction submittals to ensure that the materials and proposed method of construction are compatible with the existing site conditions. The Contractor's work plan must be developed to allow Railroad traffic to remain in service per Railroad requirements and the C&M agreement.

3.4 Applicant and/or Engineer-of-Record Review

The Applicant and/or Engineer-of-Record must review and approve each construction submittal for compliance with the construction documents, AREMA and/or AASHTO, and these Guidelines before forwarding the submittal to the Railroad for review and approval.

3.5 Design Calculations

Design calculations shall be provided for all structures except Overhead Structures. Design Calculations shall be clear, legible and easy to follow. Computer program generated output or data sheet calculations shall be accompanied by input data information and sample calculations to verify the accuracy of the computer output.

3.6 Geotechnical Report

A geotechnical report shall be provided addressing all bridges and retaining walls. The preliminary geotechnical report shall include enough information to support foundation design calculations and backfill design requirements. The final geotechnical report shall have recommendations consistent with those used in the final structural design.

3.7 Drainage Report

A hydraulic and hydrologic report is required if the Grade Separation Project changes existing drainage patterns and/or drainage flow on Railroad right-of-way or at the request of the Railroad. See [Section 4.5](#) for hydraulic criteria to be used.

3.8 Units

All controlling dimensions, elevations, design criteria, assumptions and material stresses shall be expressed in English units. Dual units with English units in parenthesis are acceptable for projects that require the use of Metric units per Federal, State and/or Local government requirements.

3.9 Submittal Schedule

- a. The Applicant shall schedule submittals per [Tables 3-1](#) or [3-2](#) to ensure adequate time for review.
- b. Submittals which do not follow the schedules as outlined in these tables may require greater review time than that shown in the table by the Railroad. Partial, incomplete or inadequate submittals will be rejected, thus delaying the approval.
- c. The Applicant shall not expect a lesser time for review than indicated in the tables nor shall the Railroad be responsible for delayed design and construction.
- d. Revised submittals will follow the same procedure as the initial submittal until all issues are resolved. At the Final Plan submittal, prior to submission to the Railroad, all design plans and calculations, project specifications/Special Provisions, the geotechnical report and the drainage report must be signed and stamped by a registered Professional Engineer familiar with the Railroad requirements and licensed in the State where the project is located.

3.10 Design and Construction Submittals

Following their own internal review and approval the Applicant or their representative shall submit, at a minimum, all applicable submittals defined in [Tables 3-1](#) or [3-2](#) to the Railroad Local Representative for review and approval. The Engineer-of-Record's review comments must be submitted to the Railroad along with the submittal.

Table 3-1, Overhead Structures

Phase		Type of Submittal	Format	Railroad Review Time
Design	A	Concept (Plans and Site Pictures)	PDF only*	4 weeks**
	B	30% (Applicant response, Design Plans, Project Specifications, Drainage Report & Plan, Shoofly Design, Construction Phasing Plans)	PDF only*	4 weeks**
	C	Final Plans (Applicant response, Design Plans, Project Specifications, Drainage Report & Plan, Shoofly Design, Construction Phasing Plans)	PDF only*	4 weeks**
Construction		(Including but not limited to the following) Shoring Falsework Demolition Erection Erosion Control Construction Phasing Plans	PDF only *	4 weeks**

* Submittal Format (The following submittal formats are all required.)

PDF – The pdf shall be formatted to reproduce legibly on 11" x 17" sheets.

** Submittals which do not follow the schedules as outlined in these tables, are partial, incomplete or inadequate may require greater review time.

(cont'd)

- A.** The Concept submittal shall, at a minimum, include the following:
1. Plan, Elevation and Typical Section of proposed grade separation. See [pg 37, Plan No. 711100, sheet 1](#).
 2. Preliminary phasing plan.
 3. Photo log with pictures of the proposed project location. Site pictures shall be in all controlling directions including but not limited to, North, East, South and West. The plan view should show a reference location and direction for each picture.
- B.** The 30% submittal shall, at a minimum, include the following:
1. Applicant response to Railroad review comments on the concept submittal. The 30% submittal shall reflect concept review comments.
 2. Design Plans showing a Plan View, Elevation View, Typical Section, Construction Notes and Railroad Profile Grade Diagram. See [pg 37 & 38, Plan No. 711100, sheet 1 & 2](#). Plans shall also indicate structure design criteria and construction methods.
 3. Project Specifications and/or Special Provisions, including Railroad coordination requirements.
 4. Drainage Report, as required. (See [Section 3.7](#)).
 5. Shoofly Design. Bridge general plan shall show the location of the shoofly and indicate the footprint of the structure in relation to centerline of shoofly and existing track(s). See [Section 4.2.1](#).
 6. Construction Phasing Plans. Construction phasing plans must show all required phasing, construction procedures, temporary shoring layout, controlling dimensions and elevations.
- C.** The Final Plans submittal shall, at a minimum, include the following:
1. Applicant response to Railroad review comments on the 30% submittal. The Final Plans submittal shall reflect all previous review comments.
 2. Design Plans showing a Plan View, Elevation View, Typical Section, Construction Notes and Railroad Profile Grade Diagram. See [pg 37 & 38, Plan No. 711100, sheet 1 & 2](#). Plans shall also indicate structure design criteria and construction methods.
 3. Project Specifications and/or Special Provisions, including Railroad coordination requirements.
 4. Drainage Report, as required. (See [Section 3.7](#)).
 5. Shoofly Design. Bridge general plan shall show the location of the shoofly and indicate the footprint of the structure in relation to centerline of shoofly and existing track(s). See [Section 4.2.1](#).
 6. Construction Phasing Plans. Construction phasing plans must show all required phasing, construction procedures, temporary shoring layout, controlling dimensions and elevations.

Following review of the Final Plans and resolution of any outstanding issues the Railroad Local Representative may issue a letter of project acceptance.

Table 3-2, Underpass Structures

Phase		Type of Submittals	Format	Railroad Review Time
Design	A	Concept (Plans and Site Pictures)	PDF *	4 weeks***
	B	30% (Applicant response, Type Selection Report, Design Plan, Shoofly, Construction phasing)	PDF *	
	C	60% (Applicant response, Design Plans and Calculations, Geotechnical Report, Project Specifications and/or Special Provisions, Drainage Report and Plan, Shoofly Design, Construction phasing)	PDF *	6 weeks***
	D	Final Plans (Applicant response, Design Plans and Calculations, Geotechnical Report, Project Specifications and/or Special Provisions, Drainage Report and Plan, Shoofly Design, Construction phasing)	PDF & 1 hard copy **	4 weeks***
Construction		(Including but not limited to the following) Construction Phasing Plan Shoring Falsework Demolition Erection Erosion Control Construction Material Certifications Concrete Mix Design Structural Steel, Rebar and Strand Certifications 28 day Cylinder Test of Concrete Strength Waterproofing Material Certification Test reports for fracture critical members Foundation Construction Reports (eg.: pile driving records, caisson drilling and/or crosshole sonic log testing for drilled shafts.) Other project specific information as requested by the Railroad	PDF *	4 weeks***
Project Closing	E	As Built (Final Plans, Construction Documents, Shop Plans, Pile Driving Records.)	PDF *	N/A

* Submittal Format (The following submittal formats are all required.)

PDF – The pdf shall be formatted to reproduce legibly on 11” x 17” sheets.

** Submittal Format (The following submittal formats are all required.)

PDF – The pdf shall be formatted to reproduce legibly on 11” x 17” sheets.

Hard copy – One legible hard copy on 11” x 17” sheets.

*** Submittals which do not follow the schedules as outlined in these tables, are partial, incomplete or inadequate may require greater review time.

A. The Concept submittal shall, at a minimum, include the following:

1. Plan, Elevation and Typical Section of proposed grade separation.
2. Preliminary phasing plan.
3. Photo log with pictures of the proposed project location. Site pictures shall be in all controlling directions including but not limited to, North, East, South and West. The plan view should show a reference location and direction for each picture.

- B.** The 30% submittal shall, at a minimum, include the following:
1. Applicant response to Railroad review comments on the concept submittal. The 30% submittal shall reflect concept review comments.
 2. Structure Type Selection Report.
 3. Design Plans showing a Plan View, Elevation View, Typical Section and Railroad Profile Grade Diagram. See [pg 41, Plan No. 711200, sheet 1](#) for additional details. Plans to include general notes to indicate structure design criteria, construction methods and material compliance specifications.
 4. Shoofly Design. Bridge general plan shall show the location of the shoofly and indicate the footprint of the structure in relation to centerline of shoofly. See [Section 4.2.1](#).
 5. Construction Phasing Plans. Must show all required phasing, construction procedures, temporary shoring layout, controlling dimensions and elevations.
- C.** The 60% submittal shall, at a minimum, include the following:
1. Applicant response to Railroad review comments on the 30% submittal. The 60% submittal shall reflect 30% review comments.
 2. Design Plans and calculations including superstructure and substructure details, bearing details, deck and waterproofing details, miscellaneous bridge details, and a complete set of structural calculations (See [Section 3.5](#)).
 3. Geotechnical Reports/recommendations (See [Section 3.6](#)).
 4. Project Specifications and/or Special Provisions, including Railroad coordination requirements.
 5. Drainage Report, as required. (See [Section 3.7](#)).
 6. Shoofly Design plans and alignment data.
 7. Construction Phasing Plans. Must show all required phasing, construction procedures, temporary shoring layout, controlling dimensions and elevations.
- D.** The Final Plans submittal shall, at a minimum, include the following:
1. Applicant response to Railroad review comments on the 60% submittal.
 2. Revisions to plans and calculations as dictated by review of the 60% submittal.
 3. Geotechnical Reports (See [Section 3.6](#)).
 4. Project Specifications and/or Special Provisions, including Railroad coordination requirements.
 5. Drainage Report, as required. (See [Section 3.7](#)).
 6. Shoofly Design plans and alignment data.
 7. Construction Phasing Plans. Must show all required phasing, construction procedures, temporary shoring layout, controlling dimensions and elevations.
- E.** The As-Built submittal shall, at a minimum include the following:
1. As-Built plans.
 2. Construction Documents.
 3. Shop Plans.
 4. Pile Driving Records.

The Applicant or their representative shall submit As-Built documents for all Underpass Structures to the Railroad Local Representative after completion of the bridge structure and prior to closing the project.

4. GENERAL REQUIREMENTS FOR GRADE SEPARATION PROJECTS

The recommendations provided within this Section are intended for all Grade Separation Projects impacting the Railroad. All Grade Separation Projects shall be designed in accordance with the requirements in this section and the specific requirements of all applicable sections within these Guidelines.

4.1 Grade Separation Structure Type

- a. The most effective method for reducing interference to Railroad operations for construction of Grade Separation Projects is to use an Overhead Structure and avoid an Underpass Structure.
- b. The Railroad discourages Underpass Structures due to safety concerns, possible interruption to Railroad operations, cost, and limitation of future replacement and maintenance.
 - 1. The Railroad recommends the use of an Overhead Structure which can be designed and constructed without interruption to Railroad operations.
- c. If an Underpass Structure is required the project must temporarily reroute train traffic around the construction site by utilizing a Shoofly track subject to local operating review and approval. Shoofly track(s) shall be designed per [Section 4.2.1](#).
- d. The analysis of Cost-Benefit ratio shall be fully considered before the structure type is finalized. Cost-Benefit ratio must include all costs associated with interruption to Railroad operations during construction of the proposed structure and/or future replacement structure in addition to future maintenance and other applicable costs. However, economy alone shall not be the governing factor in determining structure type.

4.2 Railroad Operational Requirements

- a. The proposed design plans shall allow the Contractor to execute a work plan that enables the track(s) to remain in service and shall cause no interruption to the Railroad's operation during construction.
- b. The Applicant shall contact the Railroad Local Representative in the concept design stages to determine the Railroad operation requirements.
- c. Construction activities that impact Railroad operations must be coordinated with the Railroad. The proposed staging and phasing must be reviewed and approved by the Railroad at the concept stage and subsequent stages. Special Provisions must include Railroad coordination to improve Contractor understanding of Railroad requirements prior to letting of the proposed Grade Separation project.

4.2.1 Shoofly Track(s)

- a. Shoofly track shall be designed for maximum authorized timetable speed, for freight and/or passenger trains, per Railroad track standards and operating requirements.
- b. The proposed shoofly must be designed to account for track settlement.
- c. Construction staging shall be designed to keep the Railroad tracks fully operational at all times except for pre-approved construction windows during cut over operations.
- d. The Applicant must schedule track related submittals per [Table 3-1 or 3-2](#) for Railroad review and approval.
- e. Temporary railroad bridges used for a shoofly must be designed in accordance with AREMA and these Guidelines. Temporary open deck bridges with walkways may be used if a protective cover over the roadway and sidewalks is provided or if the roadway is closed to traffic during construction.
- f. Applicant must contact the Railroad's Local Representative for additional specific restrictions which may apply to the individual Railroad.

4.2.2 Future Track(s)

It is required to investigate the need for future tracks during the conceptual design phase of grade separation structures. Future tracks shall be shown on the plans. See [Section 4.2.3](#) for future freight and commuter track spacing. Space is to be provided for one or more future tracks as required for long range planning or other operating requirements.

4.2.3 Track Spacing and Shifting

- a. The Railroad may require additional clearance to allow shifting of existing tracks according to current track spacing standards, business requirements, operating needs and safety standards. Future track shifting and

direction of shifting must be verified at the preliminary stage of the feasibility study for the proposed Grade Separation Project.

- b. Future freight track centerline shall be located a minimum of 20 feet from the centerline of the nearest existing track.
- c. Future commuter track centerline shall be located a minimum of 25 feet from the centerline of nearest existing or future freight track.
- d. Required spacing for yard or industrial tracks must be verified at the conceptual design stage.

4.2.4 Access Road

- a. It is required to investigate the need for access roads during the conceptual design phase of grade separation structures.
- b. The outside edge of the Access Road shall be located a minimum of 27 feet from the centerline of the nearest existing or future track.
- c. Grade Separation design should include adequate access to existing Railroad facilities along and/or within its right-of-way.
- d. Where provisions are made for more than two tracks, space is to be provided for an Access Road on both sides of the tracks.
- e. The minimum vertical clearance over the outside of access road(s) shall be 18 feet.
- f. For Underpass Structures, access may consist of a:

- 1. Road on the bridge.

If the bridge maintenance Access Road is part of the main railway structure, the structure shall be designed for Cooper E-80 live load to accommodate any future track needs or modifications. A removable barrier shall be provided to separate the nearest track from the Access Road by retaining the ballast.

- 2. Road on a separated bridge.

If the bridge maintenance access is a completely separate structure it shall be designed for applicable AASHTO live load. The Access Road width shall be 13 feet to accommodate one lane with curbs and railing.

- 3. Road with turnarounds.

If a bridge maintenance structure is not provided, an Access Road with a turnaround shall be designed and constructed in conjunction with the grade separation bridge structure. The turnaround pad shall start no further than 30 feet from the end of the bridge structure with the embankment shoulder a minimum of 60 feet from centerline of track. The radius for the turnaround shall be a minimum of 50 feet. Roadway grade shall not exceed 10% and shall terminate at the sub-ballast elevation. The roadway shall have sufficient width to provide for one 13 foot wide road, drainage ditch and shoulder. The turnaround pad and roadway shall be sloped to drain away from the track and carry the water to a drainage system or existing Railroad right-of-way ditches.

4.3 Structure Separation

- a. Vertical and horizontal structure separations shall be subject to the Railroad's existing, proposed or future structure type, size, location and other site constraints.
 - 1. Non Railroad Structures

All non Railroad structures, with the exception of Access Road structures running adjacent to existing or proposed Railroad structures, shall be outside the Railroad right-of-way limits or as far away as practical.

 - i. Clear horizontal separation between parallel structures shall never be less than 25 feet, measured perpendicular from proposed structure(s) to existing or future Railroad structure(s).
 - ii. Clear horizontal separation between structures perpendicular to Railroad structures shall never be less than 200 feet from the nearest Railroad structure abutment. Replacement of existing structures on existing roadway alignment may be granted exception, as approved by the Railroad.
 - 2. Railroad Structures

Horizontal separation between Railroad structures, including Railroad Access Road structures, shall be a minimum of 5 feet clear.

4.4 Construction

- a. Railroad's review and approval of construction submittals defined in [Table 3-1](#) or [3-2](#) are required.
- b. It is essential that the construction proceed with no interference to Railroad operations. Continuity of safe rail operation will be required for the duration of the project.
 - 1. The most effective method for maintaining Railroad traffic is to temporarily reroute Railroad traffic around the construction site using a Shoofly. Shoofly's shall be designed per [Section 4.2.1](#).
- c. The Applicant and it's Contractor are responsible to comply with construction documents approved by the Railroad.
- d. The Engineer-of-Record and the Applicant shall evaluate the quality of materials furnished and work performed by the Contractor. All field inspection reports, quality control reports and final As-Built plans shall be submitted to the Railroad.
- e. The project site shall be inspected by the Railroad, at the Applicant's expense during construction and toward the end of construction, for final acceptance before the Contractor demobilizes.
- f. The review of construction submittals and observation of the construction site shall neither relieve the Applicant, Engineer-of-Record nor the Contractor from the ultimate responsibility and liability for the construction on or damages to Railroad property during and after construction of the project.

4.4.1 Temporary Construction Clearances

- a. Temporary horizontal and vertical construction clearances shall be shown on the plans for all Grade Separation Projects. Every effort must be made to design for greater clearances. [See pg 36, Plan No. 711000, Sheet 1.](#)
- b. Greater clearances may be required for special cases to satisfy local operating conditions such as required sight distance for signals.
- c. Reduced temporary construction clearances, which are less than construction clearances defined in [Section 4.4.1.1](#) and [4.4.1.2](#), will require special review and prior approval by the Railroad.

4.4.1.1 Vertical Construction Clearances

- a. A minimum temporary vertical construction clearance of 21'- 6" measured above top of high rail for all tracks shall be provided. The required minimum temporary vertical clearance shall not be violated due to deflection of formwork.

4.4.1.2 Horizontal Construction Clearances

- a. A minimum temporary horizontal construction clearance of 15'- 0", measured perpendicular from the centerline of the nearest track, to all physical obstructions including but not limited to: formwork, stockpiled materials, parked equipment, bracing or other construction supports, shall be provided.
- b. In curved track the temporary horizontal construction clearances shall increase either 6 inches total or 1.5 inches for every degree of curve, whichever is greater.
- c. Temporary horizontal construction clearance shall provide sufficient space for drainage ditches parallel to the standard roadbed section or provide an alternative system that maintains positive drainage.

4.4.2 Shoring

All temporary shoring systems that impact Railroad operations and/or support the Railroad embankment shall be designed and constructed per the Railroad Guidelines for Temporary Shoring.

4.4.3 Demolition

All demolition within the Railroad right-of-way, or which may impact Railroad tracks or operations, shall comply with Railroad demolition requirements.

4.4.4 Erection

- a. Erection over the Railroad right-of-way shall be designed to cause no interruption to Railroad operations. Erection plans shall be developed such that they enable the track(s) to remain open to train traffic per Railroad requirements.
- b. Prior to the release of Railroad traffic, components erected over Railroad tracks must be supported by falsework or permanent substructure, must be secured and stable and must not be supported by cranes or other construction equipment.

4.4.5 Falsework

Falsework clearance shall comply with minimum temporary construction clearances per [Section 4.4.1](#). The design of all structural members for falsework shall comply with AREMA as well as Railroad requirements.

4.4.6 Vegetation

Vegetation to be planted on or immediately adjacent to Railroad right-of-way shall not become a fire hazard to track-carrying structures and/or an obstruction to inspection and maintenance of the structures.

4.5 Drainage

- a. Maintaining Existing Drainage System
 1. The proposed construction shall safely pass high flows and not inhibit low flows, alter the path of the existing drainage system nor increase the drainage on to the Railroad right-of-way. Railroad corridors are constructed with a drainage system designed to keep runoff away from the tracks and ballast. This drainage system includes the parallel ditches along the embankments as well as the bridges, culverts, siphons and other structures that convey runoff beneath the tracks or serve as water-equalizing structures.
- b. Changes to Existing Drainage System
 1. When changes in the drainage system are contemplated by new or replacement construction, or because of drainage problems, the system shall be modified as required to accommodate current-condition runoff including any changes that have occurred in the drainage pattern. The size of the proposed drainage system must conform to the Railroad Hydraulic Criteria described in [Section 4.5.1](#) and [4.5.2](#).
 2. A complete hydrologic and hydraulic study is required whenever new or additional drainage is added to the Railroad right-of-way, or when a drainage structure is scheduled to be added, removed, modified or replaced. The Drainage Report must be in compliance with the requirements described in these Guidelines.

4.5.1 (UPRR only) Hydraulic Criteria for Bridge and Culvert Openings

- a. New and replacement structures as well as project effects to existing structures shall meet the following requirements.
 1. Structures shall be sized to not exceed two high water elevations designated "low chord" and "subgrade." [See Table 4-1](#).
 - i. Low Chord – The water surface elevation for a given flood, per [Table 4-1](#), will not rise above the crown of a culvert or low chord of a bridge.
 - ii. Subgrade – The energy grade line for a given flood, per [Table 4-1](#), will not rise above the bottom of the adjacent subgrade elevation. The bottom of subgrade is defined as 2'- 3" below base of rail elevation.
 2. Provide the energy grade line, water surface elevation and velocity flow for both the existing and proposed hydraulic opening.
 3. In sizing culverts, to the extent practicable, the maximum headwater-to-diameter ratio must be limited to 1.5.
 4. Both the Railroad criteria and local flood flow criteria shall be evaluated and the more conservative of the two shall be adopted in sizing the replacement.

(cont'd)

Table 4-1, High Water Criteria

	Low Chord (Water Surface Elevation limit)	Subgrade (Energy Grade Line limit)
Main Track	50-year flood	100-yr flood
* Secondary or Industry Track	25-year flood	50-year flood
Any Track in FEMA Floodplain	50-year flood (UPRR) 100-year flood (BNSF)	100-year flood

* If the proposed structure is immediately adjacent to a main line bridge(s), or will impact mainline track, the low chord criteria and subgrade criteria shall be as required for Main Track.

4.5.2 (UPRR only) Hydraulic Criteria for Drainage Systems Parallel to Railroad Tracks

- a. The Subgrade criterion per [Section 4.5.1.a.1.ii](#) is to be applied for parallel ditches, open channels and other drainage systems parallel to Railroad tracks.
- b. For open ditches conveying Railroad drainage, refer to the following design standards:
 1. [UPRR Standard Drawings 0001, 0002 & 0003 \(Web Link to Standards\)](#).
- c. Sufficient lateral and vertical clearance must be provided to accommodate construction of the standard flat-bottom railroad ditch or another ditch section based upon the 100 year event; whichever produces the larger ditch. Anything less than this standard is an exception and must be supported by a hydrology and hydraulics report which requires the prior review and approval of the Railroad.
- d. In cases where Railroad's standard hydraulic criteria is not applicable due to topography of the track bed and surrounding ground, the Railroad standard flat-bottom drainage ditch (trapezoidal, 10 ft bottom width, a minimum of 2:1 side slopes, with flowline elevation a minimum of 3 ft below the subgrade elevation) must be incorporated.
- e. Where acquisition of adequate right-of-way is a limiting factor or site characteristics justify smaller drainage systems, a request for variance with sufficient supporting documents must be submitted to the Railroad for consideration.
- f. The applicant must provide hydraulic data (energy grade line, water surface elevation and velocity) for both existing and proposed conditions.
- g. Consideration shall be given to the effects of localized and contraction scour and mitigation, if deemed necessary, and shall be shown on the design plans.

4.5.3 (BNSF only) Hydrologic and Hydraulic Design Criteria

- a. The BNSF Hydrologic and Hydraulic Design Criteria is available upon request.
- b. Systems parallel to Railroad tracks shall be sized according to the BNSF Hydrologic and Hydraulic Design Criteria or the most recent BNSF Standard Roadbed Sections which are available upon request.

4.6 Erosion and Sediment Control

- a. General plans for construction within the Railroad right-of-way shall indicate the proposed methods of erosion and sediment control. They must specifically provide means to prevent sediment accumulation in the ditches and culverts, to prevent fouling the track ballast and sub-ballast and to allow free flow of runoff in the drainage systems during and after construction.
- b. Corrective and/or mitigative construction due to the fouling of Railroad ballast, sub-ballast, ditches, culverts or drainage systems will be at the Applicant's expense. It is the Applicant's responsibility to document the condition of the site before and after construction.
- c. Existing track ditches shall be maintained open at all times throughout the construction period. After the construction is complete, all erosion and sediment control devices must be removed, all sediment deposits removed and the entire project area restored to the pre-construction condition.
- d. The Applicant and/or Contractor are responsible for securing the required permits from Local, State and Federal entities. The Applicant and/or Contractor shall furnish the Railroad all copies of the Storm Water Pollution

Prevention Plan (SWPPP) and approved permits, if required. Further, these documents shall be available on-site during all construction activities. Approval of the erosion and sediment control plan does not relieve the Contractor, Applicant and/or Engineer-of-Record of the ultimate responsibility and liability for compliance with erosion and sediment control requirements.

4.7 Fencing

- a. Where laws or orders of public authority prescribe a higher degree of protection than specified in this section, the higher degree of protection so prescribed shall be deemed a part of this section.
- b. Fence Types
 1. Chain Link – Openings shall not exceed 2 inches.
 2. Wrought Iron Picket Fence – Openings shall not exceed 3 inches and may be used in locations where trespassers may cut a chain link fence.
 3. All Architectural Fencing – Shall require prior review and approval by the Railroad. Architectural fencing shall not allow an opening of more than 2 inches and shall be designed to prevent climbing.
 4. High Security – Locations with trespasser issues, or for reasons deemed applicable by the Railroad, require high security fence design as approved by the Railroad.
- c. Right-of-way fencing
 1. Fencing shall be provided to safeguard the general public and prevent trespassers from entering the Railroad right-of-way and accessing the track or other Railroad structures. Each project will be evaluated on a case by case basis.
 - i. Location – Where possible, fencing shall be located outside the limits of the Railroad right-of-way. Fence may be required on top of abutments, wingwalls, retaining walls, and/or along the Railroad right-of-way.
 - ii. Height – The fencing shall be a minimum height of 8 feet.
 - iii. Length
 1. For projects crossing Railroad Tracks - Fencing shall extend 500 feet, or as site constraints permit, in each direction along the Railroad right-of-way, outside the Railroad right-of-way, at locations as deemed necessary by the Railroad to prevent trespassing.
 2. For projects parallel to Railroad Tracks - Fencing shall extend the entire length of the parallel encroachment on Railroad right-of-way at locations as deemed necessary by the Railroad to prevent trespassing.
- d. Overhead grade separation structure fencing, see [Section 5.4.c](#).

4.8 Retaining Walls

- a. Retaining walls shall be designed to withstand lateral earth and water pressures, any live load and dead load surcharge, the self-weight of the wall, temperature and shrinkage effects, earthquake load and any other applicable loads.
- b. Retained embankment within 50 feet of the centerline of Railroad tracks, supporting Railroad infrastructure and/or within the Railroad right-of-way, shall be of a type approved by the Railroad.
- c. Walls Supporting Railroad Embankment - Shall be of a type approved by the Railroad and shall be designed in accordance with Railroad requirements and the general design principles specified in AREMA.
- d. Walls Not Supporting Railroad Embankment - Shall be designed in accordance per the appropriate codes and specifications and shall be located outside the Railroad right-of-way limits.
- e. Mechanically Stabilized Earth (MSE)
 1. MSE walls are not acceptable for support of railroad embankment.
 2. MSE walls supporting roadways above track level are not acceptable within the Railroad right-of-way or within 50 feet of the centerline of existing or future tracks.
 - i. Use of MSE walls on the Railroad right-of-way, not supporting railroad embankment, require written justification and request for variance for the proposed design. Requests for variance may be rejected.
 - ii. Abutment Protection - Design of approved requests for MSE walls on the Railroad right-of-way, or within 50 feet of the centerline of existing or future track, shall meet the following requirements. The MSE wall shall be at least 2.5 feet thick for a height of at least 12 feet above the top of rail of

nearest existing or future track. Additionally, the bridge abutments shall be supported by deep foundations.

1. Abutments designed without the additional protection as described above should, at a minimum, be designed to:
 - i. Support the future additional weight of the abutment protection as required by Section 4.8.e.ii.
 - ii. Account for any additional width of the abutment protection which would reduce the clearance from the centerline of track to the near face of the abutment.
 2. Should the applicant require the future pier protection to be designed beyond the requirements of [Section 4.8.e.2.ii](#), such designs shall be incorporated per [Section 4.8.e.2.ii.1](#).
 - i. Design requirements greater than required by [Section 4.8.e.2.ii](#) shall not be the current nor future responsibility of the Railroad to identify, incorporate and/or design should any pier be deemed necessary of pier protection.
- f. Barrier rail and fencing needs for retaining walls are subject to the retaining wall location and Railroad operating requirements. Barrier rail and fencing shall be placed in a manner to safeguard the general public while securing the Railroad right-of-way. Barrier rail and fencing shall be designed per [Section 5.4](#).

4.9 Embankment Surcharge

For all tracks located near a proposed embankment causing the track bed to be surcharged, the contractor must monitor and record top-of-rail elevations and track alignment. The movement shall be within the limits defined by local Railroad Manager of Track Maintenance (MTM). Displacements exceeding the limits defined by the MTM must be immediately reported to the Railroad. The track shall be adjusted as needed at the expense of the Applicant.

4.10 Utilities

- a. All new or relocated utilities within the Railroad right-of-way will require Railroads prior review and approval.
- b. The Applicant shall be responsible for the identification, location, protection and relocation of all existing overhead and underground utilities. The design plans for the proposed Grade Separation Project shall include complete information on existing and/or proposed relocation of said utilities.
- c. A Railroad Right-of-Entry Agreement (if applicable), per [Section 2.3](#), is required to survey or abandon existing utilities within the Railroad corridor. The Railroad has no obligation to provide property for relocated utilities that do not comply with Railroad's standard specifications and requirements including, without limitation, AREMA and these Guidelines.
- d. No utility attachments will be permitted on Underpass Structures. Existing or future fiber optic lines shall be placed underground and away from the bridge structure.
- e. Appropriate measures for the installation, protection and relocation of fiber optic cables as well as Railroad signal and communication lines shall be addressed in the plans and contract documents. For Railroad requirements and additional information refer to:

UPRR: www.uprr.com

For UPRR Fiber Optic Engineering, "Call Before You Dig", call 1-800-336-9193

For UPRR Grade Crossing/Signal Hotline, call 1-800-848-8715

Please refer to UPRR web site for utility review and approval process and Application.

BNSF: www.bnsf.com

For BNSF Signal/Telecommunications Engineering, "Call Before You Dig", call 1-800-533-2891

For BNSF Grade Crossings, call 1-800-832-5452

Please refer to BNSF web site for utility review and approval process and Application.

4.11 Construction Management Team

For construction of grade separated structures an experienced Construction Management Team will be required during the construction of the bridge structure. Public agencies with qualified bridge structure staff placed on-site during construction will be acceptable; otherwise an outside team must be obtained. Railroad participation during construction is required as indicated in [Section 4.11](#).

The following are minimum requirements for the Construction Management Team:

- a. The Applicant is to submit names and qualifications of person(s) to be used in the project and their assigned duties.
- b. Provide for a qualified quality control inspector to be present during fabrication of steel spans and any major prestressed concrete items.
- c. Provide a list of past projects that each person has actively worked on, including bridge structures (highway or rail), underground facilities and drainage structures.
- d. Provide a verifiable list of employment including a current resume for each person in the Construction Management Team.
- e. Minimum personnel for the Construction Management Team for a typical grade separation structure will consist of:
 1. Project Manager – Primary point of contact, with experience in managing construction projects, for the Construction Management Team.
 2. Resident Engineer – The resident Engineer for the project shall be a registered Civil Engineer with minimum 5 years experience in the field of bridge construction work.
 3. Construction Engineer – A Construction Engineer performs complex professional engineering work in the management of major construction projects from design through completion.
 4. Construction Inspector – Construction Inspector shall perform continuous inspection of construction projects for compliance with plans, specifications and contract documents. The inspector shall be familiar with concrete and steel bridge construction and have current certifications in the fields of inspection involved.
- f. Railroad review and approval of duties, responsibilities, education and experience for each of the above listed members of the Construction Management Team will be required.
- g. All field members of the Construction Management Team are required to have passed and comply with the FRA and Railroad requirements regarding Railroad track safety, bridge fall protection and/or contractor orientation training.

4.12 Railroad Site Observation During Construction

In addition to the office review of submittals, site observation will be performed by the Railroad at significant points during construction, including but not limited to the following, if applicable:

- a. Underpass Structure
 1. Pre-construction meeting.
 2. Shoring systems that impact the Railroad's operation and/or support the Railroads embankment.
 3. Demolition.
 4. Falsework.
 5. Erection.
 6. Acceptance observation of any shoofly before placing it in service.
 7. Foundation installation.
 8. Reinforcement and concrete placement for main bridge substructure and/or superstructure.
 9. Shop observation of fabricated steel spans and/or any major pre-stressed concrete items either by the Railroad or its designated representative.
 10. Erection of steel or precast concrete bridge superstructure.
 11. Deck installation.
 12. Acceptance of waterproofing (prior to placing ballast).
 13. Final observation and acceptance of the bridge structure.
- b. Overhead Structure
 1. Shoring systems that impact the Railroad's operation and/or support the Railroads embankment.
 2. Demolition within the Railroad's right-of-way.
 3. Falsework.
 4. Erection over the Railroad's right-of-way.
 5. Final observation and acceptance of the Overhead Structure.

Site observations are not limited to the milestone events listed above; rather, site visits to check progress of the work may be performed at any time throughout the construction as deemed necessary by the Railroad.

A construction schedule shall be provided to the Railroad Local Representative for their handling with the engineering department. Inform the Railroad's Local Representative of the anticipated dates when the listed events will occur. This schedule shall be updated as necessary, but at least monthly, so that site visits may be scheduled. Final observation and acceptance of the bridge by the Railroad is required before the contractor leaves the job site.

4.12.1 Full Time Inspector

At the Railroad's discretion, provision for a full-time Inspector to verify compliance with Railroad requirements during construction shall be included in the C&M agreement. The inspector may be a Railroad employee or outside party selected by the Railroad. The cost of this inspection shall be included in the total project cost.

5. OVERHEAD STRUCTURES

(Roadway Structures Over Railroad)

5.1 General Design

- a. The Overhead Structure shall be designed according to Sections 1, 2, 3, 4 and 5 of these Guidelines, AREMA and any applicable codes and specifications. Compliance with these Guidelines will expedite the review and approval process of submittals for the Grade Separation Project. Every effort shall be made to utilize a structure type that will not require interruption to Railroad operation during construction.
- b. See [Section 4](#) for General Requirements for Grade Separation Projects.
- c. The preferred Overhead Structure is one that will span the entire Railroad right-of-way. Designs which do not clear span the Railroad right-of-way and/or do not meet vertical clearance requirements should not progress beyond 30% without the Railroad's written approval. Else, the design will be considered 30% complete by the Railroad regardless of the Applicant's percent of completion.

5.2 Permanent Clearances

- a. Permanent clearances shall accommodate future tracks, future track raises, Access Roads and drainage ditch improvements as determined by the Railroad.
- b. Proposed permanent vertical and horizontal clearances shall be adjusted so that the sight distance to any Railroad signal is not reduced unless signal(s) are to be relocated as part of the proposed Grade Separation Project.

5.2.1 Permanent Vertical Clearance (under the structure)

- a. The minimum permanent vertical clearance shall be 23' - 4" (UPRR) or 23' - 6" (BNSF) measured from the top of the highest rail to the lowest obstruction under the structure.
 1. The extent of the permanent vertical clearance shall be a minimum of 9 feet to the field side of the outer most existing or future tracks, measured perpendicular to the centerline of said tracks. See [pg 37, Plan No. 711100, sheet 1](#).
 - i. **In curved track** the above minimum extent of 9 feet shall be increased either 6 inches total or 1.5 inches for every degree of curve, whichever is greater.
 2. The permanent vertical clearance shall extend to cover all existing and future tracks, including the space between.
- b. Additional vertical clearance may be required for adjustment of sag in vertical curve, future track raise, flood considerations, construction and maintenance purposes.
- c. The profile of the existing top-of-rail, measured 1000 feet each side of proposed Overhead Structure, shall be shown on the plans. If the profile indicates a sag at the proposed bridge location, the vertical clearance from the top of the highest rail to the bridge shall be increased sufficiently to permit raising the track to remove the sag. A note should be added to the profile stating, "The elevation of the existing top-of-rail profile shall be verified before beginning construction." All discrepancies shall be brought to the attention of the Railroad prior to the commencement of construction.

5.2.2 Permanent Horizontal Clearance (under the structure)

- a. The need and location for future track per [Section 4.2.3](#) and Access Road per [Section 4.2.4](#), of these Guidelines must be verified with the Railroad in advance of establishing horizontal clearances.
- b. The Railroad requires all piers and abutments to be located outside the Railroad right-of-way limits and to comply with [Section 4.2.3](#) and [4.2.4](#) of these Guidelines.
 1. Where it is impracticable to clear span the Railroad right-of-way, provide written justification and request for variance for the proposed design. The request should succinctly describe geometric, structural and other constraints which make a clear-span alternative unfeasible and shall show that all options have been exhausted. Cost alone should not be the determining factor. See [Section 5.6.1 & 5.6.2](#) for abutment and pier requirements within the Railroad right-of-way.

5.3 Temporary Construction Clearances

The proposed Overhead Structure shall be designed to satisfy temporary construction clearance requirements per [Section 4.4.1](#) and shown on the plans in accordance with [pg 36, Plan No. 711000, Sheet 1](#).

5.4 Barrier Rail and Fence

- a. General Requirements
 - 1. Barrier rail and fence, designed per this section, shall extend to the limits of the Railroad right-of-way or a minimum of 25 feet beyond the centerline of the outermost existing track, future track or Access Road, whichever is greater.
 - 2. The minimum combined height of a barrier rail with curved fence shall be 8 feet or with a straight fence shall be 10 feet. The barrier rail and fence shall be detailed in accordance with [pg 39, Plan No. 711100, sheet 3](#).
- b. Barrier Rail
 - 1. Cast-in-place concrete barrier rail without openings shall be provided on both sides of the superstructure to retain and redirect errant vehicles. The barrier rail shall keep the deck's storm runoff from being deposited onto Railroad right-of-way.
 - 2. Barrier rail for Overhead Structures shall be a minimum of 42 inches in height for structures in areas which may be subject to snow removal, and a minimum of 30 inches in height elsewhere.
- c. Fence
 - 1. Fence shall be provided on both sides of all Overhead Structures crossing Railroad right-of-way. It shall be designed to prevent climbing and provide positive means of protecting the Railroad facility and the safety of Railroad employees below from objects being thrown or falling off the structure.
 - 2. Allowable fence types per [Section 4.7](#).
 - 3. All parallel Overhead Structures that have a gap of 2 feet or more shall be protected with fencing. Structures with a gap of less than 2 feet shall either have the gap covered or be fenced on both sides.

5.5 Superstructures

- a. Deck drains, future utility installation and expansion or hinge joints for the Overhead Structure over Railroad tracks or inside Railroad right-of-way are not permitted.
- b. The Railroad discourages the use of cast-in-place superstructures and every effort shall be made to utilize a structure type that will not require interruption to Railroad operation during construction.
- c. The use of cast-in-place beams is not permitted. The use of stay in place deck forms for falsework between precast concrete beams or steel girders is encouraged.

5.6 Substructures

- a. Footings for all substructures shall be located and designed to account for temporary clearances per [Section 5.3](#) in order to facilitate shoring and footing construction. Temporary shoring shall be designed per [Section 4.4.2](#).
- b. Drilled shafts within the influence of track surcharge shall be designed and constructed with a permanent casing to protect the track against cave-in, subsidence and/or displacement of the surrounding ground. The casing shall be designed for live loads due to the Railroad surcharge in addition to all other applicable loads.

5.6.1 Abutments

- a. All abutment structures, including toe of abutment slopes, shall be located outside Railroad right-of-way.
- b. See [Section 4.8.e](#) for MSE wall design. Use of MSE walls to retain abutment fill require that the abutment be supported by deep foundations.
- c. Slope layout shall provide for the minimum drainage ditch(es) or culverts required by hydraulic studies in the area; see [pg 37, Plan No. 711100, sheet 1](#) details. The toe of the slope shall terminate at the bottom of drainage ditch and must have a cut-off wall as required to protect the slope from erosion. In all cases, the toe of slope shall be below the finished track or roadway subgrade.

- d. Top of paved slopes shall extend a minimum of 2 feet past the abutment wall face, and terminate with either a curb or gutter to divert runoff. Paving shall have a prepared sub-base and filter fabric. Reinforced concrete or grouted rip-rap, with a minimum thickness of 4 inches, shall be placed on prepared sub-base and filter fabric.

5.6.2 Piers

- a. Abutments and piers shall be located more than 25 feet (UPRR), 27 feet (BNSF) measured perpendicular from centerline of nearest existing or future track. Piers within Railroad right-of-way, or within 25 feet measured perpendicular from centerline of existing or future track, shall be protected per [Section 5.6.3](#) of these guidelines.
- b. A Pier footing within 25 feet of the nearest existing or future track shall be a minimum of 6 feet below the base of rail. This will allow the Railroad to modify its longitudinal drainage system in the future and/or provide an unobstructed area for placing signal, fiber optic or other utilities.
- c. For piers with greater than 25 feet of clearance from centerline of nearest existing or future track and located within the Railroad right-of-way, the Railroad requires language in the proposed Agreement mandating the Applicant to fund the construction of pier protection walls on the bridge piers should they ever be required due to additional trackage being constructed by the Railroad or for any other legitimate reason. The Applicant shall also be responsible for future modification to the pier protection wall if the Railroad deems necessary.
 - 1. Piers designed without pier protection should, at a minimum, be designed to:
 - i. Support the future additional weight of the pier protection as required by [Section 5.6.3](#).
 - ii. Account for any additional width of the pier protection which would reduce the clearance from the centerline of track to the near face of the pier and/or pier protection.
 - 2. Should the applicant require the future pier protection to be designed beyond the requirements of [Section 5.6.3](#), such designs shall be incorporated per [Section 5.6.2.c.1](#).
 - i. Design requirements greater than required by [Section 5.6.3](#) shall not be the current nor future responsibility of the Railroad to identify, incorporate and/or design should any pier be deemed necessary of pier protection.
- d. Inside guardrail may be required, between rails, for all piers located within 18 feet from the nearest existing or future track.

5.6.3 Pier Protection

All replacement or modified structures shall comply with AREMA requirements for pier protection walls.

- a. The pier protection wall shall be designed to resist the impact and redirect equipment in case of derailment. Piers shall be protected, by pier protection wall or heavy construction, where existing or future tracks are within 25 feet from the near face of piers.
 - 1. Pier Protection Wall – The pier protection wall design shall be in accordance with [pg 40, Plan No. 711100, sheet 4](#).
 - 2. Heavy Construction – Piers with cross-sectional area equal to or greater than that required for the pier protection wall (30 sq. ft.) with the larger of its dimensions parallel to the track.
- b. If seismic criteria are considered, pier design may require column isolation from the pier protection wall. The pier protection wall may also be required to be supported on an independent footing.
- c. In locations where pier columns and protection walls interfere with drainage, an alternative drainage facility shall be provided to collect and carry water to a drainage system.

5.7 Lighting

- a. All new or modified Overhead Structures which cover 80 linear feet of track or more shall provide a lighting system to illuminate the track area. However, at the discretion of the Railroad, lighting shall be provided for all structures covering less than 80 linear feet of track in areas where switching is performed or where high vandalism and/or trespassing have been experienced. Care shall be taken in lighting placement such that trains will not mistake the lights for train signals nor shall they interfere with the train engineer's sight distance for existing signal aspects. All lights shall be directed downward.
- b. Provide temporary lighting for all falsework and shoring areas.
- c. The minimum lighting design criteria shall be an average of one (1) foot-candle per square foot of structure at the Railroad tracks. Two (2) foot-candle or greater may be required at the discretion of the Railroad. The illuminated area shall extend to the limits of the overhead structure width and the width of the Railroad right-of-

way under the said structure. Fixtures shall be installed on the column walls or caps of the Overhead Structure without reducing the minimum horizontal and vertical clearances.

- d. Maintenance of lights shall be the responsibility of the Applicant. Access to perform any maintenance for lights shall be coordinated with the local Railroad operating unit.
- e. Structures with separation over ten (10) feet from each other shall be considered as independent structures for the purposes of lighting.

5.8 Drainage and Erosion

- a. Drainage from Overhead Structures shall be diverted away from the Railroad right-of-way at all times. Scuppers from the deck shall not be permitted to discharge runoff onto the track or Access Road areas at any time. If drainage of the deck uses downspouts they shall be connected to the storm drain system or allowed to drain into drainage ditches. Concrete splash blocks or aggregate ditch lining will be required at the discharge area of downspouts. Downspouts should be located opposite the track side on piers.
- b. If the layout of abutments, piers or columns with protection walls interferes with the drainage ditches, the designer shall provide an alternative method of handling the longitudinal drainage based on a hydraulic study. This may consist of pipe culverts.
- c. Track drainage ditch limits shall be shown to scale on the project plans and show the distance from the centerline of nearest track. A typical cross section detail shall be shown on the plans.
- d. If the proposed bridge structure will not change the quantity and characteristics of the flow in Railroad ditches and drainage structures, the plans shall include a general note stating so.
- e. Lateral clearances must provide sufficient space for construction of the required standard ditches, parallel to the standard roadbed section. Should the proposed construction change the quantity and/or characteristics of flow in the existing ditches, the ditches shall be modified as required to handle the increased runoff. The size of ditches will vary depending upon the flow and terrain and should be designed accordingly.
- f. All drainage systems shall be in compliance with [Section 4.5](#). Erosion and Sediment Controls shall be in compliance with [Section 4.6](#).

6 UNDERPASS STRUCTURES

(Railroad Structures Over Roadway)

6.1 General Design

- a. The Underpass Structure shall be designed according to Sections 1, 2, 3, 4 and 6 of these Guidelines, the current edition of AREMA and any applicable sections of AASHTO. Compliance with these Guidelines will expedite the review and approval process of submittals for the Grade Separation Project.
- b. See [Section 4](#) for General Requirements for Grade Separation Projects.
- c. Acceptable superstructure types are shown in [Section 6.9.1](#). The use of Railroad standard spans where possible is encouraged.
- d. Only simple spans with ballast decks are allowed. Cast-in-place concrete superstructures are unacceptable.
- e. Designs which do not meet the requirements as prescribed by this document should not progress beyond 30% without the Railroad's written approval. Else, the design will be considered 30% complete by the Railroad regardless of the Applicant's percent of completion.

6.1.1 Design Loads

The proposed Underpass Structure shall be designed for the following loads:

- a. Live load and Impact as specified in AREMA. For multiple track structures, live load shall be calculated based on the assumption that the track(s) can be located anywhere on the bridge with the horizontal clearance to the handrail defined in [Section 6.7.2](#), and a maximum track spacing of 13 feet. For actual track spacing refer to [Sections 4.2.3](#).
- b. Dead load shall include up to 30 inches of ballast from top of deck to the top of tie and all other applicable dead load.
- c. Seismic design shall comply with the criteria of the current edition of AREMA, Chapter 9 - Seismic Design for Railway Structures.
- d. Additional loads shall be applied as specified in Chapters 8, 9, and 15 of AREMA, as applicable.

6.1.2 Construction Material Requirements

Refer to the BNSF or UPRR Standard Construction Specifications for material requirements. Items not addressed specifically in the Railroad Construction Specifications, and this document, shall be in accordance with the applicable sections of the current edition of AREMA.

6.2 Concrete Requirements

All concrete material, placement and workmanship shall be in accordance with Chapter 8 of the current edition of AREMA and the following:

- a. Minimum Compressive Strength – 4000 lb. per square inch at 28 days.
- b. Exposed surfaces shall be formed in a manner that will produce a smooth and uniform appearance without rubbing or plastering. Exposed edges of 90 degrees or less are to be chamfered 3/4" x 3/4". Top surface to have a smooth finish, free of all float or trowel marks with the exception that a broom finish be used on all walkway surfaces.
- c. Concrete shall be proportioned such that the water-cementitious material ratio (by weight) does not exceed the values in AREMA Table 8-1-9. Precast concrete must contain a minimum of 610 pounds of cementitious material per cubic yard of concrete. Cast-in-place concrete must contain a minimum of 565 pounds of cementitious material per cubic yard of concrete. If fly ash is used with cement it shall be limited to 15% of cementitious material.
- d. Cement shall be Type I, II or III Portland Cement per ASTM C150.
- e. Course aggregate shall be size no. 67.
- f. Fine aggregate shall be natural sand.
- g. Admixtures, other than air entrainment, shall not be used without approval by the Railroad.
- h. Membrane curing compound shall conform to ASTM C309 Type 2.
- i. Apply ThoRoc Epoxy Adhesive 24LPL or approved alternate before placing new concrete against hardened surfaces.

- j. For precast elements, the fabricator shall stencil the fabricator's name, date of fabrication, the bridge number, lifting weight and piece mark on each component.
- k. The production facility must be pre-certified. Production procedures for the manufacture of precast members shall be in accordance with AREMA and the current edition of the Precast Concrete Institute's Manual MNL 116 for Quality Control.
- l. Dimensional tolerances governing the manufacture of precast members shall conform to Division VI, Section 6.4.6 of the Precast Concrete Institute's Manual MNL 116 for Quality Control. Tolerance for location of lifting devices shall be $\pm \frac{1}{2}$ ".
- m. The area around all lifting loops shall be recessed so that the loops can be removed to a depth of $\frac{3}{4}$ " and grouted. Properly designed lift anchors are acceptable in lieu of lifting loops.
- n. The fabricator will be responsible for the loading and properly securing the precast concrete members for shipment. All concrete components shall be made available, at the Railroad's discretion, for inspection by the Engineer-of-Record and the Railroad at the fabricator's plant prior to shipment.
- o. Foam used to create internal voids in a precast concrete member, such as in box beams, shall be securely tied down to prevent displacement during concrete placement.

6.2.1 Reinforcing Steel Requirements

- a. Reinforcing Steel shall be deformed, new billet bars per current ASTM A615 Specifications and meet Grade 60 requirements.
- b. Reinforcing Steel requiring field welding or bending shall conform to ASTM A706 Specifications, Grade 60.
- c. Fabrication of reinforcing steel shall be per Chapter 7 of the CRSI Manual of Standard Practice. Dimensions of bending details shall be out to out of bars.
- d. Reinforcing steel is to be blocked to proper location and securely wired against displacement. Tack welding of reinforcing is prohibited. Minimum concrete cover not otherwise noted shall meet current AREMA requirements.

6.2.2 Prestressing Strand Requirements

- a. Prestressing strand shall be seven wire, uncoated and low relaxation which is in accordance with the requirements specified in ASTM A416, ACI 318 and AREMA Chapter 8.
- b. The strand shall have an ultimate tensile strength of 270 ksi.

6.2.3 Tie Rods

Transverse tie rods shall be provided for all concrete spans utilizing single cell box beams. Wherever possible, transverse tie rods in end and interior diaphragms shall be placed perpendicular to the centerline of webs to facilitate application of transverse post-tensioning.

- a. Transverse tie rods shall be used at span ends and intermediately spaced at maximum intervals of 25 feet.
- b. The minimum size of tie rod shall be 1-1/4 inches in diameter.
- c. Tie rods shall be threaded steel bars with a minimum $f_y = 36$ ksi.
- d. Tie rods shall be tensioned as necessary to ensure that all beam sides are in contact without causing any vertical displacement of the beams from the bearings.
- e. The tie rod shall be protected as follows:
 - 1. Rod, plates and nuts shall be hot dip galvanized per ASTM A123 and A153 specifications
 - 2. Void between rod and hole shall be pressure grouted.
 - 3. The tie rod anchor assembly shall be recessed into the concrete and shall have 1 inch minimum grout cover.

6.3 Structural Steel Requirements

- a. All major elements subjected to railroad live load shall conform to the following minimum specifications, except as otherwise noted:
 - 1. Painted structures: ASTM A709 Grade 50.
 - 2. Unpainted structures: ASTM A709 Grade 50W.
- b. All bolted connections shall be made with high strength bolts.
- c. Material over 4 inches in thickness that is subject to railroad live load shall conform to the following specifications:

1. Painted structures: ASTM A572 or ASTM A588.
 2. Unpainted structures: ASTM A588.
- d. Elements not subjected to direct railroad live load (intermediate stiffeners, lateral bracing, diaphragms, ballast curbs, etc.) shall conform to the following specifications:
1. Painted structures: ASTM A572 Grade 50, ASTM A36 or ASTM A992.
 2. Unpainted structures: ASTM A588.
- e. Steel bridge deck shall conform to A709 specifications, Grade 36, non-weathering steel.
- f. Deck cover plates and closure plates may be per ASTM A36 specifications.
- g. Anchor rods/bolts shall conform to ASTM F1554 specifications.
- h. End welded studs shall be C1015, C1017 or C1020 cold drawn steel, which conforms to ASTM A108 specifications.
- i. Cover plate, closure plates and anchor rods/bolts shall be galvanized after fabrication in accordance with ASTM A123, thickness Grade 100.
- j. Anchor rod washers shall be zinc coated in accordance with ASTM A153 specifications.

6.4 Access Road

- a. See [Section 4.2.4](#).

6.5 Skewed Structure

- a. On skewed abutments an approach slab is required.
- b. The preferred angle of intersection between centerline of track and the centerline of bridge supports, transverse to the track, is 90 degrees.
- c. The minimum angle that will be allowed between the centerline of the track and the centerline of bridge supports, transverse to the track, is 75 degrees for a Concrete Superstructure and 60 degrees for a Steel Superstructure.
- d. Where conditions preclude compliance with these skew requirements, the skew proposal will require special structural consideration and proof of adequacy.
- e. Align bridge piers and abutments as required to comply with the above maximum skew limitations.

6.6 Approach Slab

- a. The approach slab shall be a minimum of 12 feet wide or greater as deemed necessary by the Railroad and extend parallel to the track a minimum of 3 feet beyond the back edge of the abutment.
- b. The approach slab shall be doweled into the abutment.
- c. For skewed bridge abutments, the approach slab shall also be skewed to match the abutment while the other end of the approach slab is perpendicular to the centerline of track.

6.7 Clearances

Permanent clearances shall be correlated with the methods of construction to ensure compliance with the temporary clearances specified in [Section 4.4.1](#).

6.7.1 Permanent Vertical Clearance (under the structure)

- a. Underpass Structures shall be designed to ensure that the structure will be protected underneath from oversized or unauthorized loads by providing sufficient vertical clearance and protective devices unless otherwise specified by the Railroad.
- b. Provide a minimum vertical clearance over the entire roadway width for all new or reconstructed structures as follows:
 1. 16'-6" for steel superstructure with 5 or more beams or 4 or more deck plate girders per track.
 2. 17'-6" for concrete superstructure or steel through plate girders with bolted bottom flanges.
 3. 20'-0" for steel through plate girders without bolted bottom flanges.
- c. The vertical clearance must not be violated due to the deflection of the superstructure, use of a sacrificial impact protection device or any other reason. Additional vertical clearance may be required by the Railroad.
- d. Variance from vertical clearances defined above shall require prior review by the Railroad. The variance request shall provide exhaustive justification. Cost shall not be the determining factor.

- e. If resurfacing or any other activity is to be performed below the Underpass Structure, the owner of the roadway must submit a request for approval from the Railroad. This request must provide the existing measured and posted clearances of the structure and the proposed configuration after work is completed.

6.7.2 Permanent Horizontal & Vertical Clearances (on the structure)

- a. Permanent Horizontal and Vertical Clearances on an Underpass Structure shall conform to the requirements of AREMA, Chapter 15, Part 1 and [Section 6.9.5](#).
 - 1. **In curved track** the horizontal clearances shall be increased either 6 inches total or 1.5 inches for every degree of curve, whichever is greater.
- b. Proposed structures that accommodate multiple tracks, both future and existing tracks, with spacing less than 20 feet shall be designed for a minimum of 20 foot spacing measured centerline to centerline.

6.8 Sacrificial Impact Protection Devices

- a. All structures with vertical clearances less than defined in [Section 6.7.1](#) shall be protected with a sacrificial device on each side of the structure.
- b. Protection may be in the form of a redundant steel or concrete fascia beam.
- c. Diaphragms connecting the redundant beam to the adjacent beams shall be designed to limit their impact and damage, if struck, to the adjacent beams.
- d. Concrete fascia beams used as walkways shall be installed adjacent to the proposed structure and may also serve as a sacrificial beam.
 - 1. If a concrete fascia beam is used as a sacrificial beam it shall have a 6" x 6" x 1" embedded steel angle and shall be adequately anchored to the bridge seats.

6.9 Superstructure

The size of the superstructure must accommodate future track(s) per [Section 4.2.3](#) and Access Road per [Section 4.2.4](#). For typical cross sections of select superstructures see [pg 42, 43 & 44, Plan No. 711200, sheets 2, 3 & 4](#).

6.9.1 Acceptable Superstructure Types

- a. The following is a list of Underpass Structure types that are acceptable to the Railroad and listed in the order of preference. The Railroad's preferred superstructure type is the highest listed feasible alternative unless a detailed type selection report provides justifications that a lower listed alternative is more beneficial to the Railroad and to the project.
 - 1. Rolled Beams with Steel Plate Deck. There shall be at least five beams per track.
 - 2. Steel Plate Girders with Steel Plate Deck. There shall be at least four girders per track.
 - 3. Rolled Beams with Concrete Deck. There shall be at least five beams per track.
 - 4. Steel Plate Girders with Concrete Deck. There shall be at least four girders per track.
 - 5. Railroad Standard Prestressed Precast Concrete Double Cell Box Beams.
 - 6. Prestressed Precast Concrete Box Beams, single or double cell for span of 50 feet or less.
 - 7. Prestressed Precast Concrete AASHTO Type Beams, (or similar) with Concrete Deck for spans of 100 feet or less.
 - 8. Steel Through Plate Girders with Steel Plate Deck will be considered by the Railroad when conditions preclude any other structure type.
- b. Underpass Structures of deck truss or through truss design are discouraged. However, in unusual circumstances, they will be considered by the Railroad if conditions preclude the use of any other type of structure.
- c. Where possible, use of Railroad standard spans are encouraged.

6.9.2 Deck Requirements

- a. Deck Type – In all cases when using a steel superstructure the use of a steel deck, per [Section 6.3.e](#), is preferred. The deck must be designed to prevent ballast or other material from falling through.
- b. Deck Width – The deck width shall be a function of future track, Access Road, existing track(s), minimum horizontal clearance per [Section 6.7.2](#) and a minimum of 20 foot spacing between centerlines of tracks.

- c. Ballast Depth – The minimum required depth of ballast shall be 12 inches measured from the top of deck to the bottom of tie, as required by the Railroad. The Railroad may require 13 inches of ballast depth below timber ties allowing for increased depth of future concrete ties.
- d. Ties
 - 1. (UPRR) Concrete ties on ballast deck structures and approach slabs require a bottom rubber pad meeting UPRR requirements.
 - 2. (BNSF) Concrete ties on ballast deck structures and approach slabs require BNSF approval and must meet BNSF requirements.
- e. Inside Guardrail – Inside guard rails are required across the following bridge span types. Contact the Railroad to receive the guard rail standards.
 - 1. Thru truss, pony truss, deck trusses on towers, deck plate girders on towers, thru plate girders (for span lengths over 100 feet), movable spans and others structures as designated by the Railroad.

6.9.3 Composite Deck

Steel superstructure design may utilize composite action with the deck according to the following:

- a. Steel superstructure with composite concrete deck.
 - 1. Shall be designed as composite for E80 live load and impact.
 - 2. Shall be checked as non-composite for E65 live load and impact.
 - 3. Shall satisfy the AREMA deflection requirements for E80 live load and impact as composite.
 - 4. Shall have shear transfer devices designed per AREMA.
- b. Steel superstructure with composite steel deck.
 - 1. Shall be designed as non-composite for E80 live load and impact.
 - 2. Shall satisfy the AREMA deflection requirements for E80 live load and impact as composite.
 - 3. Shall have shear transfer connections designed per AREMA.

6.9.4 Ballast Retainers, Fences and Handrails

- a. Ballast retainers must be designed to prevent ballast from falling on the roadway.
- b. Handrails shall be provided on both sides of the deck and shall meet FRA and OSHA requirements.
- c. Fencing may be included where required by the Applicant or the Railroad. Handrails and fences shall be simple designs that require minimum maintenance and shall meet clearance requirements of [Section 6.7.2](#).

6.9.5 Walkway

- a. Walkway ballast section or walkway structure shall be provided on both sides of Underpass Structures.
 - 1. Walkway Ballast – The ballast section may be used as walkway at the discretion of the Railroad provided that the clear distance from centerline of track to the ballast retainer is a minimum of 8'-0".
 - 2. Walkway Structure – If a non-ballast walkway surface is required, it shall be a minimum of 2'-6" wide.
- b. On bridges over roadways, or other locations, and where spillage of ballast or lading is possible, the walkways shall be constructed of solid material and a curb or toe board shall be provided at a height of 4 inches from top of walkway.
- c. To prevent cracking under live loads, 1/4 inch control joints shall be provided in concrete curbs, concrete walkways and concrete ballast retainers and shall be spaced at 10 feet or less for the length of the structure.
- d. When walkway structures are used, provide a detail showing the walkway transition from bridge to roadbed at bridge ends. Where there is a vertical distance from the roadbed walking surface to the bridge walkway, adjust the roadbed walkway profile to eliminate the vertical separation or provide other means to provide a safe transition. The design shall not restrict drainage at the abutments and shall be submitted to the Railroad for review.

6.9.6 Drainage

- a. General
 - 1. A minimum longitudinal grade of 0.2% on the superstructure shall be provided to ensure adequate drainage.
 - 2. The designer may provide drainage toward one end of the structure, or when the structure's length is excessive, provide adequate deck grades to drain the structure to both ends.

3. If the top-of-rail grade is less than 0.2% over the length of the structure then the depth of ballast may be varied along the structure.
4. If an approach grade descends toward the bridge, drainage from the approach shall be intercepted by an appropriate system so that it will not drain onto the bridge.
5. Inadequate drainage facilities can severely limit the life span of the superstructure. When designing drainage facilities for a structure, two important criteria to keep in mind are:
 - i. Drains should be constructed of corrosion resistant material and the use of PVC shall not be permitted.
 - ii. Drains should not discharge on other bridge elements or traffic passing underneath the structure.
- b. Concrete decks
 1. The top of the concrete deck shall be sloped a minimum of 0.5% transversely.
 2. For concrete decks, a longitudinal collection system shall be provided on top of the waterproofing along the face of parapet or curb to drain water. Longitudinal drains shall be connected to the storm drain system or properly discharged at the toe of embankment slopes. See [pg 45, Plan No. 711200, sheet 5](#).
 3. The drip groove located on the bottom of the deck slab or fascia beam shall end 3 feet before the face of the abutment.

6.9.7 Waterproofing

- a. Waterproofing and protective panels shall comply with the recommendations of Chapter 8, Part 29 of AREMA and shall be the following type, as approved by the Railroad:
 1. Cold liquid spray on waterproofing meeting AREMA requirements, as approved by the Railroad.
 - i. Shall be protected with either a single 1/2 inch layer of asphalt panels or an additional spray on protection board layer, as approved by the Railroad.
- b. Six (6) inches of ballast shall be placed over waterproofing immediately upon acceptance by the Railroad. Construction traffic is not allowed on waterproofing until the ballast covering is in place.
- c. Waterproofing installation shall be observed and approved by the manufacturer's representative.

6.9.8 Steel Superstructure

The steel superstructure shall be designed per AREMA Volume 2, Chapter 15, unless otherwise required by the Railroad or herein.

- a. Fracture critical member material, fabrication, welding, inspection and testing shall be in accordance with AREMA, Volume 2, Chapter 15.
- b. The minimum diameter of high strength bolts shall be 7/8 inch diameter.
- c. Bolted joints shall be designed as slip critical using the allowable stresses for a slip coefficient of 0.33.
- d. The railroad may require critical structural elements to be designed with additional sacrificial thickness for future corrosion.
- e. Diaphragms or cross frames shall be provided for all steel spans.
- f. Jacking stiffeners or jacking beams are required for all steel structures.
- g. Girders shall have mechanically-connected bottom flanges and intermediate stiffeners when:
 1. The girder span is over a roadway and the use of two girders per span or track cannot be avoided (such as a through plate girder) and
 2. Twenty (20) feet of vertical clearance cannot be provided.
- h. Cover plates, flange elements and intermediate stiffeners shall comply with the following requirements:
 1. Cover Plates
 - i. Cover plates of girders with bolted flanges shall be equal in thickness or shall diminish outwardly in thickness.
 - ii. No plate shall be thicker than the flange angles.
 - iii. The gross area of cover plates in any flange shall not exceed 70% of the total flange.
 - iv. The total flange consists of cover plates, flange angles directly connected to the cover plates and side plates.
 - v. The area of any flange element (flange angle, cover plate or side plate) shall not exceed 50% of the total flange.
 2. Flange Elements

- i. Flange elements that are spliced shall be covered by extra material equal in section to the element spliced.
 - ii. There shall be enough bolts on each side of the splice to transmit to the splice material the stress value of the part cut.
 - iii. Flange angles may be spliced with angles or with a full penetration weld.
 - iv. No two elements shall be spliced at the same cross section or within the development length of another spliced element.
 - v. Welded splices will not be allowed in plate elements of bolted flanges.
3. All intermediate stiffeners shall have a bolted connection to the web.

6.9.9 Painting of Steel Structures

- a. Painting of steel structures shall comply with the current requirements of AREMA, AASHTO specifications and recommendations of the Steel Structures Painting Council (SSPC).
- b. Painting of existing Railroad structures is discouraged. Painting may be considered if the structure is free of existing defects, cracks, damage or otherwise which requires inspection.
- c. Paint shall be applied in accordance with the Manufacturer's recommendations or as recommended by the SSPC, whichever is most restrictive.
- d. The painting system, including primer and top coats, shall be submitted by the Applicant for review and approval by the Railroad and must be maintained by the Applicant.

6.9.10 Concrete Superstructure

- a. Live load distribution for precast prestressed concrete single or double cell box beams shall be in accordance with Chapter 8, Part 2, Reinforced Concrete Design, Article 2.2.3.c of AREMA. This means that it shall not be assumed that the live load is necessarily equally distributed to the number of boxes supporting the tracks.
- b. Box shaped (Single or Double void) or AASHTO type precast prestressed concrete beams for all spans shall be designed with end and interior diaphragms. Interior diaphragms shall be spaced equally across the span length.
- c. Ends of strands are to be cut flush with the end of the product and painted with an approved coating.
- d. For AASHTO type beams, the designer shall provide a minimum of eighteen (18) inches clear between the bottom flanges to accommodate inspection and repair.

6.10 Substructure

- a. Pier and or abutment dimensions must accommodate future track(s) and Access Road per [Section 4.2.3](#) and [4.2.4](#).
- b. Footings for all substructures shall be located and designed to allow a minimum of 12 feet measured perpendicular from centerline of nearest active track to face of shoring to facilitate footing construction. Temporary shoring shall be designed per [Section 4.4.2](#).
- c. Cross-hole Sonic Log (CSL) Testing is required for every drilled shaft to evaluate the integrity of drilled shafts/caissons. The Plans and Specifications shall include provisions for this testing. Use steel pipes and not PVC for testing holes.
 - 1. Other testing methods may necessary, as required by the Railroad.
- d. Drilled shafts within the influence of track surcharge shall be designed with permanent or temporary casing for protection against cave-in, subsidence and or displacement of surrounding ground. Casing shall be designed for live load due to the Railroad surcharge in addition to all other applicable loads. Drilled shafts shall be designed to allow the drilling operation to proceed without impacting the Railroad operation.

6.10.1 Piers

- a. Columns shall be at least 0.2H in thickness at the base.
- b. Slope the top of bridge seat to drain. If weathering steel is used for the superstructure, detail the bridge seat to minimize water staining concrete surfaces.
- c. Provide a minimum of 6 inches from edge of masonry plate or bearing to edge of concrete.
- d. Provide a minimum of 18 inches beyond the outside edge of outermost masonry plate or bearing to end of the pier.

- e. Single column piers shall not be considered for Underpass Structures. Piers with a minimum of two columns shall be provided. A solid pier wall with minimum of 4 feet thickness is preferable.
- f. Bridge piers adjacent to roadways shall be protected from vehicular traffic as required per AASHTO and State Department of Transportation standards.

6.10.2 Abutments

- a. Slope the top of bridge seat to drain. If weathering steel is used for the superstructure, detail the bridge seat to minimize water staining concrete surfaces.
- b. The abutments shall be wide enough to satisfy the Railroad standard roadbed. For multiple track bridges, the abutment width shall be sufficient to provide for the standard shoulder, plus 20 feet for each existing or future track.
- c. Provide a minimum of 6 inches from edge of masonry plate or bearing to edge of concrete.
- d. Sloping embankments in front of abutments shall be paved or have grouted rip-rap on top of filter fabric.
- e. The year of construction shall be shown at the face of abutment backwall. Numbers shall be embedded into the concrete and be 6 inches size and located where visible.
- f. Wing walls shall be designed to support 2:1 embankment slopes and provide positive ballast containment.

6.10.3 Signage and Miscellaneous

- a. The Railroad's standard "No Trespassing" and bridge number signs shall be furnished and installed as required by Railroad standards.
- b. Clearance signs, advance signs and other roadway signage shall be the responsibility of the roadway agency. Signs may not be attached to the bridge.
- c. The Applicant shall be responsible for graffiti removal from the structure, regardless of other provisions for division of maintenance responsibility.

7 TRAILS

(Non-Vehicular Crossing over or under the Railroad)

All Trails impacting the Railroad shall be designed in accordance with Section 1, 2, 3, 4 & 7 of these Guidelines, the Manual of Uniform Traffic Control Devices (MUTCD), AASHTO code and any applicable sections of AREMA.

7.1 At Grade Crossing

- a. The Railroad does not allow at grade Trail crossings. Alternative plans should be considered to avoid crossing Railroad tracks at grade.
- b. At grade crossings immediately adjacent to an existing public roadway crossing with existing Highway Railroad warning devices may be considered. However, all costs associated with the installation of the new crossing surface and crossing warning device changes or relocation will be borne by the Applicant.
- c. Scope of proposed crossing work will be determined at a joint diagnostic meeting between the Railroad and Applicant.
- d. The Trail must conform to Railroad and MUTCD requirements.

7.2 Trail Parallel to Track

- a. The Railroad does not allow Trails parallel to the track on Railroad right-of-way and does not permit the use of Railroad Access Roads for trail use.
- b. Railroad structures cannot be used to serve Trail traffic or support a structure serving Trail traffic.
- c. Fences or barriers such as vegetation, ditches, and/or berms shall separate Trails that are outside the Railroad right-of-way and running parallel to the track to stop trespassers from entering the Railroad right-of-way.

7.3 Grade Separated Crossing

Consider the use of existing structures to cross the Railroad tracks. In accordance with Homeland Security requirements some Railroad sites and structures are off limits for Trail use and crossing.

7.3.1 Overhead Crossing (Trail over Railroad)

New and existing Overhead Structures must be designed or modified with a protective curved fence. See [pg 39, Plan No. 711100, sheet 3](#). New Overhead Structures shall be designed per [Section 5](#) of these Guidelines.

7.3.2 Underpass Crossing (Railroad Structure over Trail)

The Railroad discourages the construction of new Underpass Structures. If an Underpass Structure is the only feasible structure type for the proposed site, a detailed type selection report must be submitted to justify its use. Underpass trail crossings which also serve to convey water are not permitted.

7.3.2.1 New Underpass Crossing

New Underpass Structures shall be designed per [Section 6](#) of these Guidelines.

All pipe and concrete box culverts shall be designed per Railroad requirements and any applicable sections of AREMA. Confined structures are discouraged. To improve safety and sight distance all structures shall be tangent without curvature. The clear width and height of pedestrian structures shall be subject to the project site and structure length. The line of sight, historical security data and lighting shall be used for determining the required size of opening. Vertical Clearance shall not be less than 8 feet.

7.3.2.2 Crossing Under Existing Structures

- a. The Railroad may reject, at its discretion, the use of any existing Underpass Structure for Trail use.
- b. Existing culvert pipe, box or arch structures, designed to convey water, are not permitted for trail crossing use.
- c. An open deck structure shall be modified to a ballast deck or solid deck structure to maintain a safe crossing under a Railroad structure. If modifying an existing open deck structure is not practical, provide a protective cover over the Trail.

- d. Protection from falling debris is required for the crossing of pedestrians safely under active rail bridges. The overhead protection shall extend a minimum of 30 feet out on each side of the Railroad structure, or further as designated by the Railroad's engineering department. However, the protective cover shall not reduce the existing hydraulic opening, shall not function as a debris catcher and shall not impact proper inspection of the structure by Railroad personnel.
- e. Measuring from bottom of the Railroad structure to the top of the protective cover shall not be less than 3 feet to allow for inspection and shall not be attached to the structure. If the Applicant can not meet these requirements then the Applicant shall provide a removable hatch to allow Railroad personnel to inspect the bridge structure.
- f. The protective cover shall be removable and can be removed, at the Applicant's expense, without advanced notice if deemed necessary by the Railroad.
- g. A protective cover shall be required, meeting the above criteria, for ballast deck bridges unless the superstructure meets the requirements of [Section 6.9.4](#) and retains the ballast to a sufficient degree as approved by the Railroad.

7.4 Drainage

The drainage pattern of the site before and after construction shall be analyzed. Adequate drainage provisions shall be incorporated into the plans and specifications. Detailed Hydraulic Report may be required subject to site condition. The Hydraulic report must meet the Railroad Hydraulic Criteria per [Section 4.5](#).

7.5 Fence

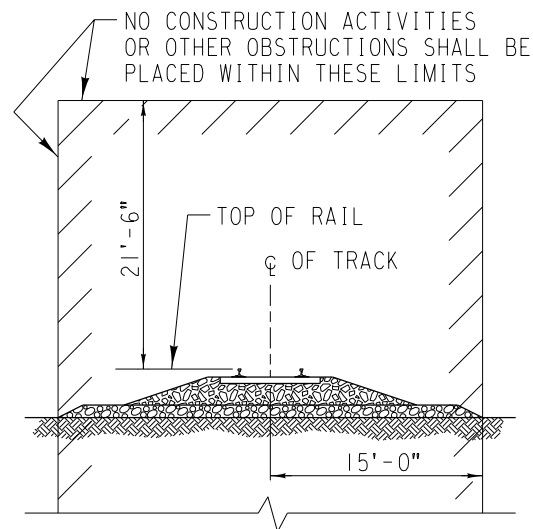
- a. The Applicant shall specify the appropriate fencing to contain the Trail traffic within the Trail, crossing the Railroad right-of-way. Fence limits are subject to each project site and must be determined on a case by case basis. Refer to [Section 4.7](#) for fence requirements.
- b. Fencing shall be located where it will not impede Railroad's access to the bridge for inspection and shall be removed and replaced at the Applicant's expense when necessary for access by the Railroad.
- c. All Railroad right-of-way fencing, for Trails adjacent to the Railroad right-of-way, must be provided, installed outside Railroad right-of-way and maintained by the Applicant.

7.6 Signs

- a. All access to Trails crossing railroad track shall be protected with bollard posts and signs prohibiting non-authorized vehicular access.
- b. All advisory and regulatory signs shall be in compliance with MUTCD and AASHTO. "No Trespassing" signs shall be posted every 500 feet.

7.7 Lighting

Adequate lighting shall be provided per AASHTO Roadway Lighting Design Guide requirements. Dark, confined, and isolated Trail crossings hidden from public view may attract illegal activities. Line of sight is extremely important when visibility is a matter of safety and security. The lighting design shall account for the impact on train operations. Lighting shall provide visibility for the Trail without directing light toward the train traffic.



MINIMUM CONSTRUCTION CLEARANCE ENVELOPE
(NORMAL TO RAILROAD)

DESIGN BY: RAF	CHECKED BY: AMH
APPROVED:	
<i>Rick Friesen</i>	
UPRR - SENIOR MANAGER STRUCTURES DESIGN	
<i>Austin M. Huest</i>	
BNSF - ASSISTANT DIRECTOR STRUCTURES DESIGN	



BNSF
RAILWAY

BRIDGE STANDARDS

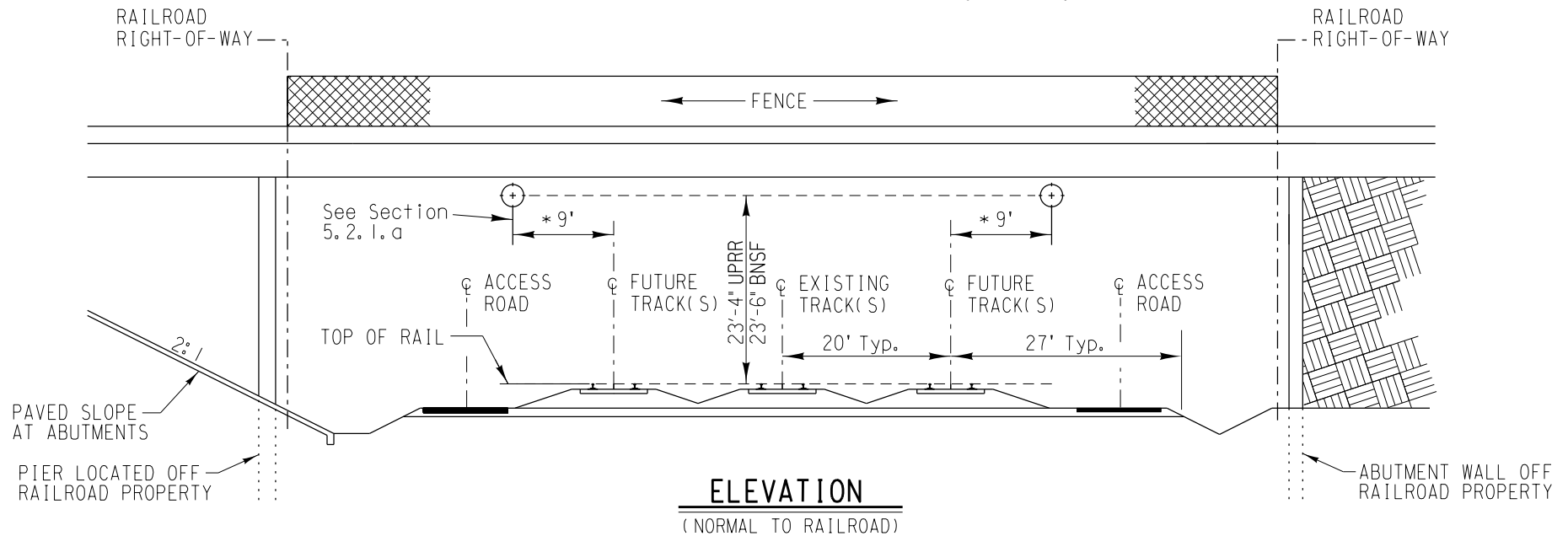
GRADE SEPARATION GUIDELINES

**TEMPORARY CLEARANCE
ENVELOPE**

FILE OWNER: UPRR	DATE: 1/05/16
PLAN NO.: 711000	SHEET: 1

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Overhead bridges shall be designed to completely span the Railroad Right-Of-Way.
Piers shall be located outside Railroad Right-of-Way.



CONSTRUCTION NOTES:

1. Any shoring system that impact the Railroad operations and/or supports Railroad embankment shall be designed and constructed per the Railroad temporary Shoring requirements.
2. All demolition within the Railroad right-of-way and/or demolition that may impact the Railroad tracks or operations shall comply with the Railroad demolition requirements.
3. Erection over the Railroad right-of-way shall be designed to cause no interruption to all Railroad operations.
4. The elevation of the existing top-of-rail profile shall be verified before beginning construction. All discrepancies shall be brought to the attention of the Railroad prior to construction.
5. The proposed grade separation project shall not change the quantity and/or characteristics of the flow in the Railroad ditches and/or drainage structures.
6. The contractor must submit a proposed method of erosion and sediment control and have the method approved by the Railroad prior to beginning any grading on the project site.
7. For Railroad coordination please refer to the Railroad's Coordination Requirements as part of the Specifications or Special Provisions of the project.
8. Temporary Construction Clearances, including falsework clearances, shall comply with Figure 1.
9. All permanent clearances shall be verified before project closeout.

* See Section 5.2.1.a
for Curved Track adjustments.

DESIGN BY: RAF	CHECKED BY: AMH
APPROVED:	
<i>Rick Friesen</i>	
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<i>Austin M. Hurst</i>	
BNSF - ASSISTANT DIRECTOR STRUCTURES DESIGN	



BRIDGE STANDARDS

GRADE SEPARATION GUIDELINES

**GENERAL OVERHEAD
STRUCTURE DRAWING**

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PLAN NO.: 711100	SHEET: 1

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PLAN

1. North Arrow
2. Centerline of bridge and/or centerline of project.
3. Track layout and limits of Railroad right-of-way with respect to centerline of main lines.
4. Footprint of proposed superstructure and substructure including existing structure if applicable.
5. Future tracks, access roadways and existing tracks as main line, siding, spur, etc.
6. Vertical & Horizontal Clearances from Railroad Track:
 - a. Point of minimum vertical clearance and distance, measured perpendicular, from the centerline of nearest track.
 - b. Horizontal clearance at right angle from centerline of nearest existing or future track to the face of obstruction such as substructure above grade.
 - c. Horizontal clearance at right angle from centerline of nearest existing or future track to the face of nearest foundation below grade.
 - d. Horizontal spacing at right angle between centerlines of existing and/or future tracks.
7. Limits of shoring and minimum distance at right angle from centerline of nearest track.
8. Locate and show all existing facilities and utilities and their proposed relocation, if required.
9. Toe of slope and/or limits of retaining wall.
10. Limits of grading with existing and proposed contours.
11. Limits of barrier rail and fence.
12. Minimum structure separation for adjacent structures.
13. Railroad Milepost and direction of increasing Milepost.
14. Direction of flow for all drainage systems within project limits.
15. Timetable direction arrows, nearest Railroad station and end station of Railroad Subdivision.

ELEVATION

1. Individual span length and total bridge length.
2. Limits of barrier rail and fence with respect to centerline of track.
3. Depth of foundation below bottom of tie.
4. Horizontal clearance at right angle from centerline of nearest existing or future track to the face of obstruction such as substructure above grade.
5. Indicate horizontal spacing at right angle between centerlines of existing and/or future tracks.
6. Minimum horizontal clearance at right angle from centerline of nearest existing or future track to the face of foundation below grade.
7. Indicate top and bottom of pier protection wall elevation relative to top of rail elevation.
8. Controlling dimensions of drainage ditches and/or drainage structures.
9. Top of rail elevations for all tracks.
10. Minimum permanent vertical clearance above top of high rail to the lowest point under the bridge.
11. Existing and proposed groundline & roadway profile.
12. Show elevation of existing or relocated utilities.
13. Show slope and specify type of slope paving. Toe of slope shall be shown relative to drainage ditch and top of subgrade.

14. Show and label future tracks, access roads and existing tracks as main line, siding spur, etc.
15. Show location of deck joints.
16. Location of deck drains.

TYPICAL SECTION

1. Total width of superstructure.
2. Width of shoulder and/or sidewalk.
3. Height and type of barrier rail and fence.
4. Depth of superstructure.


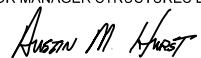
TITLE BLOCK


1. The name & logo of engineering firm or project owner.
2. Drawing title.
3. Railroad milepost number and subdivision.
4. City, county and state.
5. Project name and location.
6. Date.
7. Latitude and longitude.

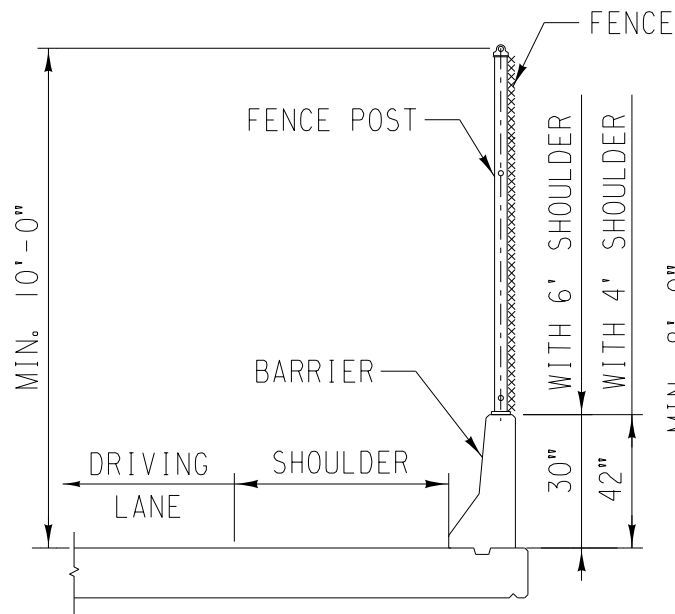
RAILROAD PROFILE GRADE DIAGRAM

1. Show existing and proposed track profile at the bridge location and a minimum of 1,000 feet past each edge of the bridge.

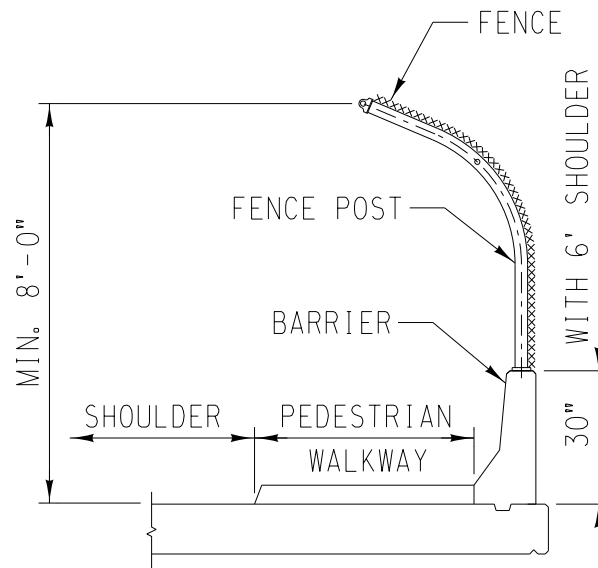
Note: The Railroad Milepost is calculated at the intersection of centerlines of the Overhead Structure and Existing Track. All separate Overhead Structures shall have individual Milepost designations.

DESIGN BY: RAF	CHECKED BY: AMH
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UPRR - SENIOR MANAGER STRUCTURES DESIGN	
	
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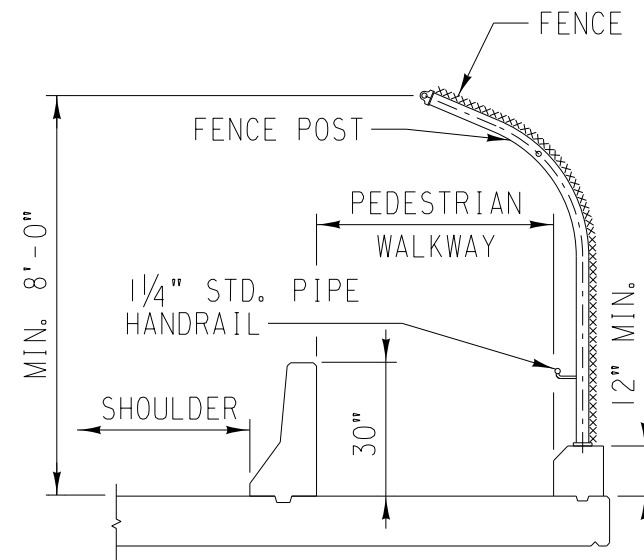
			
BRIDGE STANDARDS			
GRADE SEPARATION GUIDELINES			
MINIMUM			
LAYOUT REQUIREMENTS FOR OVERHEAD STRUCTURES			
FILE OWNER: UPRR	DATE: 1/05/16		
PLAN NO.: 711100	SHEET: 2		



FENCE ON BARRIER



WALKWAY FENCE ON BARRIER



WALKWAY FENCE ON CURB WITH BARRIER

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APPROVED:	
<i>Rick Friesen</i>	
UPRR - SENIOR MANAGER STRUCTURES DESIGN	
<i>Austin M. Huest</i>	
BNSF - ASSISTANT DIRECTOR STRUCTURES DESIGN	



BRIDGE STANDARDS

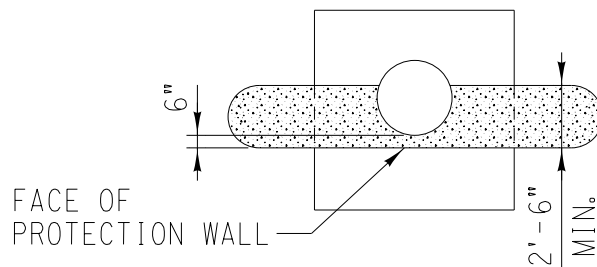
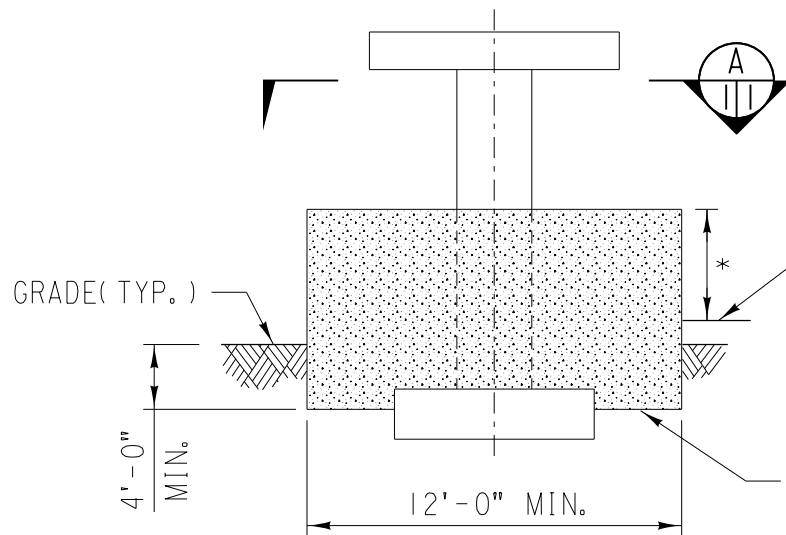
GRADE SEPARATION GUIDELINES

OVERHEAD STRUCTURE BARRIERS AND FENCES

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PLAN NO.: 711100	SHEET: 3

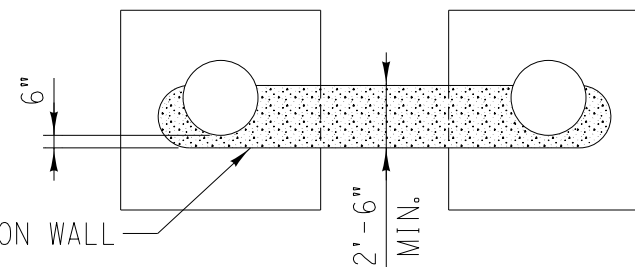
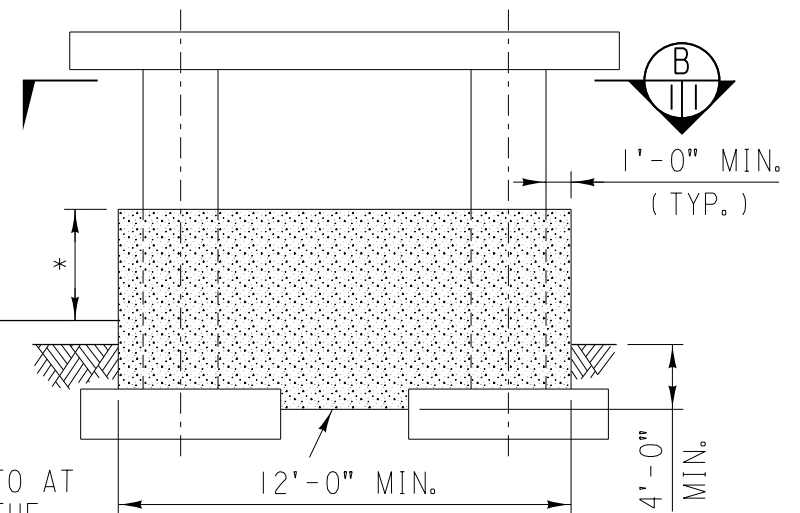
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SINGLE COLUMN DESIGN



SECTION A
SCALE: 1/8" = 1'-0"

MULTI-COLUMN DESIGN



SECTION B
SCALE: 1/8" = 1'-0"

* 6'-0" MINIMUM FOR PIERS FROM 12 FT. TO 25 FT. CLEAR FROM THE CENTERLINE OF EXISTING OR FUTURE TRACK.

12'-0" MINIMUM FOR PIERS LESS THAN 12 FT. CLEAR FROM THE CENTERLINE OF EXISTING OR FUTURE TRACK.

DESIGN BY: RAF	CHECKED BY: AMH
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<i>Rick Friesen</i>	
UPRR - SENIOR MANAGER STRUCTURES DESIGN	
<i>Aaron M. Huest</i>	
BNSF - ASSISTANT DIRECTOR STRUCTURES DESIGN	



BNSF
RAILWAY

BRIDGE STANDARDS

GRADE SEPARATION GUIDELINES

STANDARDS FOR PIER PROTECTION WALLS

FILE OWNER: UPRR	DATE: 1/05/16
PLAN NO.: 711100	SHEET: 4

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PLAN

1. North Arrow.
2. Alignment of centerline of bridge and/or horizontal control line of project, centerline of existing track(s), centerline of future track(s), centerline of shoofly, centerline of roadway. Identify tracks as main, siding, etc.
3. Angle between centerline of roadway and centerline of bridge. Skew angle of substructure.
4. Horizontal distance between centerlines of main track(s) and adjacent existing and/or future tracks.
5. Individual span length(s) and total bridge length from face to face of backwalls.
6. Limits of Railroad right-of-way with respect to centerline of main track. Limits of Right-of-Way fencing.
7. Footprint of proposed superstructure and substructure including approach slabs and existing structure, if applicable.
8. Footprint of roadway, sidewalks, retaining walls, etc.
9. Location of access roadway(s) and turnarounds.
10. Timetable direction arrows, nearest railroad station and end station of railroad subdivision.
11. Railroad Milepost measured at the inside face of backwall, at the low milepost bridge end.
12. Point of minimum vertical clearance.
13. All existing facilities and utilities and their proposed relocation, if required.
14. Limits of shoring including minimum distance at right angle from centerline of nearest track.
15. Limits of grading with existing and proposed contours.
16. Minimum structure separation for adjacent structures.
17. Direction of flow for all drainage systems within project limits.
18. Location of geotechnical borings.

ELEVATION

1. Individual span length(s) and total bridge length from inside face to face of backwalls.
2. Distance from nearest Railroad Milemarker to inside face of backwall at the low milepost bridge end.
3. Profile grade of bridge.
4. Profile grade and top of rail elevations for main track.
5. Roadway section.
6. Minimum vertical clearance from roadway to bridge.
7. Limits of handrail/fence on bridge.
8. Location of fixed and expansion bearings.
9. Location and type of substructure with elevations.
10. Numbering of spans, abutments and piers.
11. Existing and proposed groundline, including slope paving.
12. Existing and proposed utilities.
13. Depth of foundation below roadway.

TYPICAL SECTION


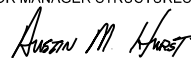
1. Centerline of bridge and/or horizontal control line of project, centerline of existing track(s), centerline of future track(s). Identify tracks as main, siding, etc.
2. AREMA clearance envelope.
3. Horizontal distance between centerline of tracks, distance from centerline of track to face of ballast retainer and handrail/fence.
4. Total width of superstructure.
5. Width of walkway.
6. Height and type of ballast retainer, handrail/fence.
7. Depth of superstructure.
8. Rail, tie and ballast system with vertical distance from top of rail to top of deck and minimum depth of ballast under the tie (12").
9. Cross slope of deck, if applicable, and waterproofing system.
10. Girder spacing.
11. Diaphragms: Steel - end and intermediate
Concrete - tie rods.



TITLE BLOCK

1. The name & logo of engineering firm or project owner.
2. Drawing title.
3. RR Milepost number and subdivision.
4. City, county and state.
5. Project name and location.
6. Date.
7. Latitude and Longitude.

RAILROAD PROFILE GRADE DIAGRAM

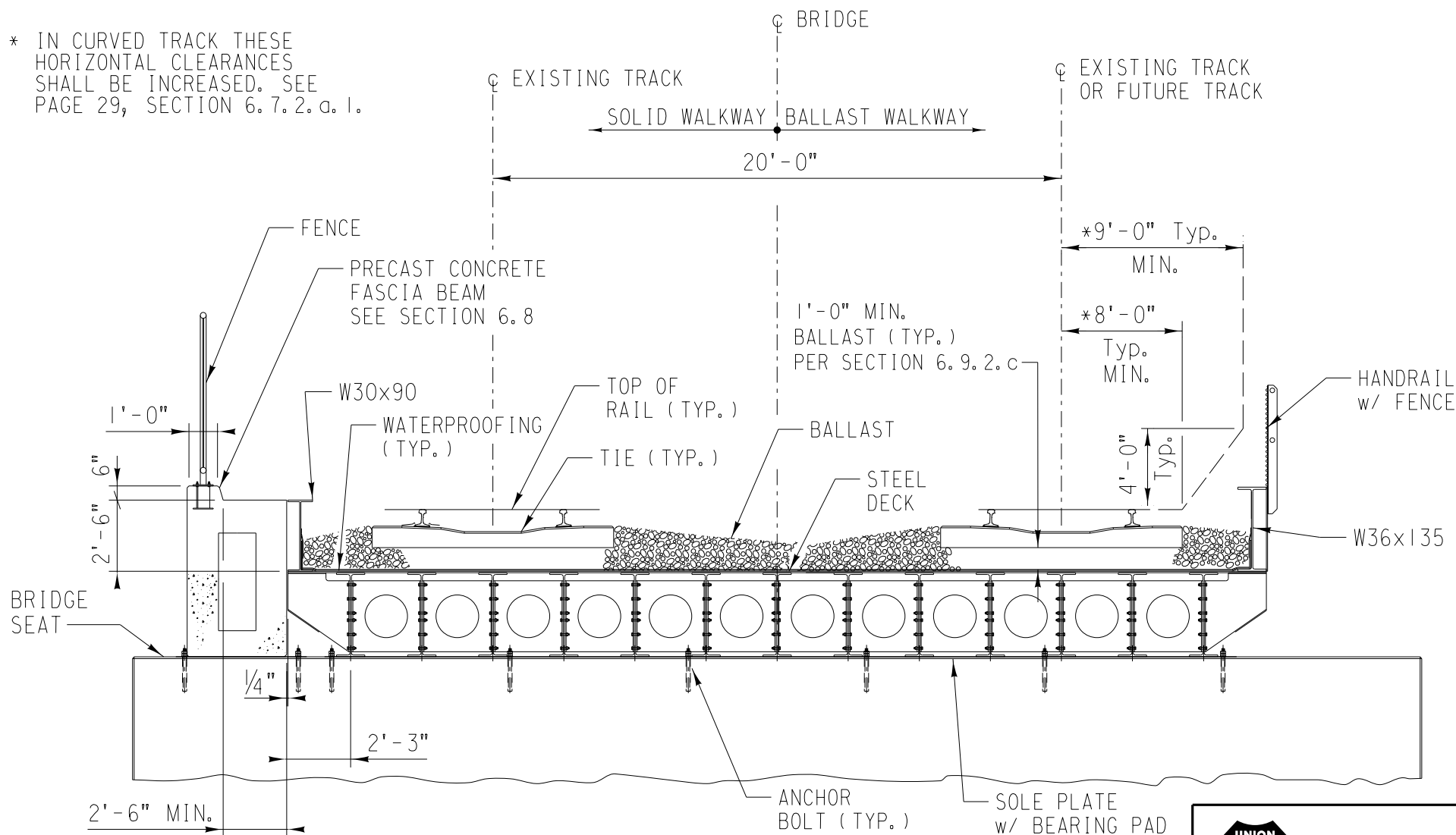
1. Show existing and proposed track profile at the bridge location and a minimum of 1,000 feet past each end of the bridge.

DESIGN BY: RAF	CHECKED BY: AMH
APPROVED:	
	
UPRR - SENIOR MANAGER STRUCTURES DESIGN	
	
BNSF - ASSISTANT DIRECTOR STRUCTURES DESIGN	

			
BRIDGE STANDARDS			
GRADE SEPARATION GUIDELINES			
MINIMUM			
LAYOUT REQUIREMENTS FOR UNDERPASS STRUCTURES			
FILE OWNER: UPRR	DATE: 1/05/16		
PLAN NO.: 711200	SHEET: 1		

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* IN CURVED TRACK THESE
HORIZONTAL CLEARANCES
SHALL BE INCREASED. SEE
PAGE 29, SECTION 6.7.2.a.1.



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APPROVED:	
<i>Rick Friesen</i>	
UPRR - SENIOR MANAGER STRUCTURES DESIGN	
<i>Austin M. Huest</i>	
BNSF - ASSISTANT DIRECTOR STRUCTURES DESIGN	



BRIDGE STANDARDS

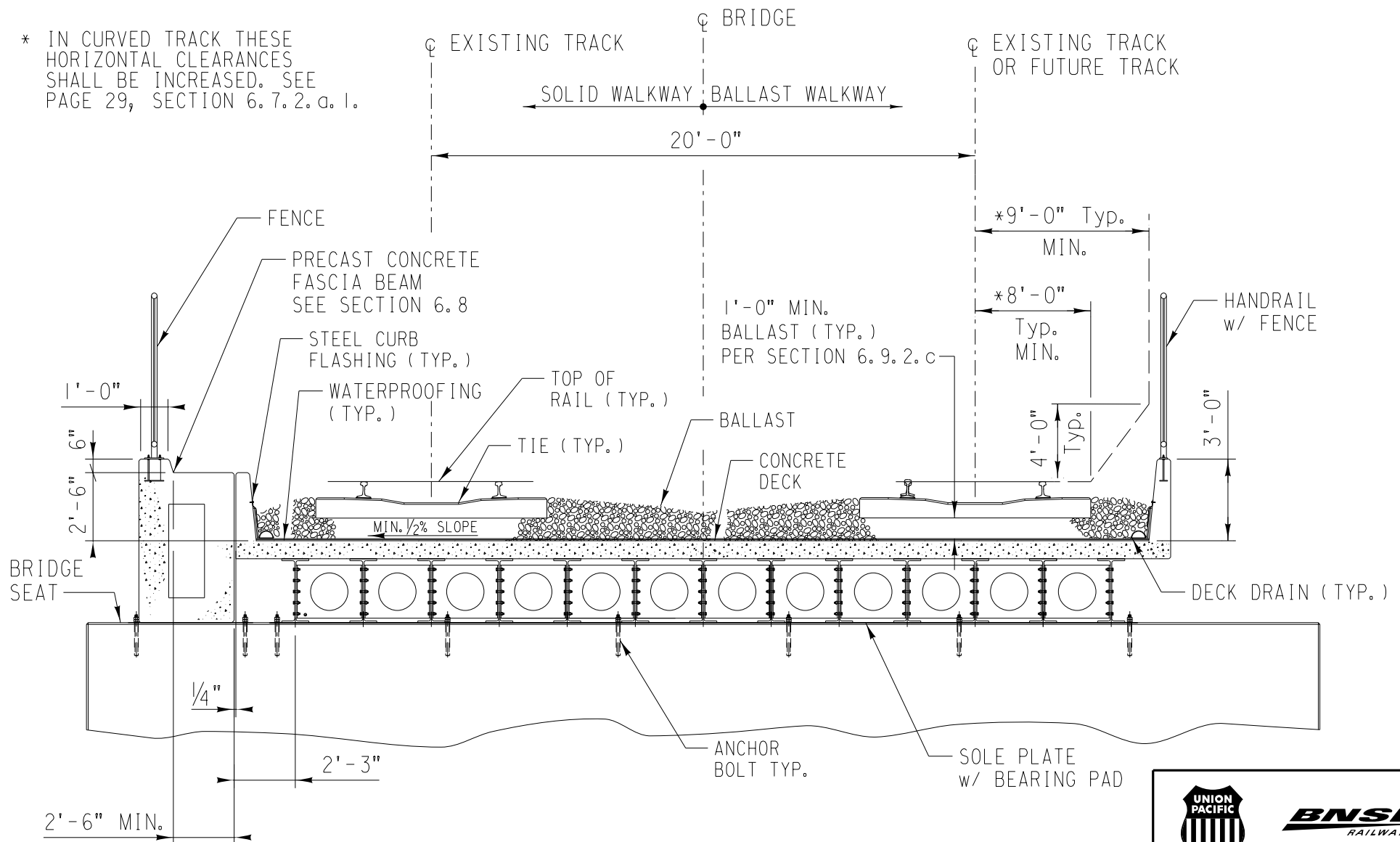
GRADE SEPARATION GUIDELINES

ROLLED BEAMS w/ STEEL PLATE DECK

FILE OWNER: UPRR	DATE: 1/05/16
PLAN NO.: 711200	SHEET: 2

PLOTTED: 5/12/2016 9:14:08 AM

* IN CURVED TRACK THESE
HORIZONTAL CLEARANCES
SHALL BE INCREASED. SEE
PAGE 29, SECTION 6.7.2.d.1.



DESIGN BY: RAF	CHECKED BY: AMH
APPROVED:	
<i>Rick Friesen</i>	
UPRR - SENIOR MANAGER STRUCTURES DESIGN	
<i>Austin M. Huest</i>	
BNSF - ASSISTANT DIRECTOR STRUCTURES DESIGN	



BNSF
RAILWAY

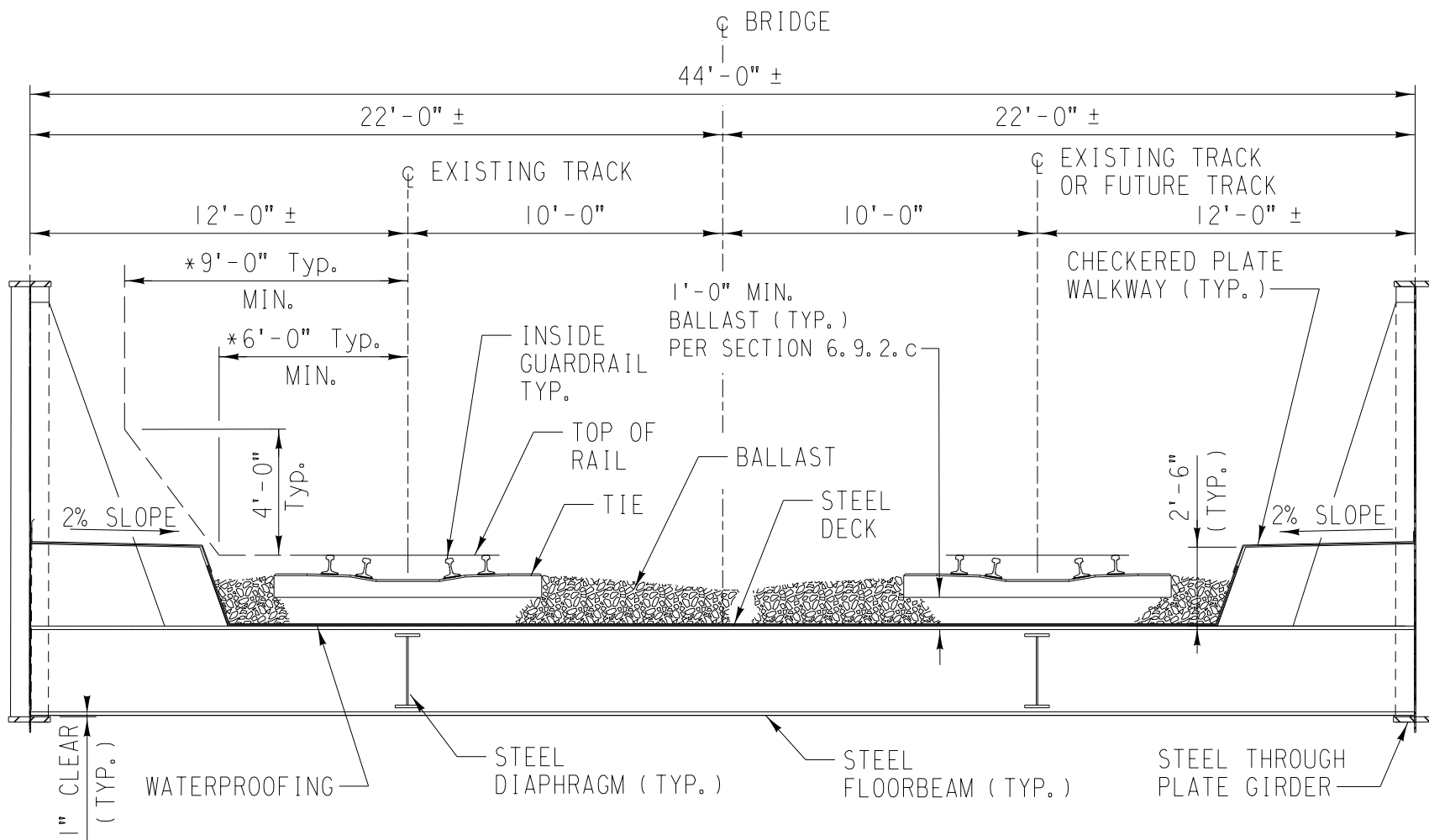
BRIDGE STANDARDS

GRADE SEPARATION GUIDELINES

ROLLED BEAMS w/ CONCRETE DECK

FILE OWNER: UPRR	DATE: 1/05/16
PLAN NO.: 711200	SHEET: 3

PLOTTED: 5/12/2016 9:14:08 AM



* IN CURVED TRACK THESE HORIZONTAL CLEARANCES SHALL BE INCREASED. SEE PAGE 29, SECTION 6.7.2.d.1.

DESIGN BY: RAF	CHECKED BY: AMH
APPROVED:	
<i>Rick Friesen</i>	
UPRR - SENIOR MANAGER STRUCTURES DESIGN	
<i>Austin M. Huest</i>	
BNSF - ASSISTANT DIRECTOR STRUCTURES DESIGN	



BNSF
RAILWAY

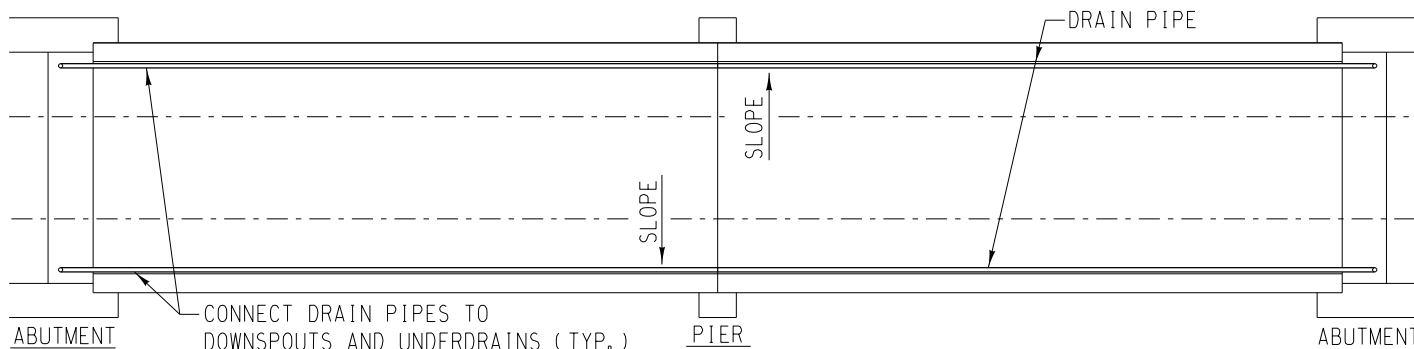
BRIDGE STANDARDS

GRADE SEPARATION GUIDELINES

STEEL THROUGH PLATE GIRDERS w/ STEEL PLATE DECK

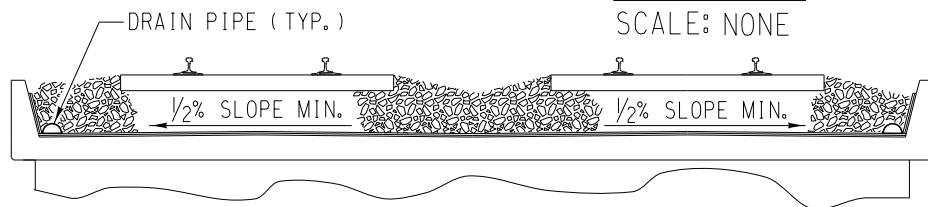
FILE OWNER: UPRR	DATE: 1/05/16
PLAN NO.: 711200	SHEET: 4

PLOTTED: 5/12/2016 9:14:08 AM



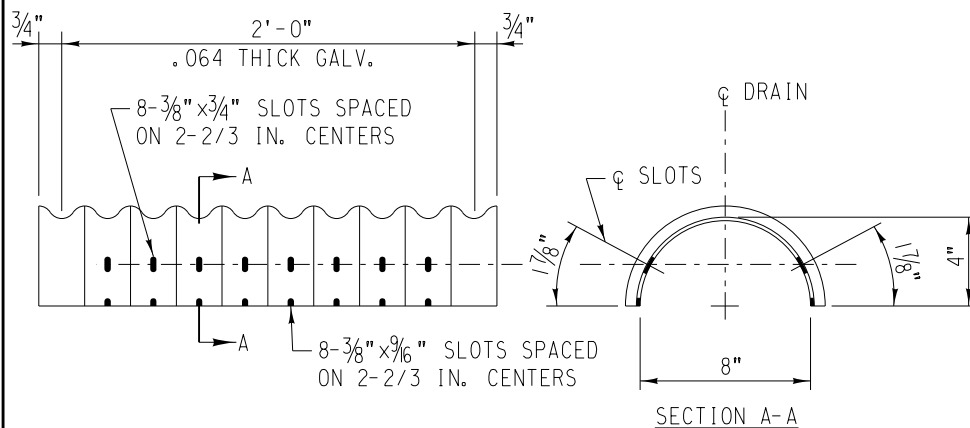
DECK PLAN

SCALE: NONE



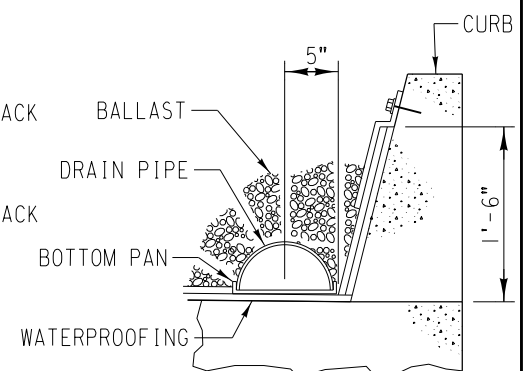
TYPICAL DECK SECTION

SCALE: NONE



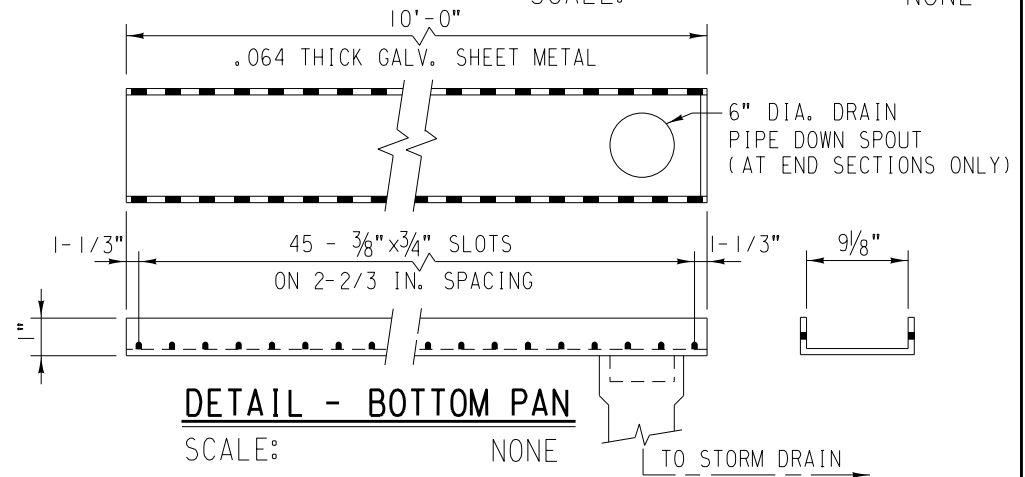
DETAIL - DRAIN PIPE

SCALE: NONE



LOCATION OF DRAIN PIPE

SCALE: NONE



DETAIL - BOTTOM PAN

SCALE: NONE

NOTE: LAP DRAIN PIPE ONE CORRUGATION AT EACH END.

DESIGN BY: RAF	CHECKED BY: AMH
APPROVED:	
<i>Rick Friesen</i>	
UPRR - SENIOR MANAGER STRUCTURES DESIGN	
<i>Austin M. Huest</i>	
BNSF - ASSISTANT DIRECTOR STRUCTURES DESIGN	



BNSF
RAILWAY

BRIDGE STANDARDS

GRADE SEPARATION GUIDELINES

CAST-IN-PLACE CONCRETE DECK DRAIN DETAILS

FILE OWNER: UPRR	DATE: 1/05/16
PLAN NO.: 711200	SHEET: 5

PLOTTED: 5/12/2016 9:14:08 AM

**ITEMIZED BID
BID OPTION 1 OF 1**

FEDERAL PROJECT NO. STP-4900(634)

COUNTY PROJECT NO. CR-1274

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ROADWAY ITEMS					
107-02.01	Railroad Permits, Agreements, and Licenses	L.S.	1		
201-20.10	Clearing and Grubbing	L.S.	1		
202-20.10	Removal of Improvements	L.S.	1		
203-10.00	Class "A" Excavation	C.Y.	4044.9		
203-10.30	Land Disturbance Permits	L.S.	1		
203-10.60	Borrow Material	C.Y.	17273		
207-10.00	Linear Grading, Class 1	STA.	1.1		
304-05.04	Type 5 Aggregate Base (4" Thick)	S.Y.	4546.1		
310-10.02	Gravel (A)	TON	79.9		

3 REPLACES previous pay item 107-02.00 Railroad Permits, Agreements, and Licenses (EACH)

ITEMIZED BID

BID OPTION 1 OF 1

FEDERAL PROJECT NO. STP-4900(634)

COUNTY PROJECT NO. CR-1274

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ROADWAY ITEMS					
405-30.10	Type "C" Bituminous Concrete (Pavement)	TON	326.8		
405-30.30	Type "X" Bituminous Concrete (Base)	TON	2068.8		
407-10.27	Tack-Emulsified Asphalt (SS-1H)	GAL.	200		
408-10.15	Prime-Liquid Asphalt (MC30)	GAL.	1130		
412-10.02	Pavement Surfacing and Texturing (0" to 2"), Concrete or Asphalt	S.Y.	339		
504-10.20	Concrete Bridge Approach Pavement	S.Y.	193.6		
604-12.01	Single Curb Inlet, Untrapped	EACH	4		
604-14.04	Area Inlet, Single, Open 4 Sides, Untrapped	EACH	2		
604-19.27	Manhole	EACH	1		

ITEMIZED BID
BID OPTION 1 OF 1

FEDERAL PROJECT NO. STP-4900(634)
COUNTY PROJECT NO. CR-1274

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ROADWAY ITEMS					
604-23.04	Hydrodynamic Separator (4')	EACH	1		
605-10.10	Class "A" Underdrain	L.F.	84		
606-10.10	Guardrail, Type "A"	L.F.	88		
606-22.00	Bridge Anchor Section (Safety Barrier Curb)	EACH	4		
606-23.00	Transition Section	EACH	4		
606-30.95	Crashworthy Guardrail Terminal	EACH	4		
607-15.48	Drive Gate, Chain Link (48")	EACH	1		
609-10.53	Curb and Gutter, Vertical	L.F.	854		
609-10.54	Curb and Gutter, Mountable (6")	L.F.	33		

**ITEMIZED BID
BID OPTION 1 OF 1****FEDERAL PROJECT NO. STP-4900(634)****COUNTY PROJECT NO. CR-1274**

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ROADWAY ITEMS					
609-10.55	Curb and Gutter, Mountable (3")	L.F.	23		
611-30.20	Furnishing Type 2 Rock Blanket	TON	573		
611-30.40	Placing Type 2 Rock Blanket	TON	573		
611-30.90	Furnishing and Placing MSD Type 5 Rock Blanket	S.Y.	19.8		
612-10.20	Moveable Barricades with Model "B" Amber Flashers (2 Each per Barricade)	EACH	4		
612-30.10	Standard Traffic Control Devices	L.S.	1		
612-60.92	Arrow Panel, Type "B" (Noiseless), Rental	EACH	2		
612-70.20	Changeable Message Board (Noiseless), Rental	EACH	2		
615-10.00	Office for Engineer	MO.	12		

ITEMIZED BID
BID OPTION 1 OF 1

FEDERAL PROJECT NO. STP-4900(634)
COUNTY PROJECT NO. CR-1274

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ROADWAY ITEMS					
617-10.90	Temporary Concrete Median Barrier, Type "A" (Includes End Sections)	L.F.	830		
619-00.00	Mobilization	L.S.	1		
621-10.00	Temporary Pavement Striping, Paint (Includes Removal if Necessary)	L.F.	2070		
624-10.01	Geotextile Fabric, Stabilization and Separation, Class 1 (Heavy Weight)	S.Y.	478		
720-10.00	Mechanically Stabilized Earth Wall Systems	S.F.	1945		
725-10.12	12" Corrugated Galvanized Metal Pipe	L.F.	129		
726-23.12	12" Class III Reinforced Concrete Pipe Culvert (Gasket Type)	L.F.	304		
726-23.18	18" Class III Reinforced Concrete Pipe Culvert (Gasket Type)	L.F.	202		
726-56.56	6" C-900 Polyvinyl Chloride Pipe	L.F.	32		

ITEMIZED BID
BID OPTION 1 OF 1

FEDERAL PROJECT NO. STP-4900(634)
COUNTY PROJECT NO. CR-1274

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ROADWAY ITEMS					
732-00.12	12" Flared End Section	EACH	3		
732-00.18	18" Flared End Section	EACH	2		
803-10.00	Sodding	S.Y.	1793		
803-10.10	Sodding (Zoysia)	S.Y.	408		
805-10.00	Seeding	ACRE	1.1		
806-20.11	Turf Reinforcement Mat (TRM)	S.Y.	648		
806-20.12	Temporary Slope Drains (12")	L.F.	183		
806-30.01	Rock Ditch Check	EACH	24		
806-40.02	Sediment Trap	EACH	1		

**ITEMIZED BID
BID OPTION 1 OF 1****FEDERAL PROJECT NO. STP-4900(634)****COUNTY PROJECT NO. CR-1274**

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ROADWAY ITEMS					
806-45.08	Inlet Protection Device, Single Unit - Filter Sock/Roll	EACH	6		
806-50.00	Temporary Seeding and Mulching	ACRE	0.6		
806-70.00	Silt Fence	L.F.	2422		
806-90.10	Temporary Erosion Control Blanket	S.Y.	2577		
999-91.00	Natural Water Quality BMP(s)	L.S.	1		
SUBTOTAL - ROADWAY ITEMS					

STRUCTURAL ITEMS					
202-10.20	Removal of Bridges	L.S.	1		
206-10.00	Class 1 Excavation	C.Y.	250		

**ITEMIZED BID
BID OPTION 1 OF 1****FEDERAL PROJECT NO. STP-4900(634)****COUNTY PROJECT NO. CR-1274**

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
STRUCTURAL ITEMS					
503-10.00	Bridge Approach Slab	S.Y.	215		
607-10.60	Pedestrian Fence (Structure)	L.F.	183		
701-12.06	Rock Sockets (4 Ft. 0 In. Dia.)	L.F.	36		
701-13.00	Supplementary Television Camera Inspection	EACH	8		
701-14.00	Foundation Inspection Holes	L.F.	116		
701-16.00	Sonic Logging Testing	EACH	8		
703-03.00	Bridge Deck Surface Penetration Sealer	S.F.	3532		
703-20.03	Class "B" Concrete (Substructure)	C.Y.	330.1		
703-42.15	Safety Barrier Curb (Bridges, Cast-in-Place)	L.F.	281		

ITEMIZED BID BID OPTION 1 OF 1

PAGE 9 OF 9

FEDERAL PROJECT NO. STP-4900(634)
COUNTY PROJECT NO. CR-1274

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
STRUCTURAL ITEMS					
703-45.01	Class "B-2" Concrete (Superstructure on Concrete "NU" Girder)	S.Y.	392		
703-90.98	Temporary Retaining Walls	L.S.	1		
705-60.23	Prestressed Concrete Members, NU Girders	L.F.	352		
706-10.60	Reinforcing Steel (Bridges)	LBS.	50290		
715-10.00	Vertical Drain at End Bents	EACH	2		
716-10.11	Plain Neoprene Bearing Pads (Full size)	EACH	8		
718-10.00	Temporary Bridge	L.F.	130		
SUBTOTAL - STRUCTURAL ITEMS					
PROJECT TOTAL - BID OPTION 1 OF 1					

SUMMARY OF QUANTITIES				
PAY ITEM	DESCRIPTION	UNIT	QUANTITY	REMARKS
ROADWAY ITEMS				
201-20.10	Clearing and Grubbing	LS	1	
202-20.10	Removal of Improvements	LS	1	
203-10.00	Class "A" Excavation	CY	4044.9	
203-10.60	Borrow Material	CY	17,273.0	
203-10.30	Land Disturbance Permits	LS	1	
207-10.00	Linear Grading, Class 1	STA	1.1	
304-05.04	Type 5 Aggregate Base (4" thick)	SY	4546.1	Includes 5% Contingency
310-10.02	Gravel (A)	TON	79.9	Based on 1.4 Tons / CY; Includes 5% Contingency
405-30.10	Type "C" Bituminous Concrete (Pavement)	TON	326.8	Based on 2 Tons / CY; Includes 5% Contingency
405-30.30	Type "X" Bituminous Concrete (Base)	TON	2068.8	Based on 2 Tons / CY; Includes 5% Contingency
407-10.27	Tack-Emulsified Asphalt (SS-1H)	GAL	200	Based on 0.10 GAL / SY; Includes 5% Contingency
408-10.15	Prime-Emulsified Asphalt (MC-30)	GAL	1130	Based on 0.30 GAL / SY; Includes 5% Contingency
412-10.02	Pavement Surfacing and Texturing (0" to 2"), Concrete or Asphalt	SY	339	Includes 5% Contingency
504-10.20	Concrete Approach Pavement	SY	193.6	Includes 5% Contingency
604-12.01	Single Curb Inlet, Untrapped	EA	4	
604-14.04	Area Inlet, Single, Open 4 Sides, Untrapped	EA	2	
604-19.27	Manhole	EA	1	
604-23.04	Hydrodynamic Separator (4')	EA	1	
606-10.10	Guardrail, Type "A"	LF	88	
606-22.00	Bridge Anchor Section (Safety Barrier Curb)	EA	4	
606-23.00	Transition Section	EA	4	
606-30.95	Crashworthy Guardrail Terminal	EA	4	Type A (Parallel) 25'0"
607-15.48	Drive Gate, Chain Link (48")	EA	1	
609-10.53	Curb and Gutter, Vertical	LF	854	
609-10.54	Curb and Gutter, Mountable (6")	LF	33	
609-10.55	Curb and Gutter, Mountable (3")	LF	23	
611-30.20	Furnishing Type 2 Rock Blanket	TON	573	Based on 1.8 Tons / CY
611-30.40	Placing Type 2 Rock Blanket	TON	573	Based on 1.8 Tons / CY
611-30.90	Furnishing and Placing MSD Type 5 Rock Blanket	SY	19.8	
612-10.20	Movable Barricades with Model "B" Amber Flashers (2 Each per Barricade)	EA	4	
612-30.10	Standard Traffic Control Devices	LS	1	
612-60.92	Arrow Panel, Type "B" (Noiseless), Rental	LS	2	
612-70.20	Changeable Message Board (Noiseless), Rental	LS	2	
617-10.90	Temporary Concrete Median Barrier, Type "A" (Includes End Sections)	LF	830	Includes 6 Barrier Height Transition End Sections
619-00.00	Mobilization	LS	1	
621-10.00	Temporary Pavement Striping, Paint (Includes Removal if Necessary)	LF	2070	
624-10.01	Geotextile Fabric, Stabilization and Separation, Class 2 (Heavy Weight)	SY	478	
720-10.00	Mechanically Stabilized Earth Wall Systems	SF	1945	
725-10.12	12" Corrugated Galvanized Metal Pipe	LF	129	
726-23.12	12" Class III Reinforced Concrete Pipe Culvert (Gasket Type)	LF	304	
726-23.18	18" Class III Reinforced Concrete Pipe Culvert (Gasket Type)	LF	202	
726-56.56	6" C-900 Polyvinyl Chloride Pipe	LF	32	
732-00.12	12" Flared End Section	EA	3	
732-00.18	18" Flared End Section	EA	2	
806-20.11	Turf Reinforcement Mat (TRM)	SY	648	
806-20.12	Temporary Slope Drains (12")	LF	183	
806-30.01	Rock Ditch Check	EA	24	
806-40.02	Sediment Trap	EA	1	
806-45.08	Inlet Protection Device, Single Unit - Filter Sock/Roll	EA	6	
806-50.00	Temporary Seeding and Mulching	ACRE	0.6	
806-70.00	Silt Fence	LF	2422	
806-90.10	Temporary Erosion Control Blanket	SY	2577	
999-91.00	Natural Water Quality BMP(S)	LS	1	
STRUCTURAL ITEMS				
703-90.98	Temporary Retaining Walls	LS	1	
LANDSCAPE ITEMS				
803-10.00	Sodding	SY	1793	
803-10.10	Sodding (Zoysia)	SY	408	
805-10.00	Seeding	ACRE	1.1	

EARTHWORK BALANCE	
CLASS "A" EXCAVATION	4044.9 CY
COMPACTING EMBANKMENT	18,752.6 CY
BORROW	17,273.0 CY
WASTE	690.0 CY

REPLACE PAY ITEM WITH:

DESCRIPTION	UNIT	QUANTITY
107-02.01 Railroad Permits, Agreements, and Licenses	L.S.	1

ADDITIONAL PAY ITEMS:

ROADWAY ITEMS

DESCRIPTION	UNIT	QUANTITY
107-02.00 Railroad Permits, Agreements, and Licenses	EA	1
615-10.00 Office for Engineer	Mo.	12



COUNTY PROJECT NO.
CR-1274

FEDERAL PROJECT NO.
STP-4900(634)

E-W GATEWAY TIP NO.
6607K-18

MSD: P-0031338-00

MSD BASE MAP:
28U

REV. DATE BY APP. WK. REPLACED PAY ITEM

3	8/27/19	RT	JK	

DISCLAIMER OF RESPONSIBILITY
I hereby specify that the documents provided to be limited to this sheet, and I hereby disclaim any documents or instruments used for any part of the engineering project or survey.

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
RICHARD S. BAUM
NUMBER E-24320

DATE: 11-OCT-2018

JACOBS
JACOBS ENGINEERING GROUP
1501 NORTH BROADWAY
ST. LOUIS, MO 63103
ST. LOUIS PHONE: (314) 335-4000-2921
CERTIFICATE #0004

Richard S. Baum, P.E.
Professional Engineer
License No. E-24320

Saint Louis COUNTY TRANSPORTATION PUBLIC WORKS
Daniel W. Dreisewerd, P.E., PTOE
Acting Director

ALLEN ROAD
BRIDGE NO. 329 OVER
UNION PACIFIC RAILROAD

SUMMARY OF QUANTITIES
"A" SHEET

DESIGNED: R. BAUM

DRAWN: R. BAUM

CHECKED: M. HESTERBERG

SHEET SEQUENCE:
2 OF 84

ALLEN ROAD BRIDGE NO. 329
FEDERAL PROJECT NO. STP-4900(634)
ST. LOUIS COUNTY PROJECT NO. CR-1274
MANDATORY PRE-BID MEETING

CONTRACTOR ATTENDEE REGISTRATION FORM

September 17, 2019
2:15 – 4:00 p.m.
MoDOT District Office
1590 Woodlake Drive
Chesterfield, MO 63017

Contractor Company Name: _____

Contractor Company Street Address: _____

Contact Person Name: _____

Contact Person Phone Number: _____

Contact Person E-Mail Address: _____

Contractor is required to e-mail a completed copy of this form to the St. Louis County Project Manager:

Pamela R. Thebeau, P.E.
PThebeau@stlouisco.com