Public Projects Manual

Updated June 29, 2018

BNSF Railway Public Projects Team

Note: The information contained in this *BNSF Railway Public Projects Manual* is neither exhaustive nor exclusive; rather, it is intended to be a general resource only and all statements contained herein are intended to be for broad use. Nothing identified in this *BNSF Railway Public Projects Manual* can be taken as authority to construct or improve. Specific projects will be subject to analysis of all factors leading to formal agreements between all project parties. The purpose of BNSF review is solely to confirm compliance with the minimum standards of BNSF, and not for any other purpose.

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  - UPRR – BNSF Joint Guidelines for Railroad Grade Separation Projects
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Additional information can be acquired through the following sources:

- American Railway Engineering and Maintenance of Way Association (AREMA), *AREMA Manual for Railway Engineering*, http://www.arema.org
- U.S. Department of Transportation (USDOT) / Federal Highway Administration (FHWA), *Manual on Uniform Traffic Control Devices*, http://mutcd.fhwa.dot.gov/
- Union Pacific Railroad (UP) and BNSF Railway (BNSF), *Union Pacific Railroad – BNSF Railway Guidelines for Railroad Grade Separation Projects* manual (2016), https://www.up.com/cs/groups/public/documents/document/pdf_rr_grade_sep_projects.pdf
- USDOT Railroad-Highway Grade Crossing Handbook: https://safety.fhwa.dot.gov/hsip/xings/com_roaduser/07010/index.cfm
- Federal Railroad Administration Office of Safety Analysis (for USDOT Inventory Number Lookup): http://safetydata.fra.dot.gov/OfficeofSafety/Default.aspx
- Federal Railroad Administration Safety Map (for USDOT Inventory Number Lookup): http://fragis.fra.dot.gov/GISFRASafety/
- Federal Railroad Administration Final Rule and Information on Quiet Zones: https://www.fra.dot.gov/Page/P0889

1.0 Introduction to this Manual

The information contained in this *BNSF Railway Public Projects Manual* is intended to assist communities, public agencies, and other Proponents to coordinate, plan, and implement construction and improvement projects that may potentially involve BNSF Railway (BNSF) property. Some examples of such projects generally include:

- **Highway-Rail Grade Crossings:** Closure, removal, installations, alterations, and Grade Separation of public highway-rail grade crossings.
- **Entry onto BNSF Property:** Temporary rights of entry onto BNSF property, easements, utility installations, and other temporary access needs such as highway overhead bridge inspections.
- **Bridges Carrying BNSF:** Construction, reconstruction, rehabilitation, repair, removal, and maintenance of bridges carrying railway lines of BNSF over roadways and other public properties initiated by outside parties.
- **Bridges Over BNSF:** Construction, reconstruction, rehabilitation, repair, removal, and maintenance of bridges over BNSF railway lines by outside parties.
- **Parallel Roads and Facilities:** Construction, reconstruction, modification, removal, and maintenance of parallel roads or other public facilities (including multi-use trails) potentially affecting BNSF property and/or operations.
- **Beautification and Bridge Painting:** Modification of structures over or adjacent to BNSF involving aesthetic work; or painting of structures over or adjacent to BNSF property.
- **Quiet Zones:** Information for a Proponent proposal to potentially establish a new Quiet Zone that encompasses the BNSF network.
- **Other Projects Involving BNSF Corridors:** Publicly sponsored projects involving or altering BNSF facilities or its property. These projects may be on, above, adjacent to, or otherwise have the potential to impact BNSF property and operations.

Users of this *BNSF Railway Public Projects Manual* should consider that prior to initiating contact with the BNSF Public Projects team regarding a proposed Public Project, communities, public agencies, and other Proponents should first ascertain whether or not the project potentially involves BNSF-owned property.

The resources and strategies identified below can be used by the public to support this process and to reduce possible confusion about a specific project location potentially involving BNSF-owned property.

- Consult the current BNSF Network Map and other mapping resources on the BNSF website that identify BNSF-owned line segments, and all states and provinces and many cities served by BNSF. The BNSF website can be accessed here: https://www.bnsf.com/ship-with-bnsf/maps-and-shipping-locations/rail-network-maps.html
- Consult the Federal Railroad Administration (FRA) Office of Safety Analysis Highway-Rail Crossing Database to make a query of a grade crossing by location for state, county/city, and street name. There is often more than one crossing on the same roadway, but the Grade Crossing Inventory Report generated by searching the database lists the precise latitude and longitude of the grade crossing for cross-reference. Also,

each grade crossing has a unique DOT inventory identification number that typically includes six digits and one letter – such as *123456A* – which is indicated on the report as well as on the signal bungalow at the crossing if applicable. To avoid confusion, reference the DOT Crossing Number in any correspondence with the BNSF Public Projects team regarding the crossing. The FRA Grade Crossing Inventory Database website can be accessed here: https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/crossing/Xinggryloc.aspx

- To ascertain if a specific parcel of land is BNSF property, interested parties can generally check with a local tax assessor or consult local courthouse records.
- Note that BNSF trains, locomotives, railcars, and equipment can operate on a rail line owned by BNSF or over rail lines owned by other railroads, and that these observations of railway operations should therefore not be used by the public to ascertain whether or not a specific rail line is potentially owned by BNSF.

Users of this *BNSF Railway Public Projects Manual* should also consider the following:

- **The safety of BNSF employees and the public is of paramount importance to BNSF.**
- The specific BNSF requirements for projects, as described in this *BNSF Railway Public Projects Manual*, shall be followed at all locations where BNSF owns and/or operates, regardless of track ownership or whether or not the track is either active or out-of-service.
- The guidelines and requirements contained in this *BNSF Railway Public Projects Manual* are provided for reference only and are subject to revision without notice. All new projects and shall be designed in accordance with the most current BNSF policies, requirements, and standards.
- Any items or project types affecting BNSF property that are not covered in this *BNSF Railway Public Projects Manual* are also subject to BNSF's prior review and approval.

2.0 BNSF Public Projects and Outside Property Manager General Roles, Contacts, and Territories

BNSF Railway Company (BNSF) is headquartered in Fort Worth, Texas, and operates one of the nation's largest Class I rail networks, with approximately 32,500 route miles in 28 states across the western two-thirds of the United States, and in two Canadian provinces. BNSF's Public Projects team is involved in a broad array of projects initiated by government agencies and other parties, as well as BNSF itself, in the communities across the railway's network.

A primary role of the BNSF Public Projects team is to work with and assist government agencies or other Proponents, including processing contracts, when they have made a determination to make modifications to at-grade crossing or grade-separated crossing (public or private). This includes modifications to the crossing surface, railroad Active Warning Devices (including flashing light signals and gates), traffic signals interconnected to railroad signals, bridge

maintenance, roadway lane widening or addition of new sidewalks across the railroad, and new grade separations. The BNSF Public Projects team is also involved in grade crossing closures, multi-use trails, any improvement project paralleling BNSF property, and any effort by a government agency to seek establishment of a Quiet Zone that encompasses the BNSF network. Identification of any permits, agreements, and other documentation required by BNSF for the facilitation of public projects work is included by project type throughout this *BNSF Railway Public Projects Manual*. A flow chart showing the roles of the BNSF Public Projects team and contact information for the BNSF Public Projects team by territory is presented throughout this section (click here to reference Figure 1 to access the flow chart).

To help facilitate the needs of government agencies and other Proponents regarding the Public Projects process, BNSF has partnered with Jones Lang LaSalle Brokerage, Inc. (JLL) to process permits, licenses, leases, and easements on BNSF property. JLL also handles the following additional roles for projects on BNSF property: Private Crossing permits, Temporary Occupancy Permits, installation of new utilities; storing of material or equipment; performing minor construction work such as soil borings or grading; surveying; and geotechnical engineering. JLL also facilitates sales of BNSF real estate and any general property management for BNSF.

Additional details about the services JLL provides can be found on the BNSF website here: https://www.bnsf.com/about-bnsf/faqs.html#permits. Identification of any permits, licenses, agreements, and other documentation required by BNSF for the facilitation of public projects work is included by project type throughout this *BNSF Railway Public Projects Manual*. A flow chart showing the roles of the JLL team and contact information for the JLL team by function and territory is presented throughout this section (click here to reference Figure 1 to access the flow chart).

2.1 BNSF Public Projects Team

A BNSF Public Projects Management Staff and Territory Map with related contact information can be found at: http://www.bnsf.com/in-the-community/public-projects/index.html

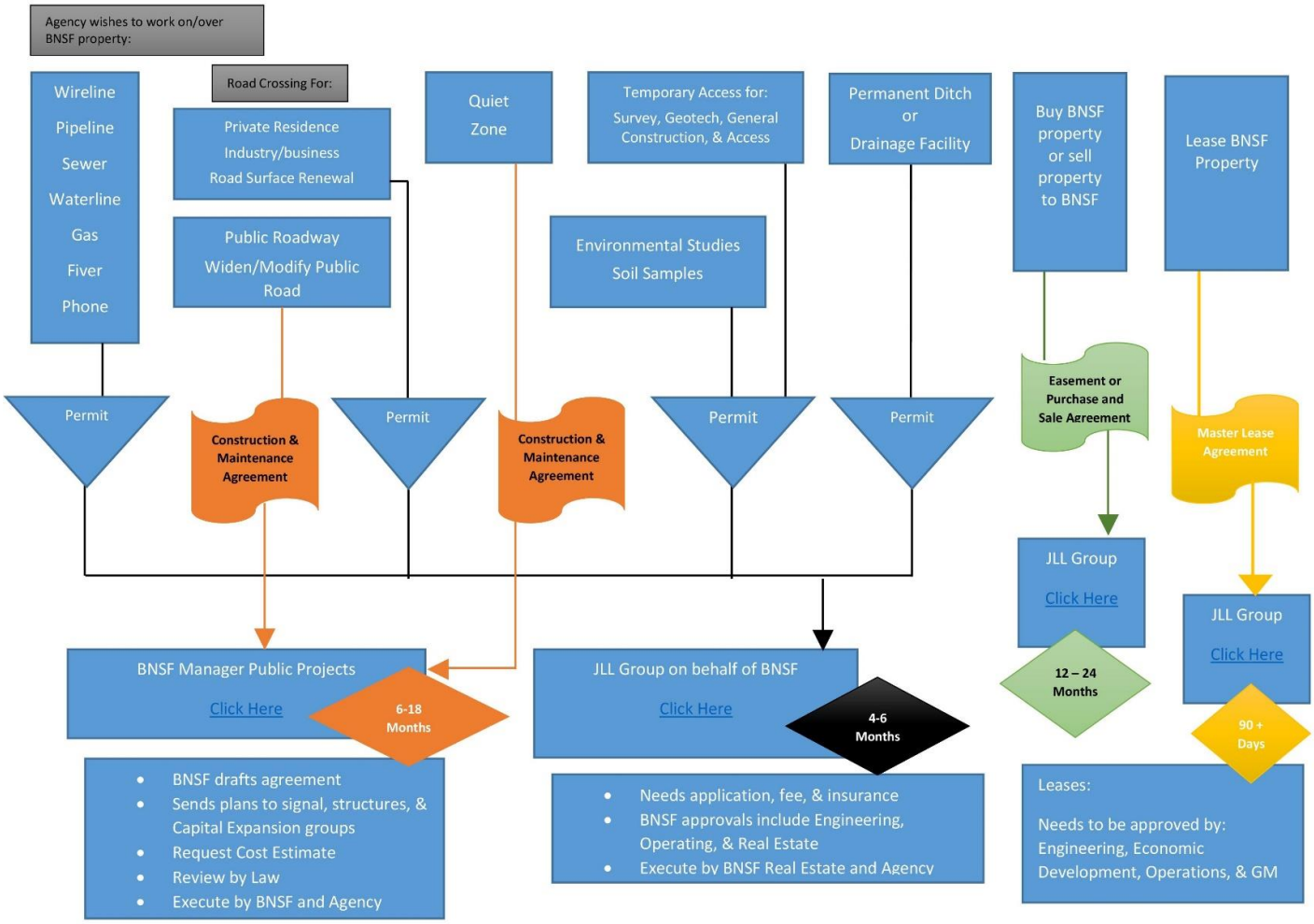
2.2 JLL Team

A JLL Permit Management Team Territory Map as well as the Lease Management Team Territory Map with related contact information can be found at: https://www.bnsf.com/in-the-community/jll-contacts.html

2.3 Flowchart of the Roles of BNSF and JLL Teams

A flowchart showing the roles of BNSF and JLL teams is shown in Figure 1 below.

Figure 1: Flowchart of the Roles of BNSF and JLL Teams



3.0 Additional BNSF Resources and Contacts

Many areas of community interest are outside of the purview of the BNSF Public Projects and JLL teams and the scope of this *BNSF Railway Public Projects Manual*. Identified below is a list of additional BNSF resources and contacts that may be helpful on other community matters and public inquiries.

Emergencies: BNSF Resource Protection Command Center (1-800-832-5452).

Table 1: BNSF Safety and Security Contact Information

Name	Contact
Emergencies	1-800-832-5452 (Option 1)
Report Trespassers or Criminal Activity	1-800-832-5452 (Option 3)
Make an Anonymous Report	1-800-832-5452 (Option 4)

BNSF Community Affairs: This BNSF team includes Public Affairs Directors who address BNSF challenges and opportunities at the local, county, and regional government levels, and serve as liaisons with the public and the media. All media inquiries must be directed to the BNSF Public Affairs team, whose contact information is available at the following link: http://www.bnsf.com/news-media/media-contacts.html

BNSF Tribal Relations: The BNSF Tribal Relations team builds and strengthens relationships with the 86 tribal and first nation communities across the BNSF network. The BNSF Tribal Relations team also provides internal training and technical guidance on protecting cultural resources, interaction with tribal representatives, and other topics involving BNSF's interaction with tribal communities. Their contact information is available at the following link: http://www.bnsf.com/in-the-community/tribal-relations/

BNSF Government Affairs: BNSF state and federal government affairs teams work to educate and inform public policymakers at local, state, and federal levels. These teams primarily focus on legislative and regulatory matters as well as working with communities to seek solutions of mutual interest. Their contact information is available at the following link: http://www.bnsf.com/about-bnsf/contact-us/

BNSF Passenger Operations: Commuter (or suburban) passenger trains operate over various segments of the BNSF network, and include Metra (Chicago Area); Metro Transit (Minneapolis, Area); and Sound Transit (Seattle, Area).

Table 2: BNSF Passenger Operations Contacts

Name	Contact
Metra Suburban Service (Chicago Area)	312-322-6777
Metro Transit (Minneapolis Area)	612-373-3333 (Option 3)
Sound Transit (Seattle Area)	206-398-5000

Other BNSF Teams: BNSF has additional teams that may have interaction with communities, public agencies, and other Proponents. For example, BNSF has a Public Private Partnerships team. If a Proponent is interested in pursuing discretional, competitive federal grants (e.g. USDOT TIGER grants), the BNSF Public Private Partnerships team can advise of BNSF's requirements for support. The BNSF Manager Public Projects will facilitate that interaction. Similarly, the BNSF Manager Public Projects can provide contact information for representatives of other BNSF teams in their respective territories that are not listed above (e.g. Engineering / Maintenance-of-Way, Economic Development, Strategic Sourcing, etc.).

State Department of Transportation and Public Utilities Commission Contacts: The BNSF Manager Public Projects can provide contact information for State Department of Transportation and/or State Public Utilities Commission representatives, as appropriate.

4.0 Definition of Terms

This section defines some terms used throughout the *BNSF Railway Public Projects Manual*.

Access Road – A road used and controlled by BNSF for the purpose of accessing, inspecting, and maintaining track, other railroad infrastructure, and railroad property.

Active Warning Device – A type of warning for at-grade roadway/railway crossings that may include bells, flashing lights, and automatic gates.

Alternative Safety Measure – An Alternative Safety Measure (ASMs) is a safety system or procedure, other than Supplemental Safety Measures (SSMs), provided by the appropriate traffic control authority which, after individual review and analysis, is determined by the Federal Railroad Administration (FRA) to be an effective substitute for the locomotive horn at specific highway-rail grade crossings. A public authority seeking approval of a Quiet Zone under public authority application to the FRA may include ASMs in its proposal.

American Railway Engineering and Maintenance-of-Way Association – The American Railway Engineering and Maintenance-of-Way Association (AREMA) is a North American railroad industry group that develops recommended practices for railroad-related projects. The use of this term shall be in specific reference to the AREMA Manual for Railway Engineering developed and maintained by AREMA.

BNSF or BNSF Railway – Refers to BNSF Railway Company.

Construction & Maintenance Agreement – A Construction & Maintenance (C&M) Agreement is an agreement between BNSF and a Proponent that provides license and permission for a Proponent to perform work on BNSF property.

Constant Warning Time (CWT) – Equipment that detects the approach and speed of a train and measures its distance from a grade crossing in order to activate grade crossing warning devices (i.e. bells, flashing lights, and automatic gates) within a uniform

minimum warning time selected, and thus reduce potential delays to vehicular traffic or the potential for motorists to disregard warning devices at the grade crossing.

Engineer – BNSF Engineering Representative authorized to act on the behalf of BNSF.

Exhibit C and C-1 – Exhibit C and C-1 to the C&M Agreement is an agreement between BNSF and the Proponent's contractor which includes parameters for occupying and performing construction on BNSF property, including insurance, notifications, and other requirements.

Federal Railroad Administration – The Federal Railroad Administration (FRA) is an agency of the U.S. Department of Transportation. The FRA's mandate is to promulgate and enforce rail safety regulations, conduct research to support improved railroad safety and national transportation policy, administer railroad assistance programs, and support other rail transportation activities.

Flagger – A qualified BNSF employee with the sole responsibility to direct or restrict movement of trains, at or through a specific location, to provide protection for workers on or near BNSF property.

Force Account – Force Account is a common procurement method with U.S. railroads, under which extra work beyond that originally agreed to by the railroad and the contractor is reimbursed to the contractor at the contractor's actual costs plus a fixed overhead and profit percentage. Force Account is generally used to avoid delay and incidental costs that would be incurred to negotiate the amount and value of extra work required for each change in conditions.

Grade Separation – A project that includes construction of an Overpass or Underpass Structure that crosses the BNSF Right-of-Way or other railroad operating location, usually eliminating an at-grade crossing.

Horizontal Clearance – Distance measured perpendicularly from centerline of any track to the nearest obstruction at any elevation between the Top of Rail and the maximum Vertical Clearance of the track.

Inspector/Coordinator Consultant – The Inspector/Coordinator Consultant (I/C) is hired by BNSF to coordinate with the designated BNSF Project Engineer during certain types of projects involving BNSF property.

Multi-Use Trail – A multi-use trail (also known as a shared-use path) is a public, shared-use pathway that may be used by bicyclists, pedestrians, joggers, equestrians, and approved motorized recreational equipment. These pathways are typically located outside the traveled way and physically separated from motorized vehicular traffic by an open space or barrier and either within the roadway Right-of-Way or within an independent alignment.

Manual on Uniform Traffic Control Devices – The Manual on Uniform Traffic Control Devices (MUTCD) is a document published by the Federal Highway Administration (FHWA) that specifies the standards and requirements for the installation of traffic control devices such as traffic signs, markings, and signals to be used on all public roadways, bikeways, and private roads open to the public in the U.S. States and their subdivisions must either comply with the MUTCD or adopt an alternative manual approved by the FHWA. Highway-rail grade crossings are addressed in Section 8 of the MUTCD.

Operationally Critical Work – Work on or adjacent to BNSF right-of-way that requires a submittal and impacts, or could impact, BNSF operations. Operationally Critical Work requires specific design/constructability submittals to BNSF.

Overpass Structure – A roadway, pedestrian, or trail structure which passes over BNSF property or Right-of-Way.

Passive Warning Device – A traffic control device, such as a highway sign or pavement marking, located at or in advance of an at-grade roadway/railway crossings that indicates the presence of an at-grade crossing but does not activate or change upon the approach or presence of a train. Passive Warning Devices may include crossbucks, stop or yield signs, and pavement markings.

Preemption – The transfer of normal operation of a traffic control signal to a special control mode of operation. In railroad preemption, the railroad warning system preempts the normal operation of the traffic signal and provides a green indication for traffic located on or near the track(s) to allow time for vehicles to clear the track area prior to the arrival of a train.

Preliminary Engineering – An early phase of project analysis and design work that typically develops construction plans, specifications, and cost estimates to a level of 30 percent completion.

Private Crossing – An at-grade crossing of a private roadway with a railway line. Private grade crossings are on privately owned roadways, such as on a farm or in an industrial area, and are intended for use by the owner or by the owner's licensees and invitees. A Private Crossing is not intended for public use and is not maintained by a public highway authority. Private Crossing owner is responsible for having a Private Crossing permit in place with BNSF.

Professional Engineer – A Professional Engineer (PE) is an engineer who is licensed in the state in which the project is to occur. All plans, specifications, and supporting calculations shall be prepared by the PE and shall bear his or her seal and signature.

Proponent – The project sponsor, which may be the roadway authority with jurisdiction over the roadway crossing BNSF Right-of-Way, a state Department of Transportation, a road authority, private developer, or other party.

Public Crossing – An at-grade crossing of a public roadway with a railway line. Public grade crossings are roadways that are under the jurisdiction of, and maintained by, a public highway authority (city, county, or state).

Quiet Zone – A segment of track over which routine sounding of train horns while approaching public grade crossings is not required owing to the installation of various Supplemental Safety Measures (SSMs) or Alternative Safety Measures (ASMs), as identified in the Final Rule on the Use of Locomotive Horns at Highway-Rail Grade Crossings (49 CFR Part 222).

Right-of-Way – Refers to BNSF Right-of-Way (ROW) as well as all BNSF property and facilities. This includes all aerial space within the property limits, and any underground facilities.

Supplemental Safety Measure – A Supplementary Safety Measure (SSM) is a safety system or procedure established in accordance with Federal rules governing Quiet Zones which is provided by the appropriate traffic control authority or law enforcement authority responsible for safety at the highway-rail grade crossing, that is determined by the FRA to be an effective substitute for the locomotive horn in the prevention of highway-rail casualties. SSMs may be installed or enacted as part of the implementation of a Quiet Zone.

Temporary Occupancy Permit – A Temporary Occupancy Permit (TOP) is utilized by BNSF via JLL primarily in situations when outside parties or other Proponents desire to undertake investigative work such as performing survey work, taking borings, performing bridge inspections, or undertaking other activities requiring only access to BNSF property and not construction work activities.

Top of Rail – This is the base point for railway clearance measurements. It refers to the top of the steel rail; the point where train wheels bear on the steel rails. Use the higher of the two rails when track is superelevated.

Track Structure – All load bearing elements that support the train. This includes, but is not limited to, the rail, ties, appurtenances, ballast, sub-ballast, embankment, retaining walls, and bridge structures.

Underpass Structure – A railroad structure over a roadway, pedestrian, or trail structure.

Vertical Clearance – Distance measured vertically from the top of the highest rail to the lowest obstruction under the structure; unless accepted by BNSF, the required minimum vertical clearance is 23’-6” from Top of Rail to low point of the overhead structure.

5.0 Summary of Steps for Outside Party Projects

This *BNSF Railway Public Projects Manual* is intended to assist communities and other project participants to generally coordinate, plan, and implement construction and improvement projects that may potentially involve BNSF property. This section provides a summary of typical steps for the design and construction of outside party projects that may potentially involve BNSF property.

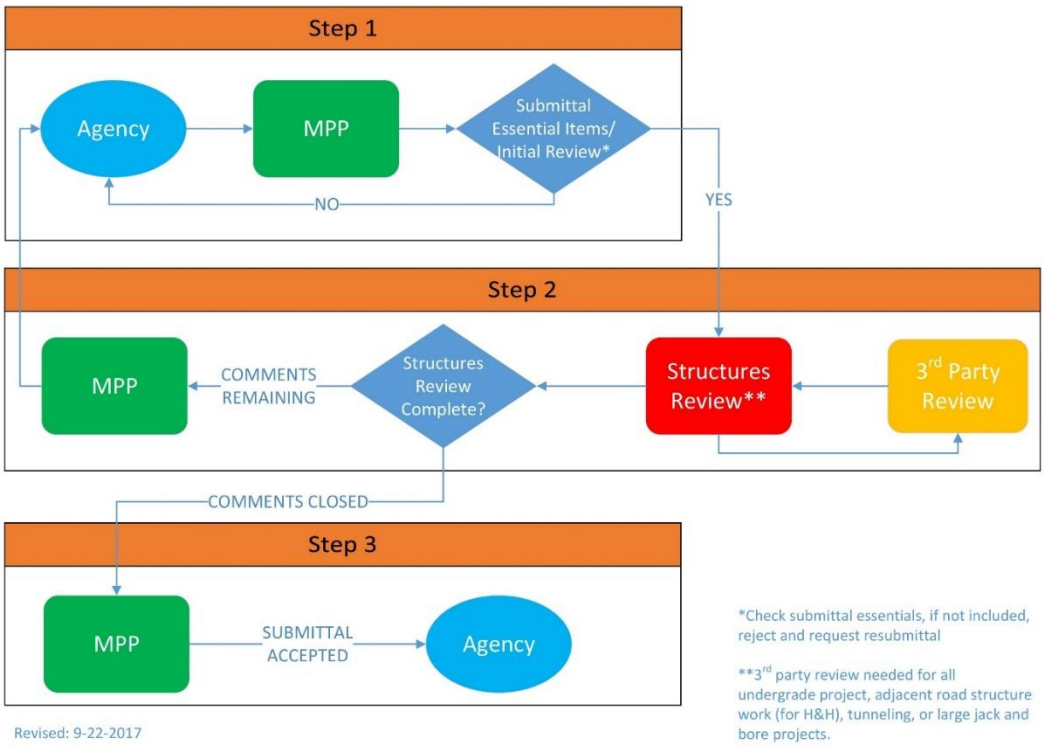
5.1 Typical Steps for Design Review

Typical steps during the design stage of the project are listed below and are presented in Figure 2:

- The Proponent notifies the BNSF Public Projects team of the project by providing location information and conceptual plans and other available preliminary information.
- Provide to BNSF the authorization to incur and be reimbursed for Preliminary Engineering costs. Note that BNSF may need to hire an outside firm for engineering review on all Underpass Structure or other complicated structures projects, adjacent road structure work (for hydraulics and hydrology [H&H]), tunneling, large jack and bore projects, etc.
- Provide project information, attend diagnostic and other meetings (as needed), and review site with BNSF or BNSF designee.
- Submit initial plans to BNSF.
- Respond to BNSF comments and adjust design if necessary.
- Submit final design for BNSF.
- BNSF will perform final review to ensure compliance with railroad requirements.
- BNSF will estimate the cost of the work to be done by BNSF, including flagging.
- Once BNSF and the Proponent have reached concurrence on comments, the Design Submittal will be approved, and may move onto the construction review.

Through the review process, a Proponent and/or its consultant/contractor will be required to complete a BNSF Review Comment Sheet. Examples of these BNSF Review Comment Sheets can be found in Appendix E.

Figure 2: BNSF Public Projects Design Plan Submittal Flow Chart



5.2 Typical Steps for Construction Submittal Review

Typical steps during the construction stage of the project are listed below and are presented in Figure 3:

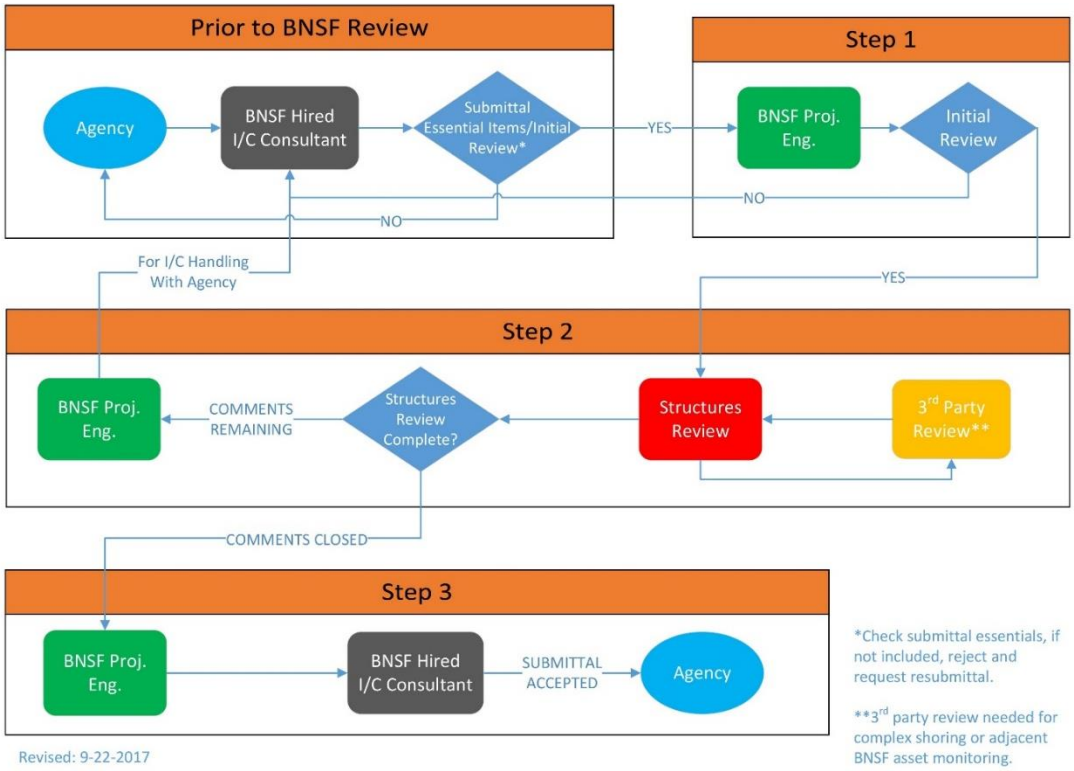
- The Proponent and BNSF Public Projects team will execute a Construction and Maintenance (C&M) Agreement.
- The Proponent will provide BNSF authorization to incur and be reimbursed for engineering costs with a Notice to Proceed (NTP).

BNSF may hire an Inspector/Coordinator Consultant (I/C) to coordinate with the designated BNSF Project Engineer. For more information about the I/C, see Section 12.0 – Construction Monitoring Requirements in this *BNSF Railway Public Projects Manual*.

- The I/C may only proceed upon notice of Purchase Order from BNSF Project Engineer.
- The I/C will confirm that the project is constructed per accepted plans and specifications for that portion of the project on BNSF Right-of-Way, as it impacts BNSF.
- The I/C also monitors construction activities to confirm that improvements on BNSF Right-of-Way meet all requirements of BNSF, and accommodate railroad operations, while also immediately reporting to the BNSF Project Engineer any material or performance test failures, or suspected deviations from plans which could negatively impact BNSF.
- The I/C also reviews all submittals from Proponent, as required. The I/C handles comments from BNSF Project Engineer and BNSF Structures team review and verifies that BNSF has taken no exception with required submittals prior to applicable work commencing.

- Note that a third party review may be needed for complex shoring and adjacent BNSF asset monitoring.
- The I/C will be the all-around liaison to Engineering Services and Structures, Transportation, Track, Environmental, Signal, and other BNSF teams as needed, throughout the construction of the project, and will coordinate work, conduct quality control, and monitor construction.

Figure 3: BNSF Public Projects Construction Plan Submittal Flow Chart



Click here to see Figure 1 in Section 2.0 – BNSF Public Projects and JLL General Roles, Contacts, and Territories, of this *BNSF Railway Public Projects Manual* for more information on BNSF and JLL roles.

5.3 State DOT/PUC Requirements

Proponents should also consider that a public project potentially involving BNSF property may also be subject to specific requirements of a state Department of Transportation and/or state Public Utilities Commission. The BNSF Manager Public Projects can provide additional information regarding any state-specific project requirements for their respective territories, as appropriate.

5.4 BNSF Fourth Quarter Construction Moratorium

Proponents should also be mindful that BNSF has the right to shut down all construction activities on and adjacent to BNSF property during the fourth quarter of each year – October 1 to December 26 – to accommodate BNSF's peak holiday shipping season. A Proponent can request a waiver (sent to the BNSF Project Engineer assigned to the project) from this

moratorium by identifying the type of work to be performed, distance from BNSF track(s), and work timeframe. BNSF can choose to waive some or all of the moratorium (construction shut down during November 1-December 26 only, for example) if BNSF determines that the construction activities will not have any impacts on BNSF peak train traffic. Minor work is often permitted adjacent to BNSF track(s), but major work (e.g. overhead bridge work) is typically not permitted by BNSF during the fourth quarter construction moratorium.

6.0 Project Alternative Delivery

BNSF recognizes that there may potentially be alternative methods for the construction and delivery of some types of public projects (e.g. design-build approach). Proponents should coordinate with the BNSF Manager Public Projects for the appropriate territory to learn more about alternative project delivery methods and their potential applicability to public projects on or near BNSF property.

7.0 Payment of BNSF's Cost and Expense

7.1 Key Points

- All funding sources must be identified upfront. Any time funding sources change, BNSF must be immediately informed.
- Preliminary Engineering costs are billed directly to the Proponent by BNSF on a monthly basis.
- BNSF construction expenses will be estimated during Preliminary Engineering, and the estimate will be incorporated into the C&M Agreement. These are cost estimates only and BNSF has the ability to update at various frequencies. BNSF will bill the Proponent actual costs on a monthly basis during construction. A final bill will be sent at the completion of the project.

7.2 General Billing and Reimbursement Requirements

Under normal billing procedures during construction of the project, BNSF will send the Proponent progressive invoices detailing the costs of the railroad work performed by BNSF under the corresponding agreement. The Proponent must reimburse BNSF for completed Force Account work within thirty (30) days of the date of the invoice for such work. Parties may negotiate a lump sum with terms to be determined.

Upon completion of the project, BNSF will send the Proponent a detailed invoice of final costs, segregated as to labor and materials for each item in the recapitulation shown in original cost estimate provided by BNSF. Proponent must pay the final invoice within ninety (90) days of the date of the final invoice.

BNSF reserves the right to charge a finance fee for any reimbursable payments made after the terms stipulated in the agreement. The finance charge continues to accrue daily until the date payment is received by BNSF, not the date payment is made or the date postmarked on the payment. Finance charges will be assessed on delinquent sums and other charges as of the

end of the month and will be reduced by amounts in dispute and any unposted payments received by the month's end. Finance charges will be noted on invoices sent to the Proponent.

7.3 Work to be Completed by BNSF (Force Account Work)

- Railroad-related construction activities, as required by union agreement or as indicated by BNSF.
- Railroad flagging protection.
- Surface – Crossing maintenance and/or replacement of the track and crossing surface are performed by BNSF and may be billable to an outside party or highway authority as specified in an agreement. The responsibility for the maintenance of Public Crossing approach pavement varies by state and is specified in some individual crossing agreements or orders.
- Signal – Crossing signal construction, maintenance, or outage required by the proposed track work.
- I/C – Inspection services during Proponent's construction.

7.4 Work to be Completed by the Proponent

- The remaining work as outlined in the accepted construction documents and corresponding C&M Agreement. The cost of this work will be the responsibility of the requesting Proponent unless otherwise stipulated in the C&M Agreement.

8.0 Requirements for BNSF Engineering Review

8.1 Key Points

- Beginning the BNSF Public Projects engineering review process early and providing conceptual plans may lower project costs and expedite the time required for BNSF review and acceptance.
- BNSF reviews plans for impacts to train operations and long-term implications for the BNSF franchise.
- Proponents are encouraged to engage a consultant familiar with BNSF policies, standards, and requirements to develop a single design and structural review.
- If the proposal requires an easement on BNSF property, the Proponent should contact JLL when beginning Preliminary Engineering.
- If the proposal requires a utility encroachment, the Proponent should refer to the BNSF Utility Accommodation Policy, located at https://www.bnsf.com/about-bnsf/pdf/utility.pdf.
- If the Proponent is requesting a signal interconnection between an active railroad at-grade crossing and a traffic signal, the Proponent will need to hire one of BNSF's pre-approved signal design consultants to perform the consult with the city's design utilizing BNSF's standards.
- If the project is a new Grade Separation where BNSF will pass over the roadway, BNSF Structures team may hire a third-party consultant to perform design reviews.

8.2 Overview

Any project proposals that may impact BNSF operations or are in close proximity to BNSF Right-of-Way must be evaluated by BNSF. To initiate a construction or improvement project, a Proponent must contact the BNSF Manager Public Projects. The BNSF MPP will work with the Proponent to identify the scope, define the tasks to be accomplished, and specify the payment required. In concurrence with the plan review, BNSF will draft a construction agreement.

8.2.1 Purpose

The purpose of Preliminary Engineering reviews is to identify issues related to safety, engineering, customer service, operations, legal and regulatory matters, expense, risk, and other considerations specific to any proposed project. BNSF review of plans is only to determine that the plans, and any improvements constructed in accordance with the plans, satisfy BNSF's requirements. Plans should be submitted early in project development so that BNSF requirements can be incorporated.

8.3 Process Steps to Be Taken

- Notify BNSF Public Projects team of the project by providing location information and conceptual plans.
- Provide project information, attend meetings (as needed), and review site with BNSF.
- Submit initial plans to BNSF for review.
- Respond to BNSF comments and adjust design if necessary.
- Submit final design for BNSF review.
- BNSF will perform final review to ensure compliance with railroad requirements.
- BNSF will estimate the cost of the work to be done by BNSF, including flagging.
- If BNSF takes no exceptions to the design plans (or once all BNSF concerns have been identified and reconciled), BNSF will draft and execute a C&M Agreement for execution.

8.4 Cost and Expenses

Section 7.0 of this *BNSF Railway Public Projects Manual* (Payment of BNSF's Costs and Expenses) details BNSF's general process payment of costs and expenses. Only a BNSF third-party engineering consultant, if required, will be billed during this period.

8.5 Timing

It is a requirement by BNSF, and in the best interest of all parties, to complete the Engineering reviews before any contracts are executed between a Proponent and BNSF or any construction steps begin. BNSF will work to be responsive, with timing depending upon the complexity of the project and the related schedule. Typical review times are 30 days per submittal to BNSF. BNSF will work with the Proponent to schedule PE and construction to meet project schedule objectives whenever possible, considering available resources.

8.6 Standard Documents

BNSF executes several agreements for Preliminary Engineering and construction of projects annually. BNSF has developed standard agreements, which can be executed by BNSF without additional legal review. Non-standard agreements or modifications to the BNSF standard agreement terms will require additional legal review and may increase approval time, project duration and/or cost. Sample standard agreement documents are available in the Appendix A and B of this *BNSF Railway Public Projects Manual*.

9.0 Summary of Submittal Review Schedules

Submission Review Period – A minimum of 30 days will be required by BNSF for the initial review response. Up to an additional 30 days may be required by BNSF to review any subsequent submissions or resubmission.

9.1 General Review Schedule by Project Type

Click here to reference Figure 1 in Section 2.3 for the roles of BNSF and JLL teams when examining general review schedules for the following project types. JLL works with various departments at BNSF to review and approve all elements listed below.

- **Bridge Demolition**
  - A minimum of four (4) weeks shall be expected for BNSF's review after the complete submittal is received (*Guidelines for Preparation of Bridge Demolition and Removal Plan Over the BNSF Railway*, 2008).
- **Utility Crossings**
  - For pipeline/wire line processing (e.g. installation of a pipeline for water, natural gas, sewage, oil or petroleum, etc.; electric supply line for voltage, circuits, or electricity; communication line for phone, fiber optic, or CATV) approximately four (4) weeks from when the application is received should be expected for applicant review; handled by JLL (http://www.bnsf.com/about-bnsf/pdf/pipeline.doc).
  - For other utilities, approximately 30 to 60 days from when the application is received; handled by JLL (BNSF Utility Accommodation Policy, 2011).
- **Temporary Occupancy Permit**
  - The average processing period for an Application for Temporary Occupancy Permit is approximately six (6) weeks from when the application is received; handled by JLL (http://www.bnsf.com/about-bnsf/pdf/temporary.doc).
- **General License Permit** (e.g. culvert, permanent ditch, drainage facility, or storm water fall-out, encroachments, existing fence, etc.).
  - A minimum of eight (8) weeks from when the application is received; handled by JLL (http://www.bnsf.com/about-bnsf/pdf/general.pdf).
- **Highway-Rail Grade Crossing Surface Maintenance and Replacement (Private and Public)**

- The average processing period for an Application for Roadway Surfacing/Resurfacing is approximately six (6) weeks from when the application is received; handled by JLL (http://www.bnsf.com/about-bnsf/pdf/roadway.doc).
- **New Public Crossing:** It is BNSF policy to deny any requests for new Public Crossings unless a Proponent is closing two existing Public Crossings. Contact the BNSF Manager Public Projects (MPP) for more information – click here for a map of the BNSF Manager Public Projects territories and contact information.
- **New Private Crossing:** The average processing time is approximately 10 weeks from when the application is received for permanent crossings. Temporary Private Crossings have an average processing time of 45 working days after receiving the application. This application is handled by JLL (http://www.bnsf.com/about-bnsf/pdf/private.pdf).

- **Modifications to Highway-Rail Grade Crossings**
  - All active crossing signal modifications require Proponent approval pursuant to the MUTCD as well as an on-site Diagnostic Meeting, typically initiated by the Proponent, before plan review and acceptance; handled by BNSF MPP – click here for a map of the BNSF Manager Public Projects territories and contact information.
- **Public Road Crossing Closures**
  - May require state Public Utility Agency approval; handled by BNSF MPP – click here for a map of the BNSF Manager Public Projects territories and contact information.
- **Quiet Zone Proposals**
  - All Quiet Zone proposals require an on-site diagnostic meeting before plan review and acceptance; handled by BNSF MPP – click here for a map of the BNSF Manager Public Projects territories and contact information.
- **Overpass and Underpass Structure Projects (including Grade Separations)**
  - A minimum of four (4) weeks per submittal; handled by BNSF MPP – click here for a map of the BNSF Manager Public Projects territories and contact information.
- **Parallel Construction Projects**
  - A minimum of six (6) weeks per submittal; handled by JLL.
- **Cleaning and Painting BNSF Bridges and Structures and Other Bridges over BNSF Property**
  - A minimum of six (6) weeks per submittal; handled by JLL.
- **Leases and Easements on BNSF Property**
  - A minimum of four (4) weeks per submittal; handled by JLL in conjunction with the BNSF MPP.
- **Land Access Permit**
  - On average, it takes four (4) weeks for a permit to be sent to the Proponent for execution if there are no engineering issues or changes involved; handled by JLL (http://www.bnsf.com/in-the-community/faqs.html).

- **Environmental Access**
  - The average processing period for an Application for Environmental Access (e.g. environmental studies, acquiring soil samples, etc.) is approximately eight (8) weeks from when the application is received; handled by JLL. (http://www.bnsf.com/about-bnsf/pdf/environmental.doc).
- **New Bicycle/Pedestrian Pathways and Multi-Use Trails**
  - A minimum of four (4) weeks per submittal; handled by BNSF MPP – click here for a map of the BNSF Manager Public Projects territories and contact information.

10.0 Insurance Requirements for Public Projects

10.1 Overview

This section identifies BNSF's general insurance requirements for public projects. To work on BNSF property, a Proponent's contractors must obtain several different types of insurance coverage, as applicable. Contractor insurance requirements are documented in Exhibit C-1 (see Appendix B) or the JLL documents issued. The contractor is obligated to provide and maintain in full force and effect the insurance called for under Section 3 of Exhibit C-1.

BNSF has the right to stop construction work on a project if the insurance described in the Exhibit C-1 is canceled during the course of the project. The work stoppage will continue until all necessary actions are taken by the contractor or its subcontractor to rectify the situation to the satisfaction of BNSF's Division Engineer or until additional insurance has been delivered to and accepted by BNSF.

10.2 Insurance Requirements

Below are the types and levels of insurance coverage that a Proponent and/or its contractor must maintain in order to work on BNSF property. Circumstances unique to a particular project may necessitate a change to these requirements. For a complete description of BNSF's default requirements, including all necessary endorsements and coverage terms, see the sample Exhibit C-1 in Appendix B of this *BNSF Railway Public Projects Manual*. As used in this Section, "RAILWAY" means Burlington Northern Santa Fe, LLC; BNSF Railway Company; and the subsidiaries, successors, assigns, and affiliates of each. "Licensee" means the Proponent and/or contractor required to meet BNSF's Insurance Requirements under the applicable agreement.

- **Commercial General Liability (CGL) Insurance**
  - The policy will provide a minimum coverage of $2,000,000 per occurrence and an aggregate limit of at least $4,000,000. For projects involving overpasses, underpasses, or tunnels, these levels increase to $5,000,000 per occurrence and an aggregate limit of at least $10,000,000, but in no event will the coverage be in an amount less than the amount otherwise carried by Licensee.
- **Business Automobile Liability Insurance**

The insurance will provide minimum coverage with a combined single limit of at least $1,000,000 per accident.

- **Workers' Compensation and Employers' Liability Insurance**
  - The policy will provide coverage of all employees performing any part of the work or services including coverage for, but not limited to:
    - Licensee's statutory liability under the workers' compensation laws of the state(s) in which the work or services will be performed. The policy will cover all of Licensee's employees, regardless of whether such coverage is optional under the law of that state(s).
    - Employers' Liability (Part B) with limits of at least $500,000 per accident, $500,000 by disease policy limit, $500,000 by disease each employee.
- **Railroad Protective Liability Insurance (RPLI)**
  - The policy will name only RAILWAY as the Insured and will provide coverage of at least $2,000,000 per occurrence and $4,000,000 in the aggregate. For projects involving overpasses, underpasses, or tunnels, these levels increase to $5,000,000 per occurrence and an aggregate limit of at least $10,000,000.
  - In lieu of providing a RPLI policy Licensee may participate, if available, in RAILWAY's Blanket Railroad Protective Policy.

11.0 Entry onto BNSF Property

11.1 Key Points

- The operating environment of railroads can be inherently dangerous to the general public. Under Federal law, it is illegal to trespass, enter, or remain upon railway property not open to the public, without the permission of the railway. Additionally, there may be state and/or local laws that make trespass on railroad property illegal. **Written permission is required for all parties entering BNSF property.**
- Construction agreements authorize entry onto BNSF property.
- Temporary Occupancy Permits (TOPs) can also be used for limited purposes.
- JLL handles temporary rights of entry for construction and non-construction activities.
- Before accessing BNSF property, contractors are required to complete a BNSF contractor orientation/safety training and must possess valid eRailSafe identification.
- All parties must adhere to BNSF safety policies and procedures and federal Roadway Worker Protection on-track safety rules.
- BNSF flagging services are required when projects are within close proximity to active BNSF rail lines, and cost associated will be paid by the Proponent or other party performing the work.
- Appropriate insurance is required before entrance to property is authorized.

11.2 Overview

To maintain efficient customer service and to ensure the safety of BNSF employees and of those parties requesting access to BNSF property, BNSF requires all parties accessing its

Right-of-Way for investigative activities[1] or for the performance of construction work to have a written agreement with BNSF fully detailing each party's responsibilities. Activities by others with the potential to affect BNSF's property, operations, and/or personnel without actually entering BNSF property must also be reviewed with BNSF and appropriate arrangements and agreements completed. The public should be aware that any unauthorized entry onto BNSF property could be considered trespassing by federal, state, or local law, and could lead to criminal prosecution.

The process by which an appropriate agreement covering entry and/or the other necessary conditions or requirements can be developed and implemented is typically dependent upon the scope of the activities proposed by an outside party or Proponent. Although the type of agreement may vary, most agreements include insurance and liability provisions, work procedures and conditions, and reimbursement provisions relating to payment to BNSF for costs it may incur in relation to the entry or work.

The following summarizes the various types of BNSF agreements and contracts most frequently utilized to accommodate the requested entry and the proposed work activities. Click here to reference Figure 1 in Section 2.3 (for roles of the BNSF and JLL teams) when performing the activities listed below.

11.3 Entry for Construction Work via BNSF Public Projects

Entry for construction work (not exclusively associated with utility work) will require a Construction & Maintenance (C&M) Agreement or a Temporary Occupancy Permit (TOP) as determined by the magnitude of potential impacts to BNSF.

A C&M Agreement will be required for construction work that could impact BNSF facilities or operations, and may include work such as construction or rehabilitation of a bridge over BNSF Right-of-Way, roadway construction, other highway improvements, heavy grading, or drainage work.

Construction work that will not impact BNSF facilities or operation may be handled by a TOP, as determined by the BNSF Public Projects team. Entry for Non-Construction Work via JLL

A TOP is utilized by BNSF primarily in situations when outside parties or Proponents desire to undertake investigative work such as performing survey work, taking borings, performing bridge inspections, or undertaking other activities requiring only access to BNSF property and not construction work activities. It should be noted that different agreements are used for temporary Private Crossings.

[1] This Section 11 only concerns entry onto BNSF property for purposes relating to potential projects that are the subject-matter of this *BNSF Railway Company Public Projects Manual*. Other entries onto BNSF Property, such as site inspections that occur during litigation, are subject to the applicable rules of civil procedure and are outside the scope of this Manual.

Applications for TOPs for investigative and non-construction work activities (including movement of off-highway or oversized loads at grade crossings) within BNSF's Right-of-Way can be obtained by contacting JLL online at https://www.bnsf.com/in-the-community/jll-contacts.html.

11.4 Entry for Other Purposes via JLL

BNSF may use other forms of agreements covering entry by outside parties or Proponents depending on work scope or other factors. The process to obtain right of entry for these purposes as listed below may also be initiated through JLL online at http://www.bnsf.com/about-bnsf/faqs.html.

- Environmental Right-of-Entry.
- Utility Permit/License Agreement for pipeline and wire line construction – for both specifications and applications.
- Land Lease applications.
- Movement of oversized loads across BNSF tracks at private or public highway-rail grade crossings.
- Movement of off highway construction equipment across BNSF tracks at private or public highway-rail grade crossings.

11.5 Other Contractor Requirements

In order to protect BNSF's investment in its Right-of-Way, for the safety of BNSF employees, and for the safety of persons coming onto BNSF property, BNSF has established certain additional requirements. The following items listed in this section constitute minimum requirements for all persons coming on or near BNSF Right-of-Way. Contractors are encouraged to develop their own safety rules that meet or exceed the following requirements.

Before accessing BNSF property, contractors are required to complete BNSF contractor orientation/safety training and must possess valid eRailSafe identification.

11.5.1 eRailSafe

The contractor shall have a background investigation performed on all of its employees, subcontractors, and agents whom BNSF determines will require one of the following:

- To be on Railroad's property, or
- To require access to BNSF's critical infrastructure, railroad critical information systems, BNSF's employees, hazardous materials on BNSF's property, or is being transported by or otherwise in the custody of BNSF, or freight in transit involving BNSF.

The required background screening shall at a minimum meet the rail industry background screening criteria defined by the eRailSafe Program as outlined at http://www.everifile.com/, in addition to any other applicable regulatory requirements. Employees of government agencies are exempt from the eRailSafe requirements.

eRailSafe is the Class I railroad industry standard for contractor safety and security management. eRailSafe enables Class I railroads to monitor and maintain a history of all

contractor employees that have access to their property. The purpose of the program is to improve the security of railroad employees, operations, and facilities. eRailSafe provides the testing, background checks, and badges for current employees and future applicants that is required by BNSF to meet U.S. Department of Homeland Security requirements.

The contractor shall obtain written consent from all its employees, subcontractors, or agents screened in compliance with the eRailSafe program to participate in the program on their behalf and to release completed background information to BNSF's designee. The contractor shall be subject to periodic audits to ensure compliance.

Contractors subject to the eRailSafe Program hereunder shall not permit any of its employees, subcontractors, or agents to perform services hereunder who are not first approved under eRailSafe Program standards. BNSF shall have the right to deny entry onto its premises or access as described in this section above to any of the contractor's employees, subcontractors, or agents who do not display the authorized identification badge issued by a background screening service meeting the standards set forth in the eRailSafe Program, or who in BNSF's opinion, may pose a threat to the safety or security of BNSF's operations, assets, or personnel.

Railroad contractors can register their company, and its personnel and/or employees performing work on BNSF property, with the eRailSafe program via the current risk assessment provider e-VERIFILE.com, Inc., located at 900 Circle 75 Parkway, Suite 1550, Atlanta, Georgia 30339, 1-800-560-6435. Participants must have their vendor number, as provided by BNSF, prior to calling eRailSafe. For more information visit: http://www.e-railsafe.com/. This qualification is good for two years.

11.5.2 BNSF Contractor Orientation

BNSF Contractor Orientation Training must be completed annually by contractors working on or near BNSF property. No employee of the contractor, its subcontractors, agents, or invitees may enter BNSF property without first having completed the BNSF Contractor Orientation. Additionally, the contractor must ensure that each of its employees, subcontractors, agents, or invitees possesses a card certifying completion of the BNSF Contractor Safety Orientation before entering BNSF property. The contractor is responsible for the cost of the BNSF Contractor Safety Orientation. The contractor must renew the BNSF Contractor Safety Orientation annually and may not use training required by and completed for another railroad as a replacement.

The training covers six sections, including: general safety, critical exposure work protection, work on or near the track (including roadway worker protection), intermodal operations, automotive operations, and the contractor's safety action plan.

BNSF business partners enrolled in the Contractor Safety Program must enter information pertaining to their safety performance while in service to BNSF and are also required to submit a Safety Action Plan. For more information visit: https://bnsfcontractor.com/Default.asp#.

11.5.3 General Safety Rules

Work in the proximity of railway track(s) is potentially hazardous where movement of trains and equipment can occur at any time and in any direction. All work performed by contractors with 25 feet of any BNSF track must be in compliance with Federal Railroad Administration (FRA) Roadway Worker Protection regulations and BNSF policies.

Contractor safety rules, including rules regarding Personal Safety Equipment (PPE), must not conflict with BNSF safety policies. Current PPE requirements for contractors on or near BNSF property include safety glasses with permanently affixed side shields (no yellow lenses); five point suspension hard hats; safety shoe with hardened toes, above the ankle lace-up, and a defined heel; and high visibility work gear such as American National Standards Institute (ANSI) Class 2 orange safety vests (and not yellow vests). Additional information on PPE requirements for contractors on or near BNSF property can be found online at www.bnsfcontractor.com. This website will discuss PPE and on-track protection requirements provided by BNSF. Any Proponent employees who wish to enter BNSF property, whether they are supervising or performing construction, will need to fulfill the requirements listed on this website.

Contractor personnel will obtain BNSF's safety orientation (BNSF Contractor Orientation) prior to entering BNSF property. A job safety briefing will be held prior to beginning work each day and any time work conditions change. All personnel will wear PPE while on BNSF property. Any person working on BNSF property may be subjected to a safety audit by BNSF personnel and is required to comply with the audit. The results of the audit will be presented to the contractor's supervisor immediately upon completion. Any questions regarding safety and requirements for working within 25 feet of the centerline of any BNSF track should be directed to the BNSF Project Representative.

11.5.4 Drug and Alcohol-Free Workplace

BNSF expects that all contractors performing work on BNSF property on behalf of a Proponent will maintain a drug and alcohol-free workplace. BNSF reserves the right to remove any contractor employee, agent, or invitee suspected of being under the influence of drugs or alcohol, or in the possession of the same. Any persons so remove will not be permitted to reenter BNSF property.

11.6 Railroad Flagging for Activities On or Near BNSF Property and Tracks

11.6.1 Key Points

- A BNSF Flagger is a BNSF employee that coordinates between BNSF forces, contractor employees, BNSF dispatchers, and BNSF trains. This is not the same as a roadway Flagger that is utilized with traffic control when waiving automobile traffic by a construction site.
- BNSF will have a live Flagger present during any contractor construction anytime on BNSF Right-of-Way, but usually more specifically within 25 feet of an adjacent rail, or in the case that any tall equipment could enter or tip into the 25-feet zone nearest to an adjacent rail. Flaggers are normally billed to the Proponent at approximately $1,600 per eight-hour contractor workday.

- Flagging services are required when projects are within close proximity to active rail lines, as mandated by federal law.
- Flagging services can only be performed by qualified BNSF personnel or by rules-qualified individuals approved by BNSF.
- Arrangements for flagging services must be requested from the BNSF Roadmaster 30 days prior to the start of construction. The BNSF MPP can provide BNSF Roadmaster contact information, or it will be included in the permit or other BNSF contract.
- The final determination of whether flagging will be required and the cost of same will be at the sole discretion of the BNSF Roadmaster.
- A Flagger will typically need to work for one hour prior to the contractor starting work and one hour after the contractor has completed work for the day. The invoice to the Proponent or contractor will reflect as such.

11.6.2 Overview

In the interest of public safety and the safety of employees and property, BNSF will work cooperatively with Proponents, consultants, contractors, and others who need to access BNSF property when work brings them in close proximity to active BNSF tracks to determine the appropriate flagging services needed and to arrange for those services.

11.6.3 Conditions When BNSF Flagging Services Are Required:

- When any entity is working on, near, or adjacent to active BNSF tracks. A Flagger is required when a contractor's work activities are located anywhere on BNSF Right-of-Way, over, under, and/or within 25 feet measured horizontally from centerline of the nearest track and when cranes or other equipment positioned beyond 25 feet from the track centerline could foul the track in the event of tip over or other catastrophic occurrence.
- When an outside party is using BNSF property or performing operations that may affect BNSF property or facilities. This includes occasions when a party has been given express permission from BNSF to enter railroad property or perform such operations under the terms of a Construction & Maintenance (C&M) Agreement, Temporary Occupancy Permit (TOP), or other appropriate documentation.
- When off-highway construction equipment is crossing BNSF at a private or public grade crossing.
- When oversized equipment or highway vehicles are to cross BNSF at a private or public grade crossing.
- Any excavation work adjacent to BNSF tracks or facilities, within the Theoretical Railroad Live Load zone of influence, or where the active earth pressure zone extends within the BNSF property limits.
- The use of any equipment where, if tipped and laid flat in any direction (360 degrees) about its center pin, can encroach within twenty-five feet (25'–0") of the nearest track centerline. This is based upon the proposed location of the equipment during use, and may be a function of the equipment boom length. Note that hoisting equipment with the potential to foul must satisfy the required Factor of Safety of 1.5 (150 percent) for lifting capacities.
- Any work where the scatter of debris or other materials has the potential to encroach within twenty-five feet (25'–0") of the nearest track centerline.

- Any work where significant vibration forces may be induced upon the Track Structure or existing structures located under, over, or adjacent to the Track Structure.
- Any other work that poses the potential to disrupt rail operations, threaten the safety of railroad employees, or otherwise negatively impact railroad property, as determined by BNSF.
- In other instances as determined by BNSF.

11.6.4 Qualified Flagging Personnel

BNSF flagging services may only be performed by qualified BNSF employees or by rules qualified individuals approved by BNSF who are trained in the proper procedures related to rail operations and safety requirements, familiar with BNSF rail operations and procedures in a project area, and are able to communicate directly with BNSF dispatching personnel and train crews.

11.6.5 Arrangements for BNSF Flagging Services

- BNSF will arrange for flagging services related to planned work by an outside party under the terms of a Temporary Occupancy Permit, C&M Agreement, Environmental License Agreement, or other mutually acceptable arrangements.
- The contractor must give BNSF's Roadmaster a minimum of 30 calendar days advance notice when flagging services will be required so that the Roadmaster can make appropriate arrangements. If flagging services are scheduled in advance by the contractor and it is subsequently determined by the parties hereto that such services are no longer necessary, the contractor must give the Roadmaster five working days advance notice so that appropriate arrangements can be made to cancel the flagging service.
- In the case that a Flagger is needed for an extended period of time, such as several months, the Flagger is assigned to that project Monday through Friday. The Proponent/contractor can be charged for five-day work weeks even if a Flagger is not required every day. BNSF must be given seven days' notice to cancel the Flagger's job.
- Flagging crew generally consists of one employee. However, additional personnel may be required to protect BNSF property and operations, if deemed necessary by the BNSF Roadmaster.

11.6.6 Responsibility for Costs and Expenses

The cost of Flagger services provided by BNSF, and all costs and expenses associated with BNSF Flagger services, will be borne by the Proponent or the Proponent's consultant or contractor.

- BNSF will provide its estimated costs prior to the start of the project work or its assignment of flagging personnel. Flagging estimates can have a quick turnaround, however more complex estimates can take 30 to 90 days to process.
- Once flagging personnel are formally assigned by BNSF to a specific work location, the period of assignment can only be changed with appropriate advanced arrangements.
- Each time a Flagger is called, the minimum period for billing will be the eight-hour basic day.

- Charges for providing flagging services beyond a normal eight-hour weekday are calculated and billed at an overtime rate with respect to BNSF labor or collective bargaining agreements.
- For initial planning purposes, the estimated cost for one Flagger can be approximately $1,600 per basic eight-hour day, with time and one-half or double time for overtime, rest days, and holidays. Note that actual Flagger cost is subject to change and should be confirmed with BNSF Public Projects team.

Negotiations for BNSF labor or collective bargaining agreements and rate changes authorized by appropriate federal authorities may increase actual or estimated flagging rates.

11.6.7 Examples of Flagging Costs and Expenses

Charges billed by BNSF to the Proponent or the Proponent's consultant or contractor may include – but are not limited to – employee salary and benefits; overhead costs; employee expenses; and administrative, accounting, and billing services.

11.7 Examples of On-Track Safety Protection

In order to determine which kind of Roadway Worker Protection is appropriate for the scope and duration of a given public project, the contractor shall coordinate with the BNSF Manager Public Projects, and the MPP will work with local BNSF transportation and track maintenance managers. Typical methods of on-track safety for roadway workers on BNSF are identified and described below for background purposes only.

- **Work Windows**
  - Work Windows (known also as Track Windows or Track Curfews) provide protection for workers and equipment during a predetermined date and span of time during which no train operations occur. If a contractor needs to block one or all of the railroad tracks for a set period of time, for construction purposes, a work window shall be requested 6-8 weeks in advance. Expected work window durations can be as short as 30 minutes and do not often exceed 6 hours. Work window durations are dependent on BNSF's existing and future train traffic volumes and schedules.
  - BNSF, the Proponent, or its contractor, will establish mutually agreeable Work Windows for the project. BNSF has the right at any time to revise or change the Work Windows due to train operations or service obligations. BNSF will not be responsible for any additional costs or expenses resulting from a change in Work Windows. Additional costs or expenses resulting from a change in Work Windows shall be accounted for in the contractor's expenses for the project. The contractor and subcontractors must plan, schedule, coordinate, and conduct the contractor's work in order to not cause delays to trains.
- **Form B**
  - If there is any major work that is occurring within 25 feet of a railroad track, BNSF will likely establish a Form B. The Form B is used to protect workers and equipment in an established work zone on the track and also allow the potential of train operations or work equipment movements through the work zone following a strict set of rules. Issued through a bulletin, a Form B notifies train crews and operators of on-track equipment of the time that a work zone is in

effect, the name of the Employee-in-Charge/Flagging Foreman, the railway milepost limits of the work zone, and other conditions as applicable. A BNSF Flagger will be communicating with the trains, train dispatcher, and contractor any time a train or work equipment approaches the Form B limits. Trains and work equipment are then authorized to enter the work zone only after obtaining clearance from the Employee-in-Charge/Flagging Foreman.

- In order to use a Form B as a form of on-track safety, BNSF and the contractor will establish mutually agreeable Form B curfews for the project. BNSF has the right at any time to revise or change the Form B curfew due to train operations or service obligations. BNSF will not be responsible for any additional costs or expenses resulting from a change in Form B curfews. Additional costs or expenses resulting from a change in Form B curfew planning shall be accounted for in the contractor's expenses for the project. The contractor and subcontractors must plan, schedule, coordinate, and conduct the contractor's work in order to not cause delays to trains.

► **Lookout Protection**

- When minor work will occur within 25 feet of a railroad track, BNSF may choose to use Lookout Protection to protect the contractor. Lookout Protection is facilitated by a rules qualified BNSF employee or BNSF representative.
- Lookout Protection is intended to provide advanced warning to roadway workers of approaching trains or on-track equipment so that each roadway worker can reach a pre-determined place of safety at least 15 seconds before the arrival of the train or on-track equipment. This form of on-track safety protection is not intended for work equipment or for invasive track work that will foul the track or make the track unsafe for train traffic. Lookout Protection is not a guaranteed form of on-track safety since environmental conditions (e.g. weather, lighting, etc.) and sight distances can limit the lookout's ability to visually detect trains. BNSF will not be responsible for any additional costs or expenses resulting from Lookout Protection not being available at the time of work. Additional costs or expenses resulting from Lookout Protection not being available shall be accounted for in the contractor's expenses for the project.

► **Exception**

- If authorized by the BNSF Roadmaster in writing, the contractor may place a fence offset at least 10 feet from the railroad tracks to create a barrier between the contractor's work and BNSF train operations. The fence will allow the contractor's work to continue while trains pass by. However, if any equipment has the potential to foul the railroad tracks (or has the ability to reach within 4 feet or less of the railroad tracks), this method is not allowed.

11.8 Which Method of On-Track Safety is Appropriate?

BNSF will determine the method of on-track safety for each project. The contractor shall coordinate with the BNSF Manager Public Projects (MPP) as early as possible during project development regarding on-track safety. The MPP will work with the local transportation manager (BNSF Trainmaster) and track maintenance manager (BNSF Roadmaster) to determine the most practical form of on-track safety for the contractor's project.

11.9 Injury Reporting

Call 911 if necessary for any medical emergency while on BNSF property.

BNSF is required to report certain injuries as a part of compliance with FRA reporting requirements. Any vehicle incident or personal injury sustained by an employee of the contractor, subcontractor, or contractor's invitees while on BNSF's property must be reported immediately to the BNSF Project Representative in charge of the project. A voicemail must be left if the contractor is unable to contact the BNSF Representative in person. A Non-Employee Personal Injury Data Collection Form shall be completed and sent by Fax to the BNSF at 1-817-352-7595 or Accident-Reporting.Center@BNSF.com and to the BNSF Project Representative no later than the close of shift on the date of the injury.

Note that if an injury is in connection with a rail equipment accident/incident, highway-rail grade crossing accident, or automobile accident, the contractor will ensure that appropriate information is obtained, forms completed, and that BNSF or its agent are aware that injuries relate to that specific event.

11.10 Spill Reporting

The contractor is responsible for determining and complying with all federal, state, and local laws and regulations, including, but not limited to environmental laws and regulations (such as the Resource Conservation and Recovery Act, as amended; the Clean Water Act; the Oil Pollution Act; Hazardous Materials Transportation Act; and Comprehensive Environmental Response, Compensation, and Liability Act or CERCLA), and health and safety laws and regulations.

The discharge, release, or spill on or adjacent to BNSF property of any hazardous substances, oil, petroleum, constituents, pollutants, contaminants, or any hazardous waste is prohibited and the contractor must immediately notify the **BNSF's Resource Operations Center (1-800-832-5452)**, of any discharge, release, or spills in excess of a reportable quantity. The contractor must also immediately take safeguards necessary to protect its employees, subcontractors, agents and/or third parties and exercise due care with respect to the release including taking any appropriate measure to minimize the impact of the release. The contractor must not allow BNSF property to become a treatment, storage, or transfer facility as those terms are defined in the Resource Conservation and Recovery Act (RCRA) or any state analogue. Any dirt excavated from BNSF property must be properly tested for contaminants and exported to a BNSF-approved disposal facility.

12.0 Construction Monitoring Requirements

12.1 Overview

To promote the safety of the public and BNSF employees, maintain quality rail service to BNSF customers, and to protect BNSF property and assets, BNSF may require construction monitoring (in addition to flagging protection) for public projects. The construction monitoring will be conducted by BNSF and its consultants at the Proponent's expense.

12.2 General Guidelines

Construction monitoring includes intermittent or continuous on-site presence of BNSF or its consultants during construction activities.

- The construction owner or Proponent in charge will pay for the cost of construction monitoring. Construction monitoring will be specified, and the estimated cost will be included in the Construction & Maintenance (C&M) Agreement for the project.
- Construction monitoring is in addition to railroad employee flagging.
- Construction monitoring includes BNSF review and approval of all plan changes and required contractor submissions during the construction phase of the project.
- The Proponent is responsible for its safety and the safety of its property, contractors, and employees. BNSF, as part of its construction monitoring, will review the work site for activities that could interfere with safe operation of the railroad.
- BNSF and its consultants are not responsible for monitoring the general work activities under the direction of the Proponent for compliance with safety regulation. Any observed unsafe acts or conditions will be reported immediately to the Proponent or contractor representative.

12.3 Inspector/Coordinator (I/C) Consultant

BNSF or a BNSF-hired Inspector/Coordinator (I/C) Consultant will typically act as the construction monitor. The I/C Consultant's scope of work varies depending on the requirements of specific projects, but a typical summary of the I/C Consultant's work is listed below.

- Attend pre-construction meeting with BNSF, Contractor, and Proponent to clearly set expectations for project.
- Attend initial job kick-off at site.
- Review contractor's Safety Action Plan and provide comments.
- Periodically attend morning job safety briefings.
- Attend weekly or regularly scheduled contractor project meetings with contractor(s).
- Monitor BNSF Contractor Orientation and eRailSafe compliance.
- Review Vertical and Horizontal Clearance requirements for grade separations and ensure project is built according to accepted clearances for that portion of the project on BNSF Right-of-Way, as it affects BNSF. Monitor construction activities to ensure that improvements on BNSF Property meet all requirements of BNSF and accommodate railroad operations.
- Monitor any material or performance test failures or suspected deviations from plans that could negatively impact BNSF.
- Coordinate the flagging requirements with local BNSF Manager Public Projects and Roadmaster. Coordinate track outage work window requirements with BNSF Project Engineer.
- Review all submittals from Proponent to BNSF.
- Track all submittals and verify BNSF has accepted all submittals prior to applicable work commencing.

- Review and monitor the project to ensure compliance with the applicable accepted submittals for all Operationally Critical (OC) work.
    - OC submittals included in the Guidelines are shoring, falsework, demolition, erection, and construction phasing
    - Additional OC submittals required are all work plans that remove tracks from service and contingency plans for Underpass Structures only
    - In-person safety review meetings at the job site for all OC work to review applicable submittals accepted by BNSF and ensure they are being followed.
- Assess job site housekeeping and general safety, including use of personal protective equipment (PPE). Discuss issues with the contractor and Proponent and elevate non-compliance to BNSF Project Engineer.
- Serve as BNSF liaison to Engineering Services and Structures, Transportation, Track, Environmental, Signal, and other BNSF teams as needed.
- Coordinate any required utility relocations/modifications. All utilities relocations/ modifications need to be properly permitted through JLL.
- Notify contractor's employee, contractor, Proponent, and BNSF of any observed non-compliance with BNSF safety requirements and take appropriate action in an attempt to avoid imminent accident or injury if an unsafe condition is observed, then report non-compliance to the BNSF Project Engineer.
- Create and complete a punch list near project completion to ensure BNSF property and facilities are left in good and proper condition.
- Review Environmental Permit compliance and assists in reporting violations or spills on BNSF property.

Any BNSF employee or the I/C Consultant has authority to remove a contractor's employee from BNSF property if that employee fails to comply with the BNSF safety policy, does not have proper PPE, or otherwise does not comply with instructions regarding work on BNSF Right-of-Way. The I/C Consultant has authority to shut down work on BNSF Right-of-Way if the contractor works in a manner that is in violation of BNSF's safety policy or Roadway Worker Protection rules.

Anytime a contractor does not comply with instructions issued by BNSF or the I/C Consultant, the I/C Consultant will shut down work and document these events. The I/C Consultant will immediately notify the Flagger and contact the BNSF Project Engineer when a contractor is shut down. All equipment and personnel will be removed from BNSF property until issues causing the shutdown are resolved to BNSF's satisfaction.

13.0 Signal and Communications Cable Locates and Protection

13.1 Key Points

- The contractor must call the BNSF **"Call Before You Dig!" hotline (1-800-533-2891)** to arrange for a BNSF underground cable locate or exploration before any work or excavation commences in addition to the other utility locate number for that region/state.
- A completed BNSF Underground Cable Location and Acknowledgment Form must be in the contractor's possession at the job site at all times.
- The contractor must cease all work and notify BNSF immediately before continuing excavation in the area if obstructions are encountered which do not appear on drawings or were previously located.
- If a BNSF signal and communication asset is severed or damaged, the contractor must immediately contact **BNSF's Emergency Response hotline (1-800-832-5452)** and the BNSF Project Representative.
- Note the type of signal protection at grade crossings and location of insulated joints in the track(s) where applicable, and whether modifications to any of these facilities are required.

13.2 Overview

The protection of BNSF signal and communication assets is paramount to the safe operation of train operations. Contracted work that has the potential to impact existing signal and communications infrastructure shall be coordinated with the appropriate BNSF representative prior to the start of construction. The appropriate measures for the installation and protection of the signal, communications, and fiber optic cables shall be addressed in the plans and contract documents and shall be accepted by BNSF prior to construction.

13.3 General Guidelines

- Fiber optic cables may be presently buried on the BNSF Right-of-Way or such installations may be scheduled for installation. The presence of such facilities shall be considered in the project design and appropriate measures for the installation and protection of the fiber optic cables shall be addressed in the plans and contract documents.
- Appropriate measures for the installation, protection, and relocation of fiber optic cables as well as BNSF signal and communication lines shall be addressed in the plans and contract documents.
- Contractors must utilize the **BNSF "Call Before you Dig!" hotline (1-800-533-2891)** before excavating within BNSF property.
- Contractors must retain a completed copy of the BNSF Underground Cable Location and Acknowledgment Form while on the jobsite
- If a BNSF signal and communication asset is severed or damaged, the contractor must immediately contact **BNSF's Emergency Response hotline (1-800-832-5452)** and the BNSF Representative.

13.4 General Process

The contractor must call the **"Call Before You Dig!" hotline (1-800-533-2891)** to arrange for a BNSF underground cable locate prior to the start of construction. This number is specific to BNSF and will not include any utilities outside of BNSF property. The contractor should also call the appropriate regional locate number in addition to the BNSF number. A BNSF Underground Cable Location and Acknowledgment Form will be completed by a BNSF representative and copy provided to the contractor. The contractor must have this completed form in possession at the job site at all times.

Before excavating, the contractor must determine whether any underground pipelines, electric wires, or cables, including fiber optic cable systems (for signals or communications) are present and located within the project work area. The contractor must determine whether excavation on BNSF's property could cause damage to buried cables resulting in delay to rail traffic and service disruption to users. Service delays may cause business interruptions involving loss of revenue and profits. Before commencing excavation, the contractor must contact its designated BNSF Representative. All underground and overhead wires will be considered high voltage and dangerous until verified with the company having ownership of the line. The contractor is responsible for notifying any other companies that have underground utilities in the area and arranging for the location of all underground utilities before excavating.

The contractor must cease all work and notify BNSF immediately before continuing excavation in the area if obstructions are encountered that do not appear on drawings or were previously located. If the obstruction is a utility and the owner of the utility can be identified, then the contractor must also notify the owner immediately. If there is any doubt about the location of underground cables or lines of any kind, no work must be performed until the exact location has been determined. There will be no exceptions to these instructions.

14.0 Underground Utility Crossings

BNSF has developed a Utility Accommodation Policy to outline the procedure for a utility owner to have utility infrastructure located on BNSF Right-of-Way. This policy can be found at https://www.bnsf.com/about-bnsf/pdf/utility.pdf on BNSF's website or in Appendix C of this *BNSF Railway Public Projects Manual*. The Utility Accommodation Policy outlines BNSF's general policies and guidelines for utilities paralleling railroad property; utilities crossing railroad property; and plans, approvals, and procedures for utility installation. The policy was developed in the interest of safety, protection, utilization, and the accommodation of future BNSF development with due consideration given to public and private service afforded by adequate and economical utility installations.

This policy is applicable to new utility installations, additions to existing utility installations, and adjustments to or relocation of existing utilities. It is also applicable to existing or planned utility installations for which agreements with BNSF were entered prior to the adoption of the current policy. Existing utility installations that do not meet the licensing agreements may remain at the

discretion of BNSF. Utilities covered by this policy include public or privately-owned lines, facilities, or systems.

A Utility Agreement License allowing a utility owner the privilege of placing its facilities in or on BNSF property does not constitute permanent right for such usage. Any removal, remodeling, maintenance, or relocation of the facilities, whether or not required by BNSF, will be accomplished promptly by the utility owner at no cost to BNSF. JLL processes license requests on behalf of BNSF.

15.0 Highway-Rail Grade Crossing Surface Maintenance and Replacement

15.1 Key Points

- BNSF is responsible for maintaining all public at-grade crossing surfaces up to and including approximately one foot outside of the rail, or to the edge of railroad tie. The roadway authority is typically responsible for all paving and approaches to the crossings, unless otherwise dictated by state law.
- All work must meet BNSF engineering standards and conform to the Manual on Uniform Traffic Control Devices (MUTCD) Part 8 signage, striping, and pavement marking requirements.
- Coordination and agreements with BNSF are required for work near crossings.
- Crossings must be closed entirely for vehicular traffic during at-grade crossing surface replacement or maintenance work.
- Guidelines vary from state to state regarding a funding solution that shares the cost between the Proponent and BNSF.
- Proponents seeking to have a grade crossing renewed should contact BNSF Public Projects.
- Each grade crossing has a unique USDOT inventory number that should be used to reference that crossing in all communications. This can be found at the websites linked below in Section 15.8.

15.2 Overview

The objective of a highway-rail grade crossing (for purposes of this Section 15, “Crossing”) is to provide a means for highway traffic to cross a railroad track. Crossings present unique safety challenges and require careful planning, design, and execution to provide for the continued safety of both the public and the railroad.

Beyond this, Crossing maintenance and replacement require coordination between BNSF and the highway authority. Complete closure of the Crossing is typically required to perform a renewal of a Crossing surface, so identification of potential detour routes and impacts to traffic are important considerations.

15.3 Crossing Design and Construction

The most familiar aspect of a Crossing to the public is the driving surface. The surface material and construction method is chosen on a case-by-case basis and is based on a number of factors including the type and volume of traffic on both the highway and the railroad, past experience, and available funding from the highway agencies for individual projects. New standard Crossing surfaces include concrete panels attached to wood ties. Approaches are typically paved with concrete or asphalt, or can also be surfaced with gravel in rural areas. Other materials may be used in some cases with approval from BNSF.

The railroad Track Structure is continuous through the Crossing and resembles what you see on either side, with rail, ties, and ballast. The Crossing panels that make up the roadway surface are fastened to the ties. Approaches are paved up to the edges of these Crossing panels. Drainage is a critical consideration, as it can affect the quality of the driving surface for road users, the structure of the railroad track, and the reliability of the active crossing warning systems.

15.4 Crossing Maintenance and Replacement

To renew a Crossing, BNSF must remove the panels and a portion of the approaches, replace the ballast and ties, and then surface the track. Then the panels will be replaced and the approaches repaired. In some cases, additional subgrade improvements may be required, such as replacement of the base rock under the ballast. Drainage will be reestablished for all four quadrants of the crossing. Replacement of the track and Crossing surface typically requires the entire roadway to be closed for several days.

15.5 Maintenance Blitz

In some cases, BNSF may desire to address multiple Crossings within a corridor at once by dedicating extra forces and resources over a period of time. BNSF will attempt to coordinate this maintenance blitz activity with local communities and the state DOT to arrange road closures and detours, and to maintain access for emergency services. The corridor may also be examined overall for opportunities for Crossing closures.

15.6 Modifications to Crossings

If modifications to a Crossing are desired, the roadway authority should contact BNSF Public Projects. BNSF will review the request and prepare an agreement and cost estimate for the work. If a Proponent desires to widen the roadway for additional lanes or sidewalks, it is typically beneficial to renew the entire crossing surface. This approach can be discussed with the BNSF Manager Public Projects.

To add or modify grade crossing warning devices, see the Alterations to Highway-Rail Grade Crossing Warning Devices section in this *BNSF Railway Public Projects Manual* for more information.

If a Grade Separation of an existing Crossing is desired, see the section Public and Private Road Crossing Openings and Closures and Grade Separation section of this *BNSF Railway Public Projects Manual* for more information.

15.7 Contacts

To report malfunctioning the false activation of lights and gates, damage to lights and gates or other grade crossing infrastructure, or any other grade crossing emergency, call **BNSF's emergency number at 1-800-832-5452** to make a report. This number will connect callers directly to BNSF's Resource Operations Command Center, which is staffed 24 hours a day, seven days a week.

To report a crossing in need of maintenance or repairs, use the Contact Us form on the BNSF website at http://www.bnsf.com/about-bnsf/contact-us-form.html. Provide details of the issue and the location including street, city, state, and USDOT Inventory Number.

15.8 Additional Information on Crossings

- USDOT Grade Crossing Handbook: https://safety.fhwa.dot.gov/hsip/xings/com_roaduser/07010/index.cfm
- FHWA Section 130 Program: https://safety.fhwa.dot.gov/hsip/xings/
- FRA Office of Safety Analysis (for USDOT Inventory Number Lookup): http://safetydata.fra.dot.gov/OfficeofSafety/Default.aspx
- FRA Safety Map (for USDOT Inventory Number Lookup): http://fragis.fra.dot.gov/GISFRASafety/
- MUTCD: https://mutcd.fhwa.dot.gov/

16.0 Alterations to Highway-Rail Grade Crossing Warning Devices

16.1 Key Points

Highway-rail grade crossing warning systems must adhere to all applicable laws and regulations and BNSF standards.

The Proponent, not BNSF, is responsible for determining the level and configuration of warning devices for a public highway-rail grade crossing. If the Proponent is not also the Transportation Authority responsible for regulating the use of traffic control devices, the Transportation Authority may share responsibility for making the warning system equipment determinations as well as selecting appropriate traffic control signs and devices. Any alterations to highway-rail grade crossing warning systems must adhere to all applicable laws, regulations, and federal and state standards.

- Requests to BNSF for new or modified public at-grade crossing warning devices must be initiated by the Proponent, not BNSF, per Section 8 of the MUTCD.
- In most cases, the requesting Proponent will be responsible for funding all of the payment for the installation of warning devices.

- The coordination of traffic intersection signals with warning devices will be determined by the Proponent or Transportation Authority. BNSF requires a pre-approved signal consultant to assist the Proponent with the traffic signal interconnection design.
- Construction & Maintenance (C&M) agreements are used to implement the projects.

16.2 Overview

It is the responsibility of BNSF's Maintenance team to maintain all railroad crossing signals at public highway-rail grade crossings in accordance with federal, state, and local law and regulations. However, the BNSF Public Projects team will process all projects proposing alterations to public highway-rail grade crossing warning systems, including but not limited to: projects for opening new crossings, closing existing crossings, modifying or widening of existing crossings, installing new warning systems, removing and/or relocating existing warning systems, and modifying/upgrading existing warning systems. BNSF does not determine the adequacy of warning devices at highway-rail grade crossings; rather, this is determined through a diagnostic team led by the Proponent or Transportation Authority. BNSF believes that any warning device that meets MUTCD requirements is sufficient if the motoring or pedestrian public adheres to the warning device and complies accordingly.

16.3 Definitions

A word or phrased defined in this Section 16.3 has the same meaning throughout this Section 16:

- **At-Grade Crossing:** The location where a roadway and a railroad track intersect each other at the same elevation.
- **Diagnostic Review:** An on-site evaluation of the existing conditions and safety of an At-Grade Crossing typically initiated by the Proponent, which typically consists of, among other factors, reviewing train and highway traffic volumes, speed, sight distance, existing warning devices, gate arm length, lamp configuration, pedestrian treatments, signal interconnections, and the placement of medians/curbs and guardrails.
- **Transportation Authority:** Any government agency other than the Proponent proposing the modification to the At-Grade Crossing that has regulatory responsibility for determining the appropriate traffic control devices to be used on roadways in the state. Depending on state law, Transportation Authorities may include State Departments of Transportation, state Departments of Public Safety, and State Public Utility Commissions, among others.

Types of At-Grade Crossings:

- **Public Crossing:** At-Grade Crossings that are under the jurisdiction of, and maintained by, a public highway authority.
- **Private Crossing:** At-Grade Crossings located on privately owned roadways, such as on a farm or industrial area, and intended for use by the owner or by the owner's licensees and invitees. A Private Crossing is not intended for public use and is not maintained by a public highway authority.

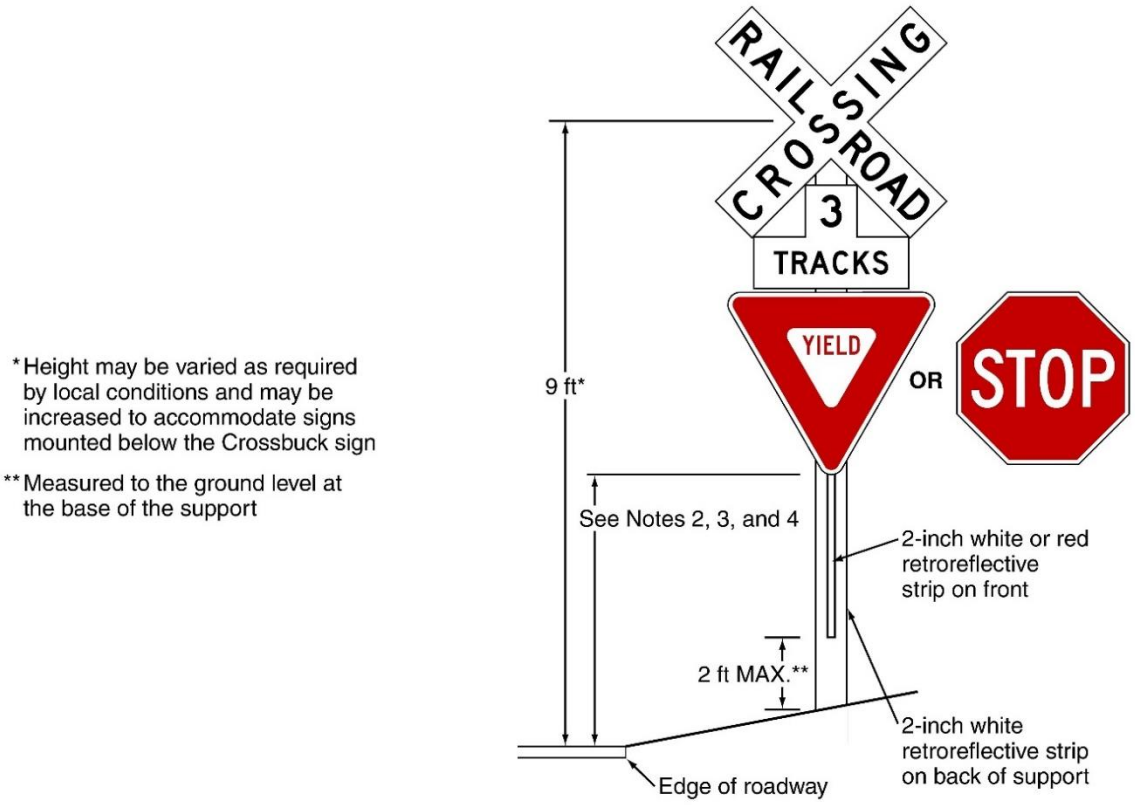
Common Signal Standards:

- BNSF has its own standards independent from the MUTCD and AREMA.

- BNSF prefers to keep the gate arms less than 28 feet, with a maximum allowed length at 32 feet.
- The maximum allowed pre-emption time is 50 seconds per BNSF and AREMA.

Crossings may be protected by either Passive Warning Devices or Active Warning Devices.

Figure 4: Example Passive Warning System at an At-Grade Crossing

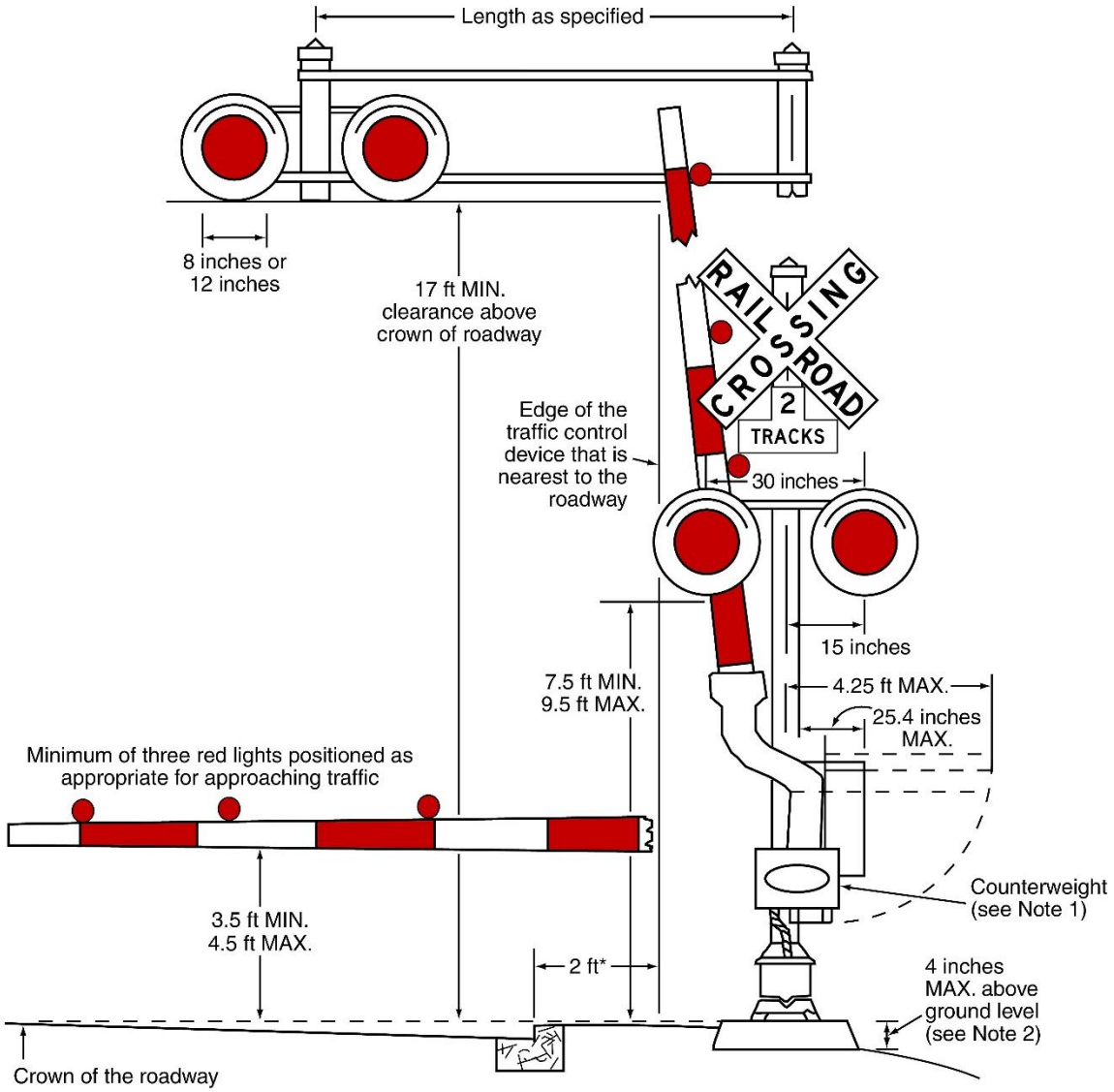


Notes:

1. YIELD or STOP signs are used only at passive crossings. A STOP sign is used only if an engineering study determines that it is appropriate for that particular approach.
2. Mounting height shall be at least 4 feet for installations of YIELD or STOP signs on existing Crossbuck sign supports.

Source: MUTCD, 2009

Figure 5: Example Active Warning System at Grade Crossing



*For locating this reference line on an approach that does not have a curb, see Section 8C.01.

Notes:

1. Where gates are located in the median, additional median width may be required to provide the minimum clearance for the counterweight supports.
2. The top of the signal foundation should be no more than 4 inches above the surface of the ground and should be at the same elevation as the crown of the roadway. Where site conditions would not allow this to be achieved, the shoulder side slope should be re-graded or the height of the signal post should be adjusted to meet the 17-foot vertical clearance requirement.

Source: MUTCD, 2009

16.4 Identification of the Crossing and Location

Each At-Grade Crossing has a unique DOT inventory identification number. There is often more than one At-Grade Crossing on the same roadway. The USDOT National Crossing Inventory Number, such as *123456A*, must be used to identify the specific At-Grade Crossing in all communications with the railroad to reduce possible confusion about the specific location.[2]

16.5 Design Considerations

At-Grade Crossing warning systems must adhere to all applicable laws and regulations and BNSF standards. Per Section 8 of the MUTCD, the Proponent, not BNSF, is responsible for determining the level and configuration of warning devices for an At-Grade Crossing. In addition, the Proponent or other Transportation Authority responsible for making the warning system and equipment determinations is also responsible for selecting appropriate vehicular traffic control signs and/or devices for a specific public highway.

Regarding loop detection, by labor agreement with the Brotherhood of Railroad Signalmen, BNSF or its contractor will install and maintain all equipment related to the Highway Grade Crossing. Maintenance fees may be based off upon AAR (AREMA) units which will be provided by BNSF Signal Engineering. BNSF maintains all equipment related to the Vehicle Detection Systems (VDS). BNSF or its contractors will install and maintain all cabling for the VDS. BNSF or its contractors will design the VDS. BNSF will use an approved Road Authority contractor for any road construction necessary to install any VDS loops and cable to the junction box at the Proponent's expense. Loops are to be milled in place and not saw cut. All wiring connections will be performed by BNSF. All VDS design, equipment and installation will be specified and purchased by BNSF and paid for by the Proponent. BNSF will maintain the VDS loops. Should the loops fail or become damaged and no longer function, BNSF will notify the Proponent and have the loops replaced at the agency's expense in the method described above. At crossings that are designed to be interconnected to a Road Authority's traffic system, BNSF or its contractor will specify, design, install and maintain railroad interconnection equipment including the junction box at the agency's expense. A required annual joint inspection or any other required joint inspections to verify the health and performance of interconnected systems will be conducted jointly between BNSF and the Road Authority. This inspection will determine the condition, functionality and performance of the interconnected system. Each party is responsible for their own expenses to conduct this inspection. The Proponent is responsible for the installation and maintenance of the interconnect cable to a BNSF supplied junction box as well as any equipment needed to control their traffic system. Proponent is responsible for their traffic signal system including design, installation and maintenance.

The recommended practices and additional information are available in AREMA manuals, FRA's Railroad-Highway Grade Crossing Handbook, MUTCD, and any documentation developed by state Departments of Transportation or Public Utilities Commissions, where applicable.

[2] https://www.fra.dot.gov/eLib/Details/L02934

16.6 Engineering, Cost Estimation, and Installation

Each Proponent or Transportation Authority determines the location and types of At-Grade Crossing signals to be installed pursuant to the MUTCD and applicable laws and regulations. Section 130 funding is available from the Federal Highway Administration (FHWA) for crossing safety improvements and is traditionally managed by a state Transportation Authority. Crossing signals regulate motorists and pedestrians and are within the jurisdiction of Government Agencies and Transportation Authorities. Therefore, they are defined by the FHWA as highway control devices, not railroad signals.

Per the MUTCD and applicable law, BNSF cannot and does not install grade crossing signals on its own accord without Proponent approval as BNSF does not have the authority to regulate roadway traffic. Installation of traffic control devices must be done according to the procedures detailed by each state. BNSF will design the circuitry for each crossing and estimate the cost for each project. BNSF must be compensated for any and all costs incurred in completing environmental assessments, preliminary and final design, and construction of improvements necessary to carry out the proposed Proponent initiative without adverse effects, delays, or restrictions on current and future freight transportation mobility and growth, and to reflect fair market value of any interest in rail property affected by or acquired by the Proponent.

BNSF must retain operating control of rail facilities impacted by the proposed Proponent initiative. All final engineering and construction must be done under the control of BNSF. As such, BNSF will provide engineering, design, and cost estimates for the installation of At-Grade Crossing warning devices at the expense of the Proponent as part of the final engineering for a project. Changes to At-Grade Crossing surfaces may also require engineering and estimating by BNSF.

The Proponent will pay for the cost of all labor and material. Cost estimates from BNSF to the Proponent can take up to 90 days for signal work. Notwithstanding any prior practices, BNSF's current policy is to order material and schedule the project after an Agreement is executed and after receiving the Proponent's Notice to Proceed. Labor agreements with BNSF forces will require BNSF to install the At-Grade Crossing warning devices on main line tracks.

16.7 Operation of At-Grade Crossing Warning Devices

Passive Crossing Warning systems are designed to alert roadway users of an At-Grade Crossing ahead so that users will be alert for an approaching train. Active At-Grade Crossing warning systems (i.e. bells, flashing lights, and automatic gates) are designed to activate in advance of a train entering the crossing. Train speed changes while approaching the crossing may cause a standard warning system to activate longer than expected. Trains stopping or making forward and reverse movements near the crossing may also cause a standard warning system to activate and then clear after an appropriate time without a train entering the crossing. Constant Warning Time (CWT) equipment detects the approach and speed of a train and measures its distance from an At-Grade Crossing in order to activate warning devices within a uniform minimum warning time selected and thus reduce potential delays to vehicular traffic or the potential for motorists to disregard warning devices at the crossing.

16.8 Traffic Signal Preemption Interconnection

The appropriate traffic control system to be used at an At-Grade Crossing should be determined by an engineering study (or Diagnostic Review meeting on-site) involving representatives of both the Proponent and BNSF.

Preemption of the traffic signals at highway intersections near At-Grade Crossings requires careful review by an engineering team to determine the appropriate timing and sequence for both the traffic signal and the At-Grade crossing warning system. Preemption for the traffic signal may be simultaneous with, or in advance of, the warning system activation. Per recent changes to the AREMA manual, which BNSF supports, advance Preemption timing on BNSF shall not exceed 50 seconds of total time, including advance Preemption time.

Information regarding the type of Preemption and any related timing parameters shall be provided to BNSF so that BNSF can check the appropriate train detection circuitry. BNSF requires that all requests for Preemption projects and proposed Preemption timing and traffic signal operation be reviewed by a pre-approved traffic engineering consultant before being forwarded to BNSF Signal Design for estimation and final approval, listed below. As such, the Proponent shall review all Preemption plans, layouts, traffic signal timing, and calculations with that Consultant.

The pre-approved traffic consultants identified below are currently among those that work with BNSF regularly on review of interconnected crossings; are familiar with BNSF, AREMA, and MUTCD standards; and can assist a Proponent in putting together required submittals based on BNSF requirements. Additional information is available through the BNSF Public Projects team.

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17.0 Public and Private Road Crossing Openings and Closures and Grade Separation

17.1 Key Points

- BNSF discourages new at-grade crossings and works to close or consolidate existing crossings.
- Federal policy encourages closure of crossings and provides funding to develop such projects.
- As of May 2018, there were just over 25,600 at-grade crossings on BNSF's network. Since 2000, BNSF has closed more than 6,000 at-grade crossings. Of the 109 requests for new Private Crossings made to BNSF in 2015, only 2 new permanent crossings were installed.
- The negotiations for Grade Separation projects are managed by the BNSF Public Projects team.
- Each Grade Separation project generally has a unique Construction & Maintenance (C&M) Agreement. This agreement specifies ownership and maintenance responsibilities associated with the project.
- BNSF may provide financial incentives for permanent closure of a crossing, whether by Grade Separation or closure of the existing at-grade crossing. BNSF determines the appropriateness and amount of incentives on a case by case basis, and the local Manager Public Projects can be contacted for more information.
- If a Proponent desires a new Public Crossing, it must close at least two nearby crossings.
- BNSF may deny a crossing application due to safety or operational concerns.
- Work on crossings is divided between BNSF and the Proponent in the manner described below.
- Private Crossing permit requests for existing or new crossings are handled by JLL.

17.2 Overview

Federal, state, and BNSF policy is to close or consolidate at-grade crossings to eliminate the possibility of a collision between a train and a motorist, pedestrian, or bicycle. BNSF discourages any new at-grade crossings across its tracks and any such requests will be highly scrutinized by BNSF. The BNSF Public Projects team will address potential openings or closings of at-grade crossings, including both public and Private Crossings. BNSF will coordinate with the state transportation authority on Public Crossings or with the property owner on Private Crossings.

17.3 New Crossings – Public

New public at-grade crossings are discouraged by BNSF. If a Proponent desires a new Public Crossing, it should contact BNSF Public Projects. Every effort must be made to provide

alternate access or additional capacity by constructing grade separations or utilizing other roadways leading to existing crossings. Otherwise, the Proponent must provide a detailed explanation of why a new crossing is the only feasible solution and identify two existing crossings within the Proponent's jurisdiction that can be closed. BNSF also reviews existing crossings for potential closures or consolidations.

Any new crossings permitted by BNSF should generally be constructed with concrete surfaces and Active Warning Devices where consistent with the requirements of the MUTCD. Costs for new crossings shall be borne by the Proponent.

JLL will issue an easement for all new roadway crossings approved by BNSF. Application information can be found at http://www.bnsf.com/communities/faqs/permits-real-estate/.

17.4 New Crossings – Private

New Private Crossing applications and permits are handled by JLL but still require BNSF approval. BNSF discourages new Private Crossings and will encourage the applicant to find alternate access. Applicants should refer to Section 2.0 for contact and permit information for this process, or visit this website: http://www.bnsf.com/communities/faqs/permits-real-estate/

17.5 Closure Procedure – Public

The best way to reduce incidents between trains and vehicles is to close or consolidate crossings. Closing adjacent crossings can simplify the design of Active Warning Devices for remaining crossings. This approach will also free up funding formerly dedicated to those closed crossings for the improvement of the remaining crossings.

The procedure varies by state, but generally approval from the state public utility commission is required to close or modify a public at-grade crossing. BNSF will work with the roadway authority to try to reach a consensus on closure and then make a formal application to the authority for closure. If the roadway authority disputes the closure, the dispute will be resolved under procedures established by state law. Once closure is approved, BNSF will put barricades up to block the roadway; remove the crossing surface, any crossing signals and gates, related signage, and approaches and restore the railroad ditch line. Any related work outside of the BNSF Right-of-Way is the responsibility of outside parties unless it specified otherwise in any agreements with BNSF.

In the case of Grade Separation, the at-grade crossing may or may not need to stay open during construction of the Grade Separation structure(s), but the same removal process outlined above applies. BNSF may provide a financial incentive for the roadway authority for such a closure on a case by case basis (to be confirmed through the local BNSF Manager Public Projects), which is typically paid at the end of the project when the grade crossing is permanently closed and the new structure is substantially complete. Additionally, federal funds are available for crossing closures via the federal Section 130 program.

17.6 Closure Procedure – Private

If no permit exists and the user(s) has alternate access, BNSF may remove the crossing at any time. If there is a 30-day cancellable permit and the user(s) has alternate access, BNSF may remove a crossing with 30-day written notice to the user(s). BNSF will not land-lock a property owner with crossing removal and will work with such property owner to facilitate an alternate means of access.

Once it is decided that a crossing will be removed, BNSF will install barricades to block the road or driveway, remove the crossing surface and approaches, remove any appropriate signage, and restore the railroad ditch line. Any related work outside of the BNSF Right-of-Way is the responsibility of outside parties unless it specified otherwise in any agreements with BNSF.

17.7 Division of Work for New Crossings

As mentioned above, the work associated with a crossing project will be divided between BNSF and the Proponent. For any of the tasks listed below, design and construction are included unless otherwise noted.

BNSF will perform the following tasks:

- Review of Proponent plans
- Track modifications or construction
- Installation of crossing surface up to 1 foot outside of the rail, subject to state law
- Installation of crossing signals and crossbuck signs where determined by the Proponent to be appropriate for the crossing
- Railroad bridge structure
- Railroad flagging
- Construction inspection and coordination

The Proponent will be responsible for the following tasks:

- Determining the need for and selection of the appropriate warning devices per the MUTCD and applicable laws and regulations
- Paving (beyond the limits performed by BNSF) and striping
- Signage in conformance with MUTCD, Part 8 (except for crossbuck signs and Emergency Notification Signs [ENS])
- Roadway Overpass Structures
- Roadway and civil design, including drainage and grading (except under tracks)
- Fencing
- Traffic signals
- All other work

17.8 Additional Information on Crossings

- USDOT Grade Crossing Handbook: https://safety.fhwa.dot.gov/hsip/xings/com_roaduser/07010/index.cfm
- FHWA Section 130 Program: https://safety.fhwa.dot.gov/hsip/xings/
- FRA Office of Safety Analysis: http://safetydata.fra.dot.gov/OfficeofSafety/Default.aspx
- FRA Safety Map: http://fragis.fra.dot.gov/GISFRASafety/
- MUTCD: https://mutcd.fhwa.dot.gov/

17.9 Ownership and Maintenance for Grade Separations

It is BNSF's position that the Proponent will own and maintain grade-separated structures as a result of the elimination of an at-grade crossing or the new construction of a grade separation. See Section 20.4 for more information on temporary and permanent construction clearances pertaining to the ownership and maintenance of grade separations.

- Each Grade Separation project generally has a unique Construction & Maintenance (C&M) Agreement. The agreement specifies ownership and maintenance responsibilities associated with the project.
- For highway bridges (overpasses), the Proponent will own and maintain the new Overpass Structure, abutments, overpass bridge components, fencing, and drainage improvements upon completion of the project. As part of the elimination of an at-grade crossing and consistent with the Grade Crossing Closure Program, BNSF may contribute to the project.
- For railroad bridges (underpasses), the Proponent will generally be required to maintain, at its sole cost and expense, the railroad bridge structure, lighting, fencing, drainage, and all associated access for BNSF. It is important that the Proponent can demonstrate its proficiency with railroad bridge inspection and maintenance, plus document the perpetual ability to maintain the structure. In many cases, Proponents are unable to fulfill these responsibilities, which results in considerations to be negotiated to offset the BNSF's new obligations imposed by the Proponent's project. BNSF may be required to hire an outside consultant to review the Proponent's structural plans at the Proponent's expense.
- Temporary construction requirements, such as offset alignments (e.g., shoofly tracks), will be constructed, owned and maintained by BNSF at the sole cost of the Proponent.
- BNSF will complete routine inspection as required by FRA and BNSF irrespective of the ownership and maintenance responsibilities. Any major repairs to the structure requiring immediate repair shall be completed and communicated to the BNSF Manager Public Projects, who in turn will alert the appropriate Proponent. Project agreements will dictate financial responsibility and process.
- Railroad bridge structures over highways requiring BNSF inspection may require roadway traffic detours. BNSF personnel inspecting under the bridge will need traffic protection and allowance to complete necessary inspections. Such considerations should be made in the C&M Agreement, and in the event that this is not stipulated, traffic control costs are expected to be borne by the Proponent.

- A Proponent that owns and maintains a railroad bridge structure will also provide inspection reports and submit railroad bridge repair work to BNSF for review. Project agreements will define the process for repair and financial responsibility.
- Since bridge maintenance facilitates the safe movement of trains, inspection, and bridge repair may be done jointly with BNSF. Special provisions, access requirements, and/or specifications shall be included in the C&M Agreement and handled by the BNSF Manager Public Projects.
- Some existing bridges over the railroad may be owned and maintained by BNSF, and may sometimes be referred to as “wagon bridges.” BNSF may desire to work with the Proponent to reconstruct these structures and transfer ownership and maintenance responsibilities to the Proponent. If this is the case, BNSF may contribute more than the federally or state mandated funding contribution in exchange for the Proponent’s future responsibilities.

18.0 Train Horn Mitigation Proposals (Quiet Zones or Wayside Horns)

18.1 Key Points

- This section was developed as a general guideline for public authorities that approach BNSF regarding Quiet Zones under the Federal Railroad Administration’s (FRA) **Final Rule on the Use of Locomotive Horns at Highway-Rail Grade Crossings** 49 CFR Part 222, 2006 (Final Rule). At the outset of this section, BNSF believes each public authority should review and become familiar with the Final Rule and information on Quiet Zones provided by FRA on their website, which can be found at: https://www.fra.dot.gov/Page/P0889
- According to the FRA, the implementation of Quiet Zones – without appropriate safeguards and equipment – increases the risk of accidents at highway-rail grade crossings.[3] BNSF encourages public authorities considering a Quiet Zone to thoroughly review the Final Rule as well as use safety measures outlined in the Final Rule to compensate for the loss of the train horn at every crossing. Moreover, public authorities pursuing a Quiet Zone should consider the consolidation and/or closure of as many crossings as possible.
- Communities that wish to implement Quiet Zones must meet all federal requirements outlined in the Final Rule.
- Pursuant to the Final Rule, each required notice (as well as any applications, if required) must be sent to the appropriate parties. BNSF encourages communities to send all required notices and applications, at a minimum, to all railroads who operate through the crossings in question, local government agencies, state departments of transportation, and the FRA.
- BNSF will seek reimbursement for work performed to design and implement additional railroad facilities required within Quiet Zones, such as four-quadrant gates.
- BNSF desires to be a good corporate citizen. BNSF also places importance on railroad safety and on the quality and timeliness of service to its customers and the communities

[3] https://www.fra.dot.gov/eLib/Details/L04781

it serves. As such, consistent with the Final Rule, BNSF will seek to encourage communities requesting Quiet Zones to implement solutions and supplemental safety measures (SSMs) that optimally achieve safety while minimizing the impact on railroad operations.

18.2 Overview

BNSF strives to fully comply with the Final Rule, which provides requirements for the sounding of train horns. The Final Rule also provides guidance for conditions under which a public authority with jurisdiction over the crossing may apply for and establish a Quiet Zone. A Quiet Zone is a section of a rail line, at least one-half mile in length that contains one or more consecutive Public Crossings at which train horns are not routinely sounded. To that extent, communities should note that just because a Quiet Zone is implemented, the train horn may still be sounded for specific circumstances. (For full details on the Final Rule, Quiet Zones, and related regulations and resources, BNSF recommends that interested parties visit the FRA web site at https://www.fra.dot.gov/Page/P0889) and become thoroughly familiar with the Final Rule prior to initiating a Quiet Zone project

18.3 Policy on Quiet Zones

The Final Rule clearly defines requirements that must be satisfied by the public authority requesting a Quiet Zone be established or continued. BNSF will expect the public authority to strictly comply with these requirements.

18.4 Preliminary Planning for Quiet Zones

Preliminary work that will likely be required in connection with the proposed Quiet Zone, may include, but may not be limited to:

- Updating crossing inventory information
- Attending meetings
- Participating, to the extent feasible, in Diagnostic Reviews of all public, private, and pedestrian crossings in a proposed Quiet Zone
- Preparing and processing estimates covering the cost of work to be performed by BNSF, if applicable
- Processing necessary agreements

BNSF Manager Public Projects will coordinate preliminary planning activities with each public authority.

18.5 Getting Started: Process for Pursuing a Quiet Zone

1. Groups or individuals interested in Quiet Zones should first contact the public authority responsible for the roadway(s) where the Quiet Zone would be located. Public authorities should then consult the Federal Railroad Administration (FRA) via its website (https://www.fra.dot.gov) for additional information on current Quiet Zone requirements and procedures. Please note that only public authorities with jurisdiction over the relevant at-grade crossings may pursue a Quiet Zone.
2. The public authority shall initiate coordination with the BNSF MPP. Those making this

contact will be furnished with the Quiet Zone policy and advised of the process for the initial planning activities with BNSF. Applicants are encouraged to contact BNSF early in the process to maximize communications and facilitate Diagnostic Meetings and review. Applicants will also coordinate with the BNSF MPP to determine the specific documents BNSF requires.

3. **Supplemental Safety Measures (SSMs) and Alternative Safety Measures (ASMs) as found in Appendices A and B of the Final Rule.** The public authority must identify a funding source for any SSM or ASM required to qualify for a Quiet Zone. If BNSF is installing these safety measure(s), BNSF will estimate the costs for design and construction. These charges will be billed to the public authority. BNSF requires execution of a Construction & Maintenance Agreement between BNSF and the roadway authority sponsoring the project before work can commence.
4. If the public authority decides to proceed with preliminary planning for a Quiet Zone, BNSF will assist by providing DOT inventory information and other information required in the Final Rule and by attending Diagnostic Review meetings. BNSF personnel can be limited and thus BNSF will seek flexibility in establishing meeting dates and times in order to permit BNSF representatives to attend.
5. Planning for a Quiet Zone project should include a review of the following principles:
    a. BNSF encourages public authorities to make the safety of the traveling public and BNSF employees their priority. BNSF will cooperate and work in good faith with local communities and the appropriate public authority to provide all possible assistance in a manner that includes the safety of local citizens and their communities as well as BNSF's employees.
    b. BNSF retains the right to review and comment on the requests.
    c. BNSF strongly encourages the public authority pursuing a Quiet Zone to involve local public authority staff, state DOT staff, FRA staff, other state regulatory authority staff (if applicable), and BNSF staff in a diagnostic team process for review of each public, private, and pedestrian crossing located within the proposed Quiet Zone in order to assess physical and operating conditions at the grade crossing and to consider proper grade crossing treatments. Some states have public utility oversight agencies that are required to attend the Diagnostic Meetings and approve any crossing modifications before construction. The public authority should advise the BNSF PPM if this applies to the area in question.
    d. According to the Final Rule, some of the minimum requirements for a Public Crossing within the limits of a Quiet Zone are flashing lights and gates, CWT track circuits on all tracks, and power out indicators located on the signal bungalow. Quiet Zones must also be a minimum of one-half mile in length. Please see the FRA website as cited above to reference the full list of requirements for proposed Quiet Zones. The Final Rule outlines the two types of safety measures for modifying public at-grade crossings to FRA standards for the implementation of a Quiet Zone, as noted below:
        - Supplemental Safety Measures (SSMs) – include four-quadrant gate systems that fully block roadway traffic from entering the crossing when fully lowered, medians or channelization devices, one-way streets with gates that fully block the roadway, temporary or temporal closures (i.e. nighttime closure), and permanent closures.
        - Alternative Safety Measures (ASMs) – include modified SSMs (i.e. non-complying medians, three-quadrant gates, shortened traffic channelization devices), engineering ASMs (i.e. geometric improvements such as those that improve sight distance), and non-engineering ASMs (i.e. programmed or photo enforcement of motorists entering upon the

crossing when grade crossing Active Warning Devices are activated, public education about grade crossing safety).

BNSF strongly recommends safety measures at all at-grade crossings within the limits of the Quiet Zone corridor. BNSF reserves the right to object to any Quiet Zone which does not have safety measures at every Public Crossing. BNSF encourages implementation of SSMs and components preferred by BNSF including permanent closures, non-mountable concrete center medians compliant with Appendix A of the FRA Final Rule, and one-way paired streets.

The Quiet Zone must be fully compliant with the Final Rule, including completed construction projects for safety measures, prior to implementation.

e. As discussed above, the appropriate public authority is expected to reimburse BNSF for its cost of design and installation of safety enhancements, including, but not limited to, its installation of SSMs and ASMs. As an example, BNSF installs and maintains active warning systems at highway-rail grade crossings that may be modified or expanded for a Quiet Zone. Curbs, medians, pavement markings, and other traffic control signs such as advance warning signs are installed and maintained by public authorities. The specific responsibilities are expected to be resolved during the preliminary planning for a Quiet Zone. BNSF strongly urges the public authority pursuing the Quiet Zone to petition the state DOT to use Federal Railway-Highway Crossings Program funds (Section 130 funds) to fund any modification to a crossing. More about the Section 130 Program can be found at: https://safety.fhwa.dot.gov/hsip/xings/.
f. If one or more SSMs or ASMs requires work by BNSF, a C&M Agreement will be used for implementation of the projects. The cost of this work is the responsibility of the requesting public authority.
g. SSMs or ASMs installed and maintained by the public authority as described above are important parts of traffic control at each crossing. The public authority is responsible for periodic inspection and repair of these items, as well for any requirements outlined by local, state, or federal criteria for roadway authorities.

6. Standard BNSF Public Projects department design and estimating procedures will be used for projects related to Quiet Zones.
7. See section 16.5 for BNSF guidelines on loop detection circuitry.

18.6 Wayside Horn Systems

Wayside (or Stationary) Horn Systems are positioned in a fixed location at a grade crossing and are designed to provide audible warning to oncoming motorists when a train is approaching. Wayside Horns are a one-for-one replacement for sounding a train horn. BNSF will consider implementation of a Wayside Horn System on a case by case basis. BNSF requests that the public authority applying for installation of the Wayside Horn System use the diagnostic team process described earlier in this section to consider and present the merits of the potential implementation. A Wayside Horn System will only be considered where crossings have flashing light signals and gates as warning devices.

BNSF will only consider such an implementation under the following conditions:

- Wayside Horn System and all related infrastructure will be owned, installed, and maintained by public authority. Such infrastructure will not be attached to BNSF-owned crossing signal equipment.
- BNSF will not allow public authority access to any BNSF-owned back-up power system.
- Public authority must be willing to commit to a continuing program of public awareness of the Wayside Horn System.

A public authority may be able to pursue Section 130 funding to fund implementation of a Wayside Horn System.

19.0 Bicycle/Pedestrian Pathways and Multi-Use Trails

19.1 Overview

This section generally addresses Proponent sponsored projects that include the development of public bicycle/pedestrian pathways and multi-use trails on or adjacent to BNSF Right-of-Way.

19.2 BNSF Policy on Bicycle/Pedestrian Pathways and Multi-Use Trails Crossing BNSF Property

- Parallel bicycle/pedestrian pathways and multi-use trails are not permitted on BNSF property.
- Bicycle/pedestrian pathways and multi-use trails crossing BNSF tracks at-grade must cross adjacent to an existing public at-grade crossing. Stand-alone at-grade trail crossings of BNSF tracks are not allowed.
- The bicycle/pedestrian pathways and multi-use trails should cross the BNSF track(s) at a 90-degree angle, and the crossing must meet the requirements of the Manual on Uniform Traffic Control Devices (MUTCD).
- BNSF may require that the design developed by the Proponent include additional safety measures or specific trail features for at-grade pathways and multi-use trails within existing roadway easements.
- Bicycle/pedestrian pathways or multi-use trails combined with drainage structures are not allowed on BNSF property.
- Owners of the bicycle/pedestrian pathways and multi-use trails must enter into the proper license agreement with JLL and be responsible for the ownership and maintenance of the bicycle/pedestrian pathways and multi-use trails.
- BNSF prefers grade separated public bicycle/pedestrian pathways and multi-use trails. For guidance on grade separated public bicycle/pedestrian pathways and multi-use trails, refer to the *Union Pacific Railroad-BNSF Railway Guidelines for Railroad Grade Separation Projects*.

19.3 BNSF Policy on Bicycle/Pedestrian Pathways and Multi-Use Trails Parallel to BNSF Property

- In general, public parallel bicycle/pedestrian pathways and multi-use trails are not allowed on BNSF property. BNSF Right-of-Way is reserved for railroad infrastructure to ensure that current customer demands are met and to support future expansion needs.
- BNSF's maintenance and inspection roads are for the duties of operating, maintaining, and inspecting track and other railroad infrastructure. Public uses of railroad service roads are not acceptable for public trails or other purposes.
- BNSF bridges are designed to carry train traffic and are not designed for multimodal use. Bicycle/pedestrian pathways and multi-use trails parallel and / or attached to railroad bridges are not allowed.
- If a public parallel bicycle/pedestrian pathway or Multi-Use Trail is located adjacent to BNSF property, fencing should be installed along the pathway or trail to keep users off of BNSF property. Fencing to be maintained by owner of the bicycle/pedestrian pathway or multi-use trail.
- Adjacent public parallel bicycle/pedestrian pathway or Multi-Use Trail construction and maintenance shall not reduce the BNSF Right-of-Way or adversely impact train operations.
- Increased pedestrian activity adjacent to active BNSF track increases exposure points to train movement and potential for trespassing. Efforts to deter trespassing on BNSF property should be included in any public bicycle/pedestrian pathway or Multi-Use Trail project.

20.0 Overpass and Underpass Structures

20.1 Key Points

- Overhead and Underpass Structure projects must comply with BNSF's policies and standards, which can be found in the 2016 version of the *Union Pacific Railroad – BNSF Railway Guidelines for Railroad Grade Separation Projects* manual, found here: http://www.bnsf.com/in-the-community/pdf/uprr-bnsf-joint-guidelines-railroad-grade-separation-projects.pdf.
- All work on overhead and Underpass Structures must be reviewed and accepted by BNSF.
- The negotiations for Grade Separation projects are managed by the BNSF Public Projects team.
- BNSF approval of construction documents, execution of a Construction & Maintenance (C&M) Agreement, and some type of easement or Railroad Right-of-Entry (ROE) permit (if applicable) are required prior to beginning construction.
- BNSF should be involved early in the project development phases to allow required bridge standards to be incorporated into the design of the project.
- BNSF property and operations (including train speeds) shall not be negatively impacted by the project.

- The preferred overhead structure is one that will span the entire BNSF Right-of-Way, with all piers and abutments to be located outside of railroad Right-of-Way.
- BNSF requires a minimum 23'–6" Vertical Clearance measured vertically from the top of the highest rail to the lowest obstruction under the structure.
- Reduced temporary construction clearances, which are less than the specified construction clearances, will require special review and prior approval by BNSF.
- All new Underpass Structures must be a simple span and have a ballast deck.
- Mechanically Stabilized Earth (MSE) walls are not acceptable for support of railroad embankment. MSE walls supporting roadways above track level are not acceptable within BNSF Right-of-Way or within 50 feet of the centerline of existing or future BNSF tracks.

20.2 Overview

Given the efficiencies and environmental benefits of moving freight by rail, BNSF continues to see strong demand for rail services across its network. It is critical that BNSF maintain the ability to expand its network in the future, as demands require. As such, all work on overhead and Underpass Structure projects impacting BNSF property must be reviewed and accepted by BNSF to make sure that they comply with any future expansion initiatives by BNSF.

BNSF requires that new overhead bridges (including existing bridge replacements) span BNSF's Right-of-Way and have a minimum 23'–6" Vertical Clearance above the Top of Rail. BNSF requires that new Underpass Structures provide accommodations for future operating needs, as determined by BNSF.

All design and construction submittals shall be transmitted to the BNSF Manager Public Projects. The submittal will then be forwarded to the BNSF's Engineering Department. The Engineering Department shall have the option of reviewing the project documents in-house or by using an outside consultant (at the cost of the applicant). During the review process, the MPP shall be the point of contact for resolving outstanding issues.

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 BNSF operations during construction. Temporary run-around or shoofly track(s) and/or phased construction may be necessary as determined by BNSF. Rail operations must not be impeded by project construction.

20.3 General Guidelines

- All bridge projects over or under BNSF shall be governed by the *Union Pacific Railroad - BNSF Railway Guidelines for Railroad Grade Separations* manual. This includes, but is not limited to, bridge replacements, new construction, substructure modifications, or repairs; superstructure replacement or repair; and deck replacement or overlay.
- Railroad ditches are not designed or intended for conveyance of public water. For projects that change drainage on BNSF Right-of-Way, temporary and final drainage plans and capacities must be accepted by BNSF.
- BNSF's access to its property must be maintained at all times.

- Plans must show all tracks and horizontal and vertical track clearances for both the existing conditions, temporary conditions, and the conditions of the proposed project.
- All demolition within the BNSF Right-of-Way, or which may impact BNSF tracks or operations, shall comply with BNSF demolition requirements, which are identified in this *BNSF Railway Public Projects Manual*.
- The attachment of signs to BNSF bridges is discouraged, other than signs directly related to traffic safety. Clearance signs, advance warning signs, and other roadway signs are generally acceptable with the understanding that they are the maintenance responsibility of the roadway authority. These signs may be attached to BNSF bridges by the roadway authority with written concurrence and coordination with BNSF's Public Projects team. The signs, mounting fixtures, and related attachments must not interfere with the integrity, clearances, or accessibility of BNSF structures. The attachment of temporary signs to BNSF bridges is prohibited.
- The Proponent or its representative shall submit As-Built documents for all Underpass Structures to the MPP after completion of the bridge structure and prior to closing the project.
- All new overhead bridges and structures, including those without sidewalks, constructed over BNSF Right-of-Way, shall include fencing along exterior edges. The intent of the fencing is to prevent objects or debris from being thrown onto the track. "Throw" fences are not solely for the protection of pedestrians, but for protection of BNSF's employees, equipment, and infrastructure. Barrier rail and fencing shall be constructed according to the *Union Pacific Railroad – BNSF Railway Guidelines for Railroad Grade Separation Projects (2016)* manual.

Additional information about Grade Separation projects can be found in the Public Road Crossing Openings and Closures and Grade Separation section presented in this *BNSF Railway Public Projects Manual*. Information on Ownership and Maintenance for Grade Separations can be found in Section 17.9 of this manual.

20.4 Temporary and Permanent Construction Clearances

The information below is a summary from the *Union Pacific Railroad – BNSF Railway Guidelines for Railroad Grade Separation Projects* manual (2016). Refer to that manual for current information regarding temporary and permanent construction clearances on BNSF.

20.4.1 Temporary Vertical Clearance

The Contractor must abide by the following temporary clearances during construction:

- 27'–0" Vertically above Top of Rail for overhead electric wires carrying less than 750 volts
- 28'–0" Vertically above Top of Rail for overhead electric wires carrying 750 volts to 15,000 volts
- 30'–0" Vertically above Top of Rail for overhead electric wires carrying 15,000 volts to 20,000 volts
- 34'–0" Vertically above Top of Rail for overhead electric wires carrying more than 20,000 volts

- Temporary horizontal and vertical construction clearances shall be shown on the plans for all Grade Separation projects.
- 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.

20.4.2 Temporary Horizontal Clearance

- 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.
- 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.
- 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.

20.4.3 Permanent Clearances

Permanent clearances shall accommodate future BNSF tracks, future track raises, Access Roads, and drainage ditch improvements as determined by BNSF Manager Public Projects. Proposed permanent vertical and horizontal clearances shall be adjusted so that the sight distance to any BNSF wayside signal is not reduced unless such signal(s) are to be relocated as part of the proposed Grade Separation project.

20.4.4 Permanent Vertical Clearance (Under the Structure)

- The minimum permanent Vertical Clearance shall be 23'–6" measured from the top of the highest rail to the lowest obstruction under the structure.
  - The extent of the permanent Vertical Clearance shall be a minimum of 9'–0" to the field side of the outer most existing or future tracks, measured perpendicular to the centerline of said tracks.
    - 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.
  - The permanent Vertical Clearance shall extend to cover all existing and future tracks, including the space between.
- Additional Vertical Clearance may be required for adjustment of sag in vertical curve, future track raise, flood considerations, construction, and maintenance purposes.

Note: The Vertical Clearance should mirror the final negotiated design clearance.

20.4.5 Permanent Horizontal Clearance (Under the Structure)

- 25'–0" Horizontally from centerline of nearest track. More clearance may be required for additional future tracks or Access Roads. Exceptions can be made in certain situations, such as inner-track fencing at stations. The Proponent must inquire with BNSF Manager Public Projects for additional details.

20.4.6 Conclusions

Any infringement within state statutory clearances due to the Contractor's operations must be submitted to BNSF and to the Proponent and must not be undertaken until accepted in writing by BNSF and until the Proponent has obtained any necessary authorization from the State Regulatory Authority for the infringement. No extra compensation will be allowed in the event the Contractor's work is delayed pending BNSF approval, and/or the State Regulatory Authority's approval.

In the case of impaired Vertical Clearance above Top of Rail, BNSF will have the option of installing telltales or other protective devices that BNSF deems necessary for protection of its operations. The cost of telltales or protective devices will be borne by the Proponent.

21.0 Retaining Wall Projects

21.1 Overview

This section provides general information about retaining wall projects on or near BNSF property. There are two distinct types of retaining wall projects with different requirements. Retaining walls which retain the railroad grade have some differences from walls meant to support adjacent soil to keep them off the railroad grade. BNSF uses the term Mechanically Stabilized Earth (MSE) walls for walls that are not self-supporting. BNSF prefers retaining wall types that are self-supporting. If an MSE wall has a damaged panel, embankment fill is compromised by excavation, or the straps damaged, the entire wall can fail and will likely need to be rebuilt.

21.2 Walls Supporting Railroad Embankment

- Retaining walls which retain the railroad embankment should be self-supporting. In other words, wall types that utilize the soil stability as part of the strength of the wall are not generally acceptable for this application.
- Walls for this application shall be designed in accordance with BNSF requirements and general design principle specific in AREMA.

21.3 Walls Not Supporting Railroad Embankment

- Self-supporting walls should also be utilized for any applications within BNSF Right-of-Way, or within 50 feet of existing or future tracks. The applications may include supporting roadway or railways above track level.
- Use of MSE walls on BNSF Right-of-Way requires written justification and request for variance for the proposed design. Requests for variances may be rejected.
- In consideration of allowing MSE walls, the following will apply:
    - For locations less than 25 feet from centerline of track (existing and future), MSE walls are not acceptable.
    - For locations greater than 25 feet and less than 50 feet from centerline of tracks (existing and future), a wall thickness of at least 2.5 feet is acceptable since it meets the AREMA “heavy construction” recommendations and are represented

as having a 100 year design service life. The height of the 2.5-foot-thick section must be at least 6 feet above Top of Rail of the nearest existing or future track.

- Additionally, bridge abutments shall be supported by deep foundations within these limits.
- The 25-foot boundary should be applied to existing or future track centerline, as applicable. Otherwise, there would be a potential compromise of standards and utility of use of BNSF property.

- The responsibilities for maintenance and inspection of walls are stipulated by a Construction & Maintenance (C&M) Agreement. In general, the maintenance of walls is the responsibility of the Proponent for both structural items and aesthetic issues such as graffiti removal. In some cases, a Proponent may construct and maintain pursuant to a lease processed by BNSF's consultant JLL.

Designers and Proponents that sponsor projects that involve MSE or similar wall types understand that lower construction costs and / or less robust design criteria comes with inherent risks during future operation. In the event that walls require reconstruction or any maintenance, the full cost (both direct and indirect) are borne solely by the Proponent.

22.0 Parallel Roadway Construction Projects

22.1 Key Points

- Proposed parallel public roads shall be located off BNSF property.
- BNSF will consider accommodating parallel roadways within BNSF Right-of-Way on a case-by-case basis, when the new roadway will eliminate one or more at-grade crossings.
- Safety at existing highway-rail grade crossings must not be adversely impacted.
- No additional public drainage may be directed onto BNSF property.
- BNSF's access to its property must not be impeded at any time.
- Construction may result in the need for alterations to grade crossing warning systems or facilities.

22.2 Overview

This section generally addresses Proponent sponsored projects that include parallel roadways on or adjacent to BNSF Right-of-Way.

In the interest of public safety, parallel public roads shall be located off BNSF Right-of-Way. Parallel roads involving intersections with existing or proposed roadways where public or Private Crossings are present should be aligned to provide sufficient distance from the grade crossing for the largest vehicle (design vehicle) permitted to use the road to stop between the railroad and the parallel road traffic control signs, markings, and warning devices without interfering with railroad operations, obstructing or preventing the operation of traffic control devices, or

obstructing the crossing in any manner. BNSF will consider accommodating parallel roadways within BNSF Right-of-Way when the new roadway will eliminate one or more at-grade crossings.

22.3 General Guidelines

The design of highways, highway intersection, and configuration of highway-rail grade crossings is the responsibility of the Proponent. Drainage for highway runoff, the railroad corridor, and adjacent property must be designed to reduce or maintain existing railroad drainage and to prevent standing water and potential erosion. Access for BNSF equipment to the railroad property, structures, and track cannot be restricted or prevented.

Federal and state design manuals, the Manual of Uniform Traffic Control Devices (MUTCD), and additional recommended practices available in American Railway Engineering and Maintenance of Way Association (AREMA) manuals provide design information to be considered by the Proponent responsible for the project engineering.

22.4 Other Considerations

- In general, public parallel roadways are not allowed on BNSF property. BNSF Right-of-Way is reserved for railroad infrastructure to ensure that current customer demands are met and to support future expansion needs.
- BNSF's Access Roads are for the duties of operating, maintaining, and inspecting track. Public uses of railroad Access Roads are prohibited.
- BNSF rail bridges are designed to carry train traffic and are not designed for multimodal use.
- Increased pedestrian activity adjacent to active track increases exposure points to train movement and potential for trespassing. Efforts to deter trespassing should be included in any roadway project.
- All expenses associated with the design, installation, and maintenance of the roadway, including the costs of signs, crossing surfaces, and warning systems associated with an at-grade crossing, will be paid by the Proponent.

23.0 Cleaning and Painting BNSF Bridges and Structures and Other Bridges over BNSF Property

23.1 Cleaning and Painting of Railroad Bridges – Key Points

- BNSF understands the desire of communities to improve the appearance of bridges and other structures. Safety of BNSF employees, the general public, and neighbors restrict some alternatives for improvement of BNSF bridge appearance.
- BNSF may consider requests made by Proponents for painting of railroad-owned bridges based on the condition of the structure.
- Any surface preparation methods must follow all applicable environmental guidelines and must be accepted in advance by BNSF.

- BNSF will not accept proposals to attach signage to BNSF bridges.
- A written request should be submitted to BNSF's Public Projects team to initiate consideration of such projects.
- If the request is accepted, Proponents will enter into a Bridge Painting Agreement with BNSF prior to work and bear all costs associated with the painting project and related future maintenance.

23.2 Cleaning and Painting of Railroad Bridges – Overview

BNSF does not typically paint its railroad bridges including, but limited to, exposed steel beams, concrete abutments or piers, and hand railing. BNSF carefully inspects railroad bridges to ensure safety and structural integrity, and the appearance of surface rust or loose paint does not impair the structural integrity of a bridge. Painting over defects, cracks, or other damage can hinder the routine visual inspection of bridges and structures. Requests are occasionally made by outside parties for various beautification projects, including painting of Overhead and Underpass Structures, and these requests may be considered by BNSF on a case-by-case basis only. BNSF will make every reasonable effort to cooperate, consistent with maintaining public safety and the safe operation of the railroad.

23.3 Consideration of Railroad Bridge Cleaning and Painting Projects

Railroad bridge painting proposals must be reviewed and accepted by BNSF Director of Bridge Engineering to ensure compliance with safety and environmental regulations and BNSF specifications, and to ensure that the proposal will not impact BNSF property or operations.

- BNSF will require a Bridge Painting Agreement for all bridge painting proposals.
- A Public Agency must be a party to the agreement.
- BNSF will incur no costs or liabilities as a result of the project.
- The Public Agency will bear all costs associated with the painting project and future aesthetic maintenance (including, but not limited to, vandalism and damage caused by motor vehicles).
- A railroad Flagger will be required during painting of the bridge or structure, at the requesting Proponent's expense. See Section 11.7 of this Manual for more information about flagging.

23.4 Submission of Railroad Bridge Cleaning and Painting Project Requests

A Bridge Painting Agreement is required to cover BNSF's review of the project and preparation of a cost estimate and construction agreement. To ensure safety, a railroad employee Flagger must be present to control railroad operations in the immediate area during the planned work. Proponents must submit a written request to undertake such projects to BNSF's Manager Public Projects team for handling. To assist BNSF with completion of its review, the following information should be included:

- The Public Agency that will execute appropriate agreements for implementation as well as future aesthetic maintenance of the painted surfaces.
- Paint specifications that meet BNSF standards and methods for surface preparation, cleanup, and paint application.
- Qualifications and experience of the painting contractor. BNSF will accept state-qualified bridge painting contractors working for the responsible Public Agency.
- Containment system, clean up, and disposal of all paint and other material removed from the bridge. The clean-up and disposal of material from the surface preparation for painting and actual painting must comply with all appropriate regulations.
- The materials removed during the surface preparation must not affect the surrounding area including ground, water, or air impacts. Materials must not be stored on BNSF property.
- Regarding control of paint overspray and vapors during application, the work must be done complying with appropriate regulations and overspray controlled to prevent damage to adjacent property and vehicles in the area.
- Pictures and conceptual drawing should be submitted, along with the initial request from the Public Agency, to simplify the initial review and comment process by BNSF.
- Work site safety plan that includes keeping all personnel away from BNSF tracks and proper fall protection measures, where required.

23.5 Cleaning and Painting of Other Bridges over BNSF – Key Points

- BNSF understands that maintenance of non-railroad owned bridges over BNSF may include cleaning and painting. The safety of BNSF employees, the general public, and the Public Agency's contractors is critical to BNSF.
- A written request should be submitted to BNSF's Manager Public Projects to initiate consideration of such projects.
- If the request is accepted, Proponents will enter into a Bridge Painting Agreement with BNSF prior to work and bear all costs associated with the painting and cleaning project.
- An agreement is required to accommodate engineering, review of plans, flagging, right-of-entry, and payment of costs incurred by BNSF during the review process.

23.6 Cleaning and Painting of Other Bridges over BNSF – Overview

All work over BNSF has the potential to impact BNSF property and rail operations. BNSF will review bridge painting and cleaning projects to ensure environmental and engineering standards are met. This review, flagging protection, and construction monitoring costs will be paid by the Public Agency.

24.0 Use of Cranes, Lifting of Material, and Demolition on or Over BNSF Right-of-Way

24.1 Key Points

- A lifting plan or demolition plan sealed by a Professional Engineer registered in the state that the work is to be executed is necessary for any lifting activities requiring authority or protection over BNSF tracks. The PE is responsible for addressing all required parameters of the lifting plan or demolition plan. BNSF has minimum submittal requirements for specific lifting activities and requirements should be confirmed with BNSF.
- For Public Agency sponsored projects, the Public Agency shall accept the lifting or demolition plan and advise BNSF of acceptance of plan(s) prior to submittal.
- An onsite, pre-lift safety meeting is mandatory for all lifting activities covered by the lifting or demolition plan. Representatives of the contractor, Public Agency, and BNSF shall be present.
- Purpose is to confirm all processes and equipment are in place to proceed per the lifting plan, or otherwise BNSF track authority will not be provided.
- Deviations or modifications to the plan require additional review by BNSF.
- BNSF train operations will not be permitted during splicing, post tensioning, or any activities performed during a suspended load until structural stability is achieved. For these reasons, superstructures of these types are not recommended. The method of erection permissible will be dependent upon track time available. This is to be coordinated through the BNSF site representative during construction.
- Prior to the release of railroad traffic, components lifted over BNSF tracks shall be supported by falsework or permanent substructure, shall be secured and stable, and shall not be supported by cranes or other construction equipment.

24.2 Overview

This section generally addresses lifting activities for overhead bridge construction and demolition, but also covers other work using cranes or material lifting near BNSF property which has the potential to impact railroad operations.

The intent is to ensure necessary planning, engineering, and execution to avoid equipment or material failures that can lead to safety issues or unplanned interruptions of BNSF train operations. Demolition procedures other than those considered as lifting activities are covered in a Demolition Plan Submittal. The use of cranes and the lifting of materials on or over BNSF Right-of-Way shall not cause interruption to BNSF operations.

24.3 Erection

- Erection over BNSF Right-of-Way shall be designed to cause no interruption to BNSF operations. Erection plans shall be developed such that they enable the BNSF track(s) to remain open to train traffic per BNSF requirements.

- Prior to the release of BNSF traffic, components erected over BNSF 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.
- When cranes are operated over or adjacent to the tracks the contractor shall verify that the foundations and soil conditions under the crane and crane outriggers can support the loads induced by the crane under an assumed maximum capacity lift. The size and material type of crane mats shall be rigid and of sufficient capacity to safely distribute the crane loads.
- Additional track protection may be required for a crane when crossing over the track. The protection methods shall be submitted to BNSF for review and comment in advance of intended use.
- Cranes and other equipment utilizing outriggers shall not place outriggers on the railroad tracks or ballast.
- During passage of a train, the crane operator must stop all movements. Crane operators shall remain in the cab with motor at idle with the load lines, boom, rotation, and travel controls locked and stationary until the full length of the train has passed the job site and the Flagger has instructed that demolition can resume.

24.4 Falsework

- Falsework clearance shall comply with minimum temporary construction clearances per the *Union Pacific Railroad – BNSF Railway Guidelines for Railroad Grade Separation Projects (2016)* manual and any additional BNSF Shoring Guidelines. The design of all structural members for falsework shall comply with American Railway Engineering and Maintenance-of-Way Association (AREMA) and BNSF requirements.

24.5 Demolition

24.5.1 Key Points

- All demolition within the BNSF Right-of-Way, which may impact BNSF tracks or operations, shall comply with BNSF demolition requirements; see Appendix D. The Proponent and its demolition contractor shall submit a detailed bridge removal plan to BNSF for its review and approval.
- As with all other projects on BNSF property, safety is BNSF's top priority. The contractor shall be responsible for planning and executing all procedures necessary to remove the structure in a safe, predictable manner.
- The contractor's work shall in no way impede the train operations. The contractor shall develop a demolition plan only after consulting with BNSF to get an estimate of the range of Track Windows that might be normally available for the job site.
- BNSF tracks and property shall be protected at all times, and demolition procedures shall account for severe weather conditions, site security, and site accessibility.
- No work is allowed within 25 feet of the nearest track unless protected by a BNSF Flagger. When trains approach the work site, all demolition activity within 50 feet of the track shall stop until the entire length of the train has passed the work site and the Flagger has instructed that demolition can resume. See Section 11.7 of this Manual for more information on flagging.

- The staged demolition of any portion of a structure over or adjacent to operational tracks will not jeopardize the stability of other parts of the structure awaiting demolition.
- No blasting will be permitted on BNSF Right-of-Way. If blasting is planned to occur off of BNSF property that may impact BNSF property or train operations, this work must be coordinated with the BNSF Manager Public Projects. BNSF will work with the party requesting to perform blasting in order to minimize impacts to train traffic and BNSF infrastructure.

24.5.2 Other Considerations:

- A Track Window is the time period provided to a contractor to perform work between approaching trains.
- The estimated Track Window is a guideline and is not a guarantee for available working time. The contractor small estimate work based on the smallest Track Windows on the BNSF corridor where work is taking place.
- A Track Window is highly variable, depending on the location. Low speed - low train density tracks have more predictable Track Windows. The opposite is true for high density - high speed main tracks. BNSF can furnish a range of Track Windows that might be expected at a specific location under normal train traffic conditions.
- All substructures shall be removed to at least 3 feet below the final finished grade or at least 3 feet below base of rail whichever is lower, unless otherwise specified by BNSF.
- The Bridge Removal Plan must be executed such that stability is continuously maintained for the standing portions of the structure above all tracks.
- At the conclusion of the project, the area must be left in a clean and graded condition to the exclusive satisfaction of BNSF.
- Beam removal and all other demolition procedures shall take place as much as practicable with equipment positioned above the track. If beam removal or other demolition procedures require removal from below the structure, extra coordination will be required between the contractor and BNSF per the BNSF demolition guidelines.
- Fire suppression equipment is required when welding or torch cutting equipment is used in the demolition process. Details are listed in the BNSF Demolition Guideline document.
- The demolition operations shall be planned such that the utility lines are operating safely at all times. The utility lines shall be protected if affected by demolition operation. All the work associated with utility lines should be coordinated by the contractor with the respective utility companies.
- If any hazardous materials are discovered, the contractor must provide material protection as specified in local hazardous material codes and immediately contact the designated BNSF Representative. Fuel spills, hydraulic fluid releases, equipment oil leaks, or any other release of contaminants must be reported to BNSF immediately. Contaminated soils must be removed and replaced to the satisfaction of BNSF.

24.6 Vibratory Pile Driving

This section generally addresses the use of vibratory pile drivers to install and/or remove pile, sheeting, casing, and other material. In certain situations based on site specific characteristics, soil properties, and equipment utilized, BNSF may allow the use of vibratory pile driving. The use of vibratory pile drivers can be a risk to the stability of nearby railroad track, structures, and

other facilities, which can cause impact to railroad operations. To ensure track and structures do not incur damage due to vibratory installation and / or removal methods, BNSF requires that estimated settlement and deflection of track and foundation system, method of monitoring movement, and trigger values be provided for BNSF review. In certain situations, BNSF and / or project specifications may prohibit the use of vibratory pile driving.

25.0 Leases, Easements, and Property Purchases

25.1 Key Points

- Jones Lang LaSalle (JLL) facilitates real property management for BNSF. JLL contacts are located here: http://www.bnsf.com/in-the-community/jll-contacts.html and are covered in detail within Section 2.0 – BNSF Public Projects and JLL General Roles, Contacts, and Territories of this *BNSF Railway Public Projects Manual*.
- Proponents must obtain easements, leases, or permits to permanently occupy BNSF property. Please reference the JLL and BNSF flow chart; click here to reference Figure 1 in Section 2.3 for a flowchart showing the roles of BNSF PPM and JLL teams.
- JLL can be contacted for requests to permanently purchase BNSF property or sell private property to BNSF.

25.2 Overview

BNSF will work with any responsible Proponent to evaluate a proposed Proponent initiative. However, prior to the initiation of any Preliminary Engineering work, BNSF will need to confirm with the sponsoring Proponent that it is willing and able to:

- Implement project.
- Negotiate and, when found to be mutually acceptable and necessary, execute property purchase, property use (e.g., perpetual easements), and operating and maintenance or capital construction agreements, as applicable.
- Reimburse BNSF for any fees associated with the easement, permit, or lease. This may include upfront costs as well as long-term costs.

25.3 Process

JLL assists third parties with the purchase, lease, or permit of BNSF real estate and any other property management transactions. JLL Land Sales and Lease Management contacts are location specific and can be found on http://www.bnsf.com/in-the-community/jll-contacts.html or by contacting JLL at:

Fort Worth Land Sales / Lease Office
Jones Lang LaSalle Brokerage, Inc.
4200 Buckingham Road, Suite 110
Fort Worth, Texas 76155
Toll-Free Number: 1-866-498-6647

JLL will act as the intermediary between the third party and BNSF in order to expedite real estate sales and any other property management issues on behalf of the BNSF Corporate Real Estate team. More information about the BNSF Corporate Real Estate team and contacts can be found at http://www.bnsf.com/about-bnsf/faqs.html.

To ascertain if a certain parcel of land is BNSF property, interested parties can generally check with a local tax assessor or consult local courthouse records. For informational purposes, railroad maps that provide the width of the railroad corridor and other information are available to assist with project references. To obtain a copy of a map for a cost, interested parties should send a query email to BNSFMaps@bartwest.com. These requests are handled through another BNSF consultant, Bartlett and West.

25.4 General Guidelines

Understanding what actions require permitting or easements is crucial to BNSF's consideration of a proposed Proponent initiative. JLL should be contacted to provide guidance in completing permitting, leases, easements, as well as purchases of BNSF property. Easements shall be requested by Proponents to permanently occupy BNSF property or for construction and maintenance improvements that affect BNSF Right-of-Way.

26.0 Track Abandonment

26.1 Key Points

- BNSF prefers to retain railway lines for potential future need and customer and economic development.
- BNSF encourages communities to find ways to leverage existing railway lines for continued economic expansion.
- BNSF considers rail line abandonment on a case by case basis and only as a last resort.

26.2 Overview

A rail line abandonment (or retirement) is the discontinuance of rail service and maintenance on certain tracks or line segments of a railroad subject to approval by the appropriate federal and state agencies. Rail line abandonment, including all of the following topics, is outside the scope of this *BNSF Railway Public Projects Manual*:

- Forms of railroad Right-of-Way ownership and related use (i.e. fee simple property or easements)
- The abandonment process, including any related Public Agency coordination and public outreach conducting during an abandonment as well as any regulatory and legal aspects concerning rail-line abandonment
- Railbanking of a railroad corridor for potential recreational purpose (e.g. multi-use trail) or pursuit of a public use condition for other public purpose (e.g. light rail transit line development) in lieu of abandonment
- Potential for property reversion or sale after abandonment of a rail line

For more information on these topics as they pertain to BNSF, interested parties can direct inquiries to the BNSF Manager Public Projects for the appropriate territory, as listed in Section 2.0 of this *BNSF Railway Public Projects Manual.*

26.3 Disposition and Acquisition of Surplus and Used Track Material

The BNSF Manager Asset Disposition on the BNSF Strategic Sourcing and Supply team is responsible for the disposition of rail and other track materials that BNSF designates as surplus or used. Rail and some other track materials may be sold on as-is, where-is basis to purchasers of surplus railroad material. The purchaser is responsible for removing purchased rail and other track materials from designated BNSF job sites and property, as appropriate. The purchaser may use off-track or on-track methods and equipment to remove rail and other track materials, subject to BNSF approval.

BNSF replaces approximately 3.5 million ties annually that need to be removed from BNSF property and disposed of properly. Ties determined by BNSF to be reusable are often sold to outside parties for landscaping, fencing, and other purposes. For more information about the potential availability of reusable ties and the process to acquire them, contact the BNSF Manager Asset Disposition on the BNSF Strategic Sourcing and Supply team via email at Asset.Disposition@BNSF.com. Request for donations of ties will be processed through the BNSF Public Affairs team, and interested parties should contact the representative by appropriate territory, as listed in Section 3.0 of this *BNSF Railway Public Projects Manual*.

Appendix A

- **Grade Crossing Agreement Example** http://www.bnsf.com/in-the-community/pdf/grade-crossing-agreement.pdf
- **Overpass Agreement Example** http://www.bnsf.com/in-the-community/pdf/overpass-agreement.pdf
- **Underpass Agreement Example** http://www.bnsf.com/in-the-community/pdf/underpass-agreement.pdf

Appendix B

- **BNSF Contractor Requirements (Exhibit C)**
  http://www.bnsf.com/in-the-community/pdf/exhibit-c-contractor-rqmt-2014.pdf
- **BNSF Contractor Right-Of-Entry Agreement (Exhibit C-1)**
  http://www.bnsf.com/in-the-community/pdf/exhibit-c1-contractor-rqmt-2014.pdf

Appendix C

- **BNSF Utility Accommodation Policy** https://www.bnsf.com/about-bnsf/pdf/utility.pdf

Appendix D

- **Demolition Guidelines http://www.bnsf.com/in-the-community/pdf/bnsf-demolition-guideline.pdf**
- **Shoring Guidelines http://www.bnsf.com/in-the-community/pdf/bnsf-up-shoring-guide.pdf**
- **UPRR – BNSF Joint Guidelines for Railroad Grade Separation Projects http://www.bnsf.com/in-the-community/pdf/uprr-bnsf-joint-guidelines-railroad-grade-separation-projects.pdf**

Appendix E

- **BNSF Review Comment Sheet Example http://www.bnsf.com/in-the-community/pdf/overpass-plan-review-tracking-sheet.pdf**

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