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EXHIBIT A

EXHIBIT A



Railroad-Highway Grade Crossing Handbook - Revised Second Edition August 2007

Section 7: Maintenance Program

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VII

Maintenance Program*

A. Railroad Responsibility*

The highway-rail crossing is unique to other highway features in that railroads install, operate, and maintain the traffic control devices located at the crossing. Even though a large portion of the cost of designing and constructing crossings, including traffic control devices, is assumed by the public, current procedures place maintenance responsibilities for devices located in the railroad right of way with the railroad. The public agency having jurisdiction terminates its responsibility for the roadway at the crossing surface.

B. Highway Authority Responsibility

Traffic control devices on the approach, in most instances, are the responsibility of the public agency. Maintenance-sharing with highway or other local authorities is typically included in construction and management (C&M) agreements developed prior to initiation of final design and construction of improvements.

The highway agency is usually responsible for maintaining the highway approaches, all traffic control devices on the approaches (except the crossbuck sign), illumination, and special signing at the crossing, such as the "Exempt" sign, STOP sign, or "Do Not Stop on Tracks" sign.

1. Traffic Control Devices

Traffic control devices on approaches to highway-rail crossings require regular inspection and maintenance. Pavement markings, if present, may need to be renewed annually. Signs on the approaches will gradually lose their retroreflectivity and should be inspected at night or checked with a retroreflectometer on some regular basis, such as annually, to assure that they retain the proper brightness.

Interconnected traffic signals and active advance warning signs should be jointly inspected on a regular basis by state and railroad signal personnel. County or municipal representatives need to be included in this inspection if they share the responsibility for operation or maintenance of the device. Operation of the preempt should be checked any time a railroad or roadway signal maintainer visits

the crossing or the highway intersection. The highway agency and the local law enforcement agency should have a railroad company's telephone number available 24 hours per day to report railroad signal damage or malfunctions.

Passive flashers and roadway luminaires should be observed on a regular basis and re-lamped as necessary. Road crews should be alert for missing or damaged devices and for results of acts of vandalism that deface the devices or interfere with their effectiveness. Road crews should also drive the approach roadway to assure that vegetation does not obscure the traffic control devices from approaching drivers and should trim or cut trees or brush as necessary.

Higher-quality materials, such as improved sign sheeting and preformed or thermoplastic pavement marking materials, can offer dual benefits by increasing the effectiveness of the devices while reducing the required number of maintenance cycles.

The Federal Highway Administration (FHWA) has been developing standards on retroreflectivity of signs, which include minimum values to be provided and maintained. FHWA recently published a Supplemental Notice of Proposed Amendments to the *Manual on Uniform Traffic Control Devices*. The provisions were out for comment at the time this handbook was prepared.¹³¹

2. Roadside Clear Zone

The roadside clear zone serves the dual purpose of increasing the visibility of the crossing and traffic control devices and providing a safe recovery area for an errant motorist. The clear zone should be kept free of brush; trees that are more than 100 millimeters (4 inches) in diameter or that may obscure traffic control devices; and rocks, eroded areas, standing water, or other defects that may entrap an errant vehicle or lead to deterioration of the roadway or track structure.

The maintenance of the sight triangle, beyond highway and railroad right of way, presents a unique problem. Except for the portions on the rights of way, this involves private property. The removal of trees, brush, crops, buildings, signs, storage facilities, and other obstructions to the driver's view requires access to the property and an agreement with the landholder for the removal of the obstruction.

3. Roadside Approaches

Most maintenance on roadway approaches will be similar to that carried out on any roadway. There are a few special considerations maintenance forces need to keep in mind:

- Roadway maintenance equipment can damage crossing surfaces or the adjacent track. Repairs adjacent to the crossing should be done with care.
- Maintenance personnel should be aware of the potential for train movements and should be alert for trains. It may be necessary to station an employee at the crossing to warn the crew of train movements or to coordinate activities with the railroad.
- Particular care needs to be taken not to block or interfere with proper drainage from the crossing or track structure when maintaining pipes and ditches.
- Snow removal and ice control should be done with care. Snow must not be "windrowed" across the tracks. Snowplows can damage crossing surfaces. Chemicals can corrode track and fittings and can short-out track circuits. Snow and slush should not be

pushed or carried onto the crossing. It may be necessary for personnel with hand tools to remove ice or packed snow from the crossing flangeways. • Where possible, resurfacing operations should be coordinated with the railroad. Resurfacing lifts should be “heeled in” near the crossing so as not to leave the crossing surface in a hole or dip. Drainage should be checked to assure that the additional roadway height has not directed water onto the crossing surface. All necessary steps should be taken to prevent interference between resurfacing equipment and personnel and trains.

4. Reassessment and Periodic Review

The highway-rail grade crossing represents a discontinuity in both the highway pavement and the railroad tracks structure. Highway maintenance personnel need to be aware of the design, operational, safety, and maintenance issues surrounding these sites. The roadway maintenance supervisor should pay particular attention to the grade crossings under his or her jurisdiction and coordinate with the railroad as necessary to resolve any problems. The maintenance supervisor should also contact the grade crossing program administrator as necessary should any improvements be desired.

C. References

Federal Highway Administration Survey of Region and Division Offices, unpublished, 1984.

Maintenance Cost Study of Railroad-Highway Grade Crossing Warning Systems. Washington, DC: Association of American Railroads, October 1982.

* Includes previously unpublished materials provided by Ray Lewis, West Virginia Department of Transportation.

131 23CFR Part 655, FHWA Docket No, FHWA-2003-15149, Federal Register, May 8, 2006,

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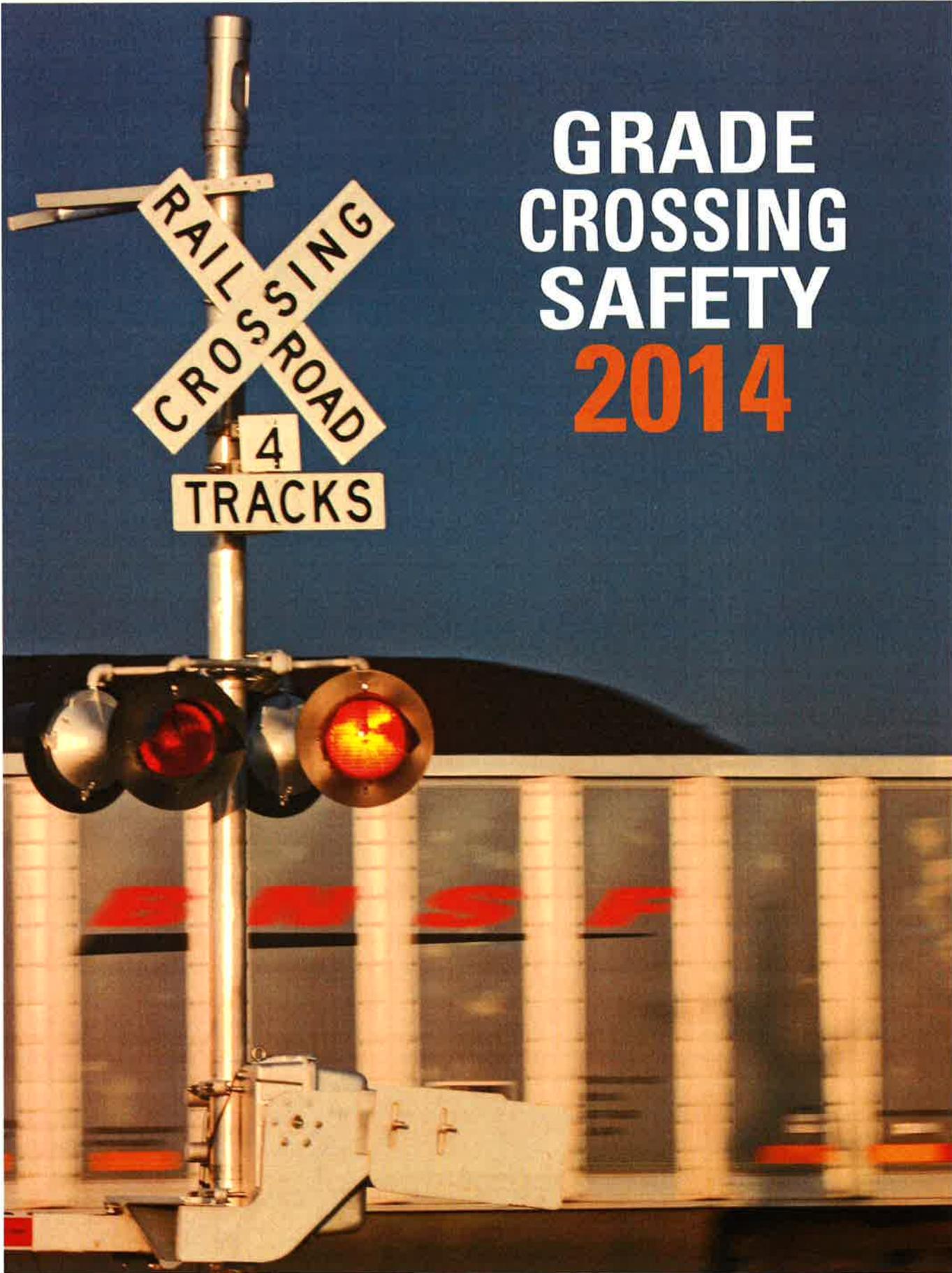
United States Department of Transportation - **Federal Highway Administration**

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EXHIBIT B

EXHIBIT B

GRADE CROSSING SAFETY 2014



Overview of BNSF's Approach to Grade Crossing Safety

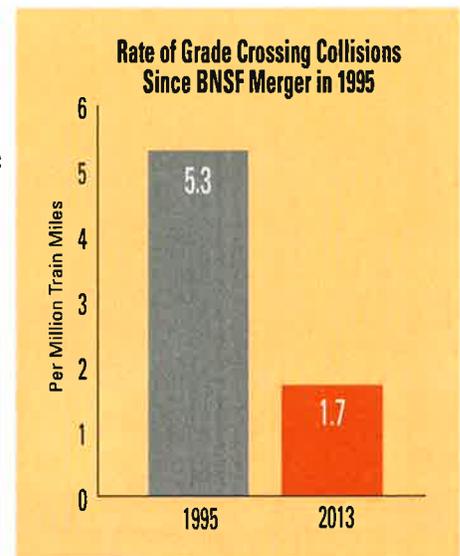
Highway-railroad grade crossing safety is an integral part of BNSF's operation and culture and involves the daily cooperative effort of many employees. Because oncoming trains cannot stop for vehicles whose drivers violate motor vehicle laws when approaching railroad tracks, each grade crossing presents possible danger to motorists and train crews. Recognizing this potential hazard, BNSF and BNSF employees are committed to grade crossing safety on many fronts, including the following:

- Community education and awareness
- Train crew education and field operations testing to monitor rules compliance
- Grade crossing closure
- Crossing safety technology
- Crossing resurfacing
- Vegetation control
- Installation of warning devices
- Track and signal inspection and maintenance

BNSF has one of the lowest highway-railroad grade crossing collision rates in the rail industry and, as an industry leader, will continue to work with the states and the communities we serve to further improve grade crossing safety.

General Information

- The United States has about 212,000 highway-railroad grade crossings, including just over 25,900 across BNSF's approximately 32,500 route-mile network.
- BNSF's highway-railroad grade crossings include approximately 17,200 public and 8,700 private and pedestrian at-grade crossings. In addition, BNSF has more than 3,700 public grade separations and 650 private and pedestrian grade separations.
- BNSF has one of the lowest highway-railroad grade crossing collision rates in the rail industry. Since BNSF's merger in 1995, the rate of grade crossing collisions has declined about 68 percent – from 5.3 per million train miles in 1995 to a rate of 1.7 in 2013.
- In 2012, 52 percent of the grade crossing collisions on BNSF occurred at crossings with active warning devices (automatic gates and/or flashing light signals).
- For the past several years, BNSF has averaged approximately \$95 million annually on programs related to grade-crossing safety. BNSF expenditures include funding the educational and program activities of 17 grade crossing safety managers and 9 public projects managers, as well as crossing-signal maintenance and vegetation control. The amount spent on grade-crossing safety includes an annual average of approximately \$20 million to maintain grade-crossing road surfaces.



Federal/Railroad Grade Crossing Safety Program

Federal and State Processes for Upgrading Crossing Signals: Each state determines the location and types of rail-highway grade-crossing signals to be installed, under a federal program. Crossing signals are defined by the Federal Highway Administration as highway control devices, not railroad signals.

Each state receives an allocation of federal safety funds and develops a priority list of crossings each year for grade-crossing improvements. The formula used to generate this list varies from state to state and typically includes elements such as train speed, train volume, average daily traffic and accident history.

Once a state determines which crossings are to be upgraded, it contacts the railroad to begin the “diagnostic” process. The railroad designs the circuitry for each crossing and estimates the cost. Once the state reviews and approves the estimate, the state issues an agreement to the railroad to install the specified signals. BNSF participated in more than 180 diagnostic projects in 2013.



Federal funds pay about 90 percent of the cost of a signal installation and the local government jurisdiction — city, county, etc. — pays the other 10 percent. The railroad maintains the signals from that time forward. These maintenance costs usually equal the cost of the initial installation in about 10 years. The railroad cannot, on its own, install crossing signals. It is required to get state permission.

FRA Locomotive Horn Rule: In 2005, in response to a Congressional mandate, the Federal Railroad Administration (FRA) issued a Final Rule on the Use of Locomotive Horns at Highway-/Rail Grade Crossings. Under the new rule, local governments may establish quiet zones or continue existing quiet zones, if they are willing to take remedial steps to address risk, based on a calculation of potential risk at the crossing. In many cases, the rule makes these designations subject to FRA review, approval and ongoing oversight.

These remedial steps can include crossing closure, grade separation, full-width crossing gates with an approved median divider, full-width gates and lights at crossings on a one-way street, temporary closure (for nighttime quiet zones only) or four quadrant gates. The rule also allows for an automated horn system at the crossing as a substitute for the train horn, if this provision is approved by the Federal Highway Administration. Certain Alternative Safety Measures (ASMs) are also described.

BNSF works with communities who wish to establish quiet zones and regularly reviews their quiet zone applications to the FRA. Community leaders who have questions about the proposed rule or about BNSF's role in implementing that rule should contact Mr. French Thompson, director Public Projects, who can be reached at french.thompson@bnsf.com.

Community Education/Law Enforcement/Awareness

Operation Lifesaver Program: In 2013, BNSF employees and operation Lifesaver volunteers presented more than 11,400 Operation Lifesaver (OL) classes on highway-railroad grade crossing safety in local communities. Many of the volunteers were trained by BNSF field safety managers, who are certified by OL to teach using the OL curriculum.

BNSF's program targets the highest risk populations: new drivers, adult drivers and professional drivers. Approximately 25 percent (2,899) of BNSF's OL courses were presented at drivers' education classes. More than 850 courses were conducted with truck and school bus drivers; more than 2,800 were offered to adult drivers; and 98 were conducted with emergency response personnel. The rest were held at elementary and junior high schools.

Officer on the Train: In 2013, BNSF conducted 55 Officer on the Train (OOT) exercises. This program gives local law enforcement the opportunity to observe motorist and pedestrian behavior from the cab of a locomotive or from the ground at a grade crossing in coordination with a BNSF train, to learn about grade crossing safety laws and get a sampling of compliance levels. Traffic citations or warnings are often issued as part of OOT exercises.

In addition, in 2013 BNSF participated in 210 positive enforcement efforts. This program places law enforcement officers near crossings to watch driver behavior. Motorists who obey grade crossing laws are stopped and thanked for their safe driving and rewarded with a small token of appreciation.



Roll Call: In BNSF's "Roll Call" program, 309 follow-up visits were conducted with patrol officers at law enforcement agencies to offer training or to reinforce prior training on the importance of enforcing grade crossing safety and trespassing laws.

Grade Crossing Collision Investigation: In 2013, BNSF participated in 119 Grade-Crossing Collision Investigation (GCCII) courses, which are four- to 16-hour courses offered as standard training at law enforcement academies. This program has been endorsed and certified by the National Sheriffs' Association and the International Association of Police Chiefs through OL and is now the standard for training nationwide.

Industrial Truck Driver Education Program: In 2013, BNSF offered over 860 truck driver education programs to trucking companies located along BNSF track. Primary targets included trucking companies that are BNSF customers, as well as trucking companies that haul commodities such as aggregate and gasoline over BNSF tracks.

Train Crew Education and Operations Testing: BNSF train crew employees receive extensive hands-on, performance-based training that covers safety and operating rules, air brake and train handling rules, and practice on locomotive simulators. This training, provided to newly hired employees as well as more seasoned employees as part of BNSF's recertification program, includes skills essential to grade crossing safety, such as a review of train whistle procedures and proper train speeds. This training is reinforced by frequent operations testing, as BNSF supervisors regularly monitor train operations to ensure all safety and operating rules are consistently followed.

Grade-Crossing Consolidation Programs

Grade-crossing Consolidation: One of the best ways to address grade crossing safety is to reduce the number of at-grade crossings. BNSF's grade crossing safety program includes an aggressive initiative to close public and private at-grade crossings, working closely with communities and property owners. Good candidates for closure include those that are redundant (other crossings nearby allow access to the same roads or areas), are not designated emergency routes, have low traffic volumes, or are private crossings that are no longer needed or used. Since 2000, BNSF has closed more than 5,750 at-grade crossings.

Private Crossing Permits Review: In 2013, about 13 percent of BNSF's grade crossing collisions occurred at private crossings. In response, BNSF is working to reduce the number of private grade crossings, especially those that are rarely used or redundant, and closely scrutinizes all requests for new private crossings. During 2012, there were 168 requests for private crossing permits. Only 25 new crossings were installed – and 22 of those were temporary for construction purposes.

Track and Signal Inspection and Maintenance

Track Inspection Programs: Key corridors on BNSF are inspected four times a week by BNSF track inspectors, and many heavily-traveled routes are inspected daily. These inspections include a review of condition of track and right-of-way as well as whistle posts, crossbucks and active warning devices. In addition, BNSF train crews are instructed to report any signal and crossing warning malfunctions immediately to BNSF's Network Operations Center (NOC) in Fort Worth. This program includes "power-on" lights at active warning devices that indicate a working power supply to the lights and gates.

Grade Crossing Warning Inspection and Maintenance: BNSF is responsible for maintenance of active warning devices and spends an average of \$45 million annually on grade crossing signal maintenance and repair. Each of the active warning devices is thoroughly inspected monthly by BNSF signal employees. This inspection includes a review of functionality of gates and lights and of battery back-up power sources



Vegetation Control

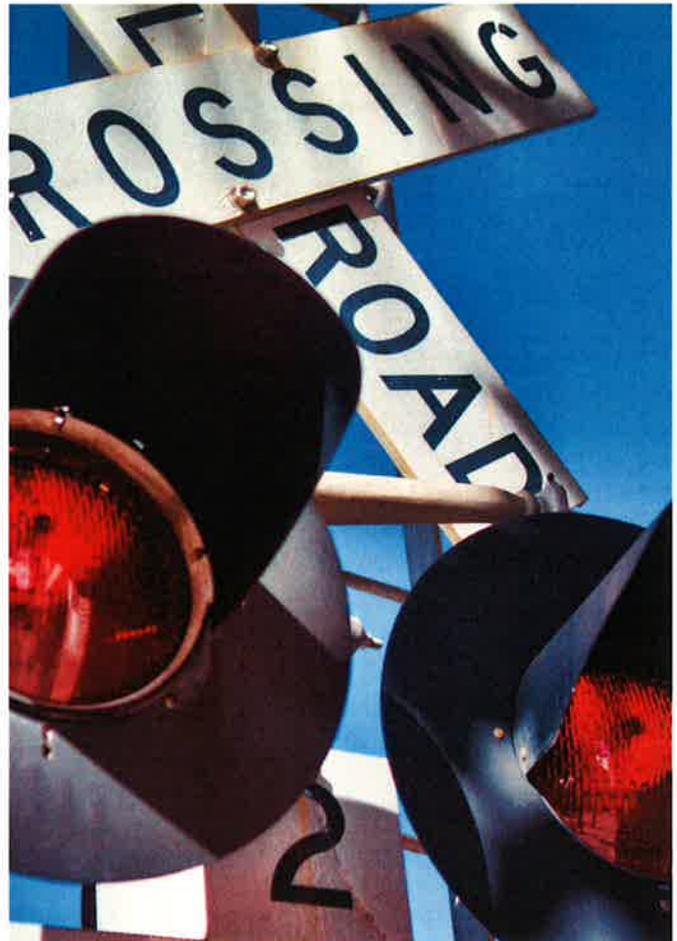
Vegetation Treatment and Brush Control: As much as practical, BNSF's goal is to reduce vegetation and other obstructions on its right-of-way that would materially interfere with motorists' ability to see approaching train traffic. In 2013, BNSF treated more than 38,000 acres along its right-of-way with herbicides to prevent growth of new vegetation at railroad crossings.

Crossing Safety Technology and Management Processes

Crossing Surveillance Systems: BNSF cooperated with various cities across the system to test surveillance systems that digitally record drivers who violate highway-rail grade crossing laws. Drivers receive correspondence advising them that they were observed behaving unsafely.

1-800 Number Signs: BNSF has posted an emergency contact number at all public grade crossings for the public's use in contacting BNSF's 24-hour Resource Operations Center with concerns regarding crossings or related questions (800-832-5452). These signs allow motorists who become stalled or in any way obstruct railroad tracks to call a number and simply provide the information on the sign. This information includes the Department of Transportation (DOT) identification number that pinpoints their location for BNSF's dispatching center and allows us to warn or stop trains in the affected area.

Other Technologies: BNSF continues to investigate new technologies that enter the marketplace related to highway-rail grade crossing safety. Examples are four quadrant gates, extended cantilever arms, median barriers, barrier gates, stationary horns and instantaneous reporting of active warning device failures via cellular technology.



Operations Monitoring Programs

Reports of Unsafe Motorists/Trespassers: As part of BNSF's unsafe motorist and trespasser program, train crews and other field employees submitted over 740 reports in 2013 of trespassers or drivers who violated grade crossing safety laws. The information is provided to state highway department personnel for consideration in preparing their grade crossing priority index to determine the possible need for traffic control devices, as part of the Federal Highway-Rail Grade Crossing and Trespasser Prevention Program. BNSF also uses this data to identify problem areas, respond with educational training and seek assistance from local law enforcement authorities.

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EXHIBIT C

EXHIBIT C



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Railroad Grade Crossings

Our network includes just over 25,800 grade crossings. Promoting grade-crossing safety is an essential part of our operation and culture.

Trains cannot stop quickly. A 100-car freight train traveling at 55 miles per hour will need more than a mile to stop once the train is set into emergency braking. When vehicle drivers or pedestrians violate traffic laws at grade crossings, or trespass onto railroad right of way, they are putting themselves and the train crews in danger.

In recent years, we've invested an average of \$95 million annually on grade-crossing maintenance, improvements and safety programs. Our initiatives include community education and awareness, train crew education and testing, crossing closures, new safety technology, vegetation control, and track and signal inspection and maintenance.

For more information: [BNSF Grade Crossing Safety brochure](#) 

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