

BNSF Contractor Orientation Course

Section Three

This course can be duplicated for student handouts.

Once you have read all three sections and completed the evaluation you will be forwarded a course completion card (within 14 days) and will be placed on the administration database page (within 48 hours). You must be on the administration database page to be allowed to work on-site at BNSF, for/with BNSF Engineering work groups, unless, as in the case of emergency or short notice work, special provisions are made to cover safety issues in a thorough on-site job safety briefing.

If you are connected through a modem, this page may load slowly due to the photographs.

If you have not yet registered, please make sure that you go to the registration page and register. If you take this course and are not properly registered it may slow our response down in placing your name on the completion database.

Please fill out the information below.

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Excavation Work

Excavation work is one of the more hazardous of construction activities. The major hazards encountered when performing excavation work are

- cave-ins
- exposure to underground utilities
- material and equipment falling into excavations



A competent person is to be present at excavation sites. The BNSF accepted definition of a competent person for excavation work is a worker who:

- is capable of identifying existing and predictable hazards and unsafe conditions; and,
- has the authority to take prompt corrective measures to eliminate hazards and unsafe conditions.

The competent person is also responsible for conducting inspections at the beginning of the shift and as needed during the course of the work shift.

The Safety Action Plan of affected contractors needs to document that competent

person level training has been completed.





Protective systems need to be in place for trenches five feet or more in depth, **or less than five feet in depth where the competent person determines that the soil is unstable.**

Note: Some state OSHA regulations may be more restrictive on the above requirement. Be familiar with the regulations that apply in your job area and comply.



All excavations regardless of depth are to have protective systems in place where there is a danger to personnel or the track structure.

Protective Systems

-  **sloping***
-  **benching**
-  **shield systems**
-  **support systems**

*** Contractors need to be careful to not undermine the track structure when sloping excavations in right-of-way areas.**

Tabulated data for protective systems needs to be maintained on-site. Where items such as trench boxes and shoring are rented, suppliers should provide copies of the tab data.

Many excavations on BNSF property will be in previously disturbed soil. Vibration concerns need to be factored in when making soil type determinations, as well as, protective systems decisions, at excavation sites adjacent to track. All soil on BNSF property is to be considered as Type C unless determined otherwise by a competent person who is qualified in soil analysis techniques. Be familiar with any state-specific OSHA requirements regarding soil analysis and classification.

Obtain the specific approval of the responsible BNSF Project Representative prior to excavating.

It is the contractor's responsibility to contact a one-call service and provide appropriate notification to other companies who may have underground utilities in an area to be excavated.

The BNSF Project Representative is to work with the contractor to make sure that appropriate personnel, including BNSF Signal, Telecommunications, Structures, and Track employees, are contacted to determine whether there are any underground communication lines, electrical lines, or pipes in an area to be excavated. The form entitled **Underground Cable Location & Acknowledgement needs**

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to be completed by the contractor prior to initiating excavation work. (This form can be found on the Reference Section of this website).



Work is not to proceed where there is doubt regarding the location of underground obstructions, including utilities.

Should an underground line, pipe, or other obstruction be unexpectedly encountered, immediately discontinue excavation activities and contact the responsible BNSF Project Representative. Where the obstruction is a utility, and the owner of the utility is known, then the owner of the utility is to be immediately notified, as well.

Excavations are not to be left uncovered or unprotected overnight. Excavations on or adjacent to public roads are to be physically protected, with locations highlighted through the use of highway barriers equipped with flashing lights and/or traffic cones, in accordance with applicable governmental regulations or guidelines.



Roadway Worker Protection/On-Track Safety

The FRA Roadway Worker Protection Standards became effective for Class I railroads and their contractors on March 15, 1997.

BNSF published corresponding on-track safety requirements that became effective at BNSF - including BNSF contractor operations- on August 1, 1996.



To be pro-active, BNSF elected to implement an on-track safety program in advance of the final publication of the FRA Roadway Worker Protection Standards.

The BNSF On-Track Safety requirements are listed as Engineering Instruction No.1.1. A copy is available in the Reference SEction of this webiste.

NOTES:

The terms On-Track Safety and Roadway Worker Protection are used interchangeably.

For the purpose of these requirements, all "contractors" working with BNSF

Engineering work groups, who will be within the 25 foot from track centerline zone, are being considered as Roadway Workers. This is a conservative measure.

The FRA Roadway Worker Protection Standards were developed to **prevent accidents and injuries** as a result of personnel being struck by trains and other on-track equipment.

<p>Affected contractors working at BNSF are responsible for developing and implementing an on-track safety program. Implementation would include providing on-track safety training for their affected employees on an annual basis.</p>	<p>Contractors may elect to adopt the program of the host railroad, in this case, BNSF(Engineering Instruction No. 1.1). Where contractor's develop their own program, this program needs to be in harmony with the BNSF program.</p>	<p>The safety action plan of affected contractors needs to document that they have an on-track safety program or have elected to adopt the BNSF program. The safety action plan of affected contractors also needs to indicate that affected employees have received on-track safety training.</p>
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Affected contractor employees need to be provided with a copy of their company's on-track safety program, or BNSF Engineering Instruction No. 1.1, where the BNSF On-track Safety Program has been adopted. A copy of the on-track safety program needs to be maintained with work groups working within 25 feet of track centerline.

<p>Key distances:</p>	<ul style="list-style-type: none"> ● Workers or equipment are foul of the track when closer then 4 feet to the nearest rail of a main track/controlled siding/other track. ● Contractors need specific authorization from their BNSF Project Representative to work within 25 feet of track centerline.
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Contractors working within 25 feet of track centerline:

- have specific authorization from the BNSF Project Representative to be in this work zone
- develop and implement an on-track safety program
- provide annual on-track safety training to affected personnel
- wear the orange and retro reflective work wear **as specified by the responsible Project Representative** (different BNSF divisions have different requirements for orange work wear)
- work with the responsible BNSF Project Representative to develop a project specific strategy for addressing on-track safety (examples of options upcoming)

Notes:

- Orange/retro-reflective nets may be used to fit over hardhats in lieu of, purchasing orange and retro-reflective hardhats
- In some areas of BNSF such as the southwest strong direct sunlight may result in orange hardhats losing their high visibility characteristics over time
- Using armbands, belts, or gloves with orange backing alone to meet the high visibility retro-reflective requirements is not acceptable
- Though the FRA Roadway Worker Protection Standards would allow the use of bright green as a high visibility work wear color, orange is specified for use at BNSF
- Should the workwear requirements, as specified by the responsible BNSF Project Representative be incorrectly communicated, BNSF will be responsible for providing the additional workwear or reimbursing the contractor for the cost of same.

Trains and engines are required to sound the whistle and ring the bell when approaching roadway workers - as identified by orange/retro-reflective workwear - who are on or near the track.



On-Track Safety Strategy Options

Working Under Authority

Where contractor personnel or equipment may be foul of track, a BNSF flagger will be present. Track authority will be obtained through the flagger. Examples of other contractor operations that will require a flagger:



- horizontal boring below the track structure, as an operation failure could result in humping of the track
- use of cranes, pile drivers, telescoping lift trucks, or similar equipment, where boom swing or tipping of equipment would result in fouling the track

When a work group has a form of authority in place, train crews are aware of the work group's presence and location. The train crew needs to contact the BNSF

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- material handling operations such as some pole line removal operations, where material could fall and foul track

employee-in-charge and receive permission to pass through the section of track covered by the authority.

Other situations where a BNSF Project Representative **may** require to use a flagger include:

- large numbers of contractor personnel working within the 25 foot from track centerline zone, though not required to work foul of track
- a large concentration of contractor rubber-tired equipment working within the 25 foot from track centerline zone, though not required to work foul of track
- the responsible BNSF Project Representative has minimal or no previous work experience with the contractor working within the 25 foot from track centerline zone
- concerns with high track speeds and/or limited sight distance

Note: In some cases a flagger may be required or otherwise used for a portion of a project with other options for on-track safety selected for the balance of a project.



The Flagger

- obtains track authority* or provides protection
- establishes the warning method to notify personnel of the need to clear for trains/on-track equipment
- notifies personnel when to occupy, clear and re-occupy the track and adjacent work area
- identifies the place(s) of safety where personnel are to go to when clearing the track for traffic
- conducts job safety briefings to cover the aforementioned information.



BNSF personnel are used to perform flagger duties, as they are BNSF Maintenance of Way Rules - Qualified, current in On-Track Safety Training, and have access to BNSF timetables and General Orders.

Types of Authority

Some forms of authority are more commonly used than others, some are rarely used. Track Bulletin Form B is the form of authority most commonly used in conjunction with projects involving contractors.

- Restricted Limits
- Block Register Territory
- Track Permit
- Track and Time
- Train Location Lineup
- Track-Car Operator Lineup
- Track Warrant
- Track Bulletin Form B
- Occupancy Control System



More information on the types of authority, including definitions, is found in the BNSF Maintenance of Way Operating Rules. ([Is available in the Reference Section of this website](#)).

To be discussed in the job safety briefing conducted by the flagger, as applicable:

- designation of employee-in-charge
- method of on-track safety*
- limits of authority (time duration, milepost-milepost) *
- tracks that may be fouled
- control of movements on adjacent tracks
- procedure for on-track safety on adjacent tracks
- means of providing a warning to clear the track and adjacent work area
- identification of the place(s) of safety
- designated work zones around machines
- distances to be maintained between machines when working and traveling

*** record this information and carry on-person**

Work Equipment Spacing as listed in BNSF Engineering Instruction No. 1.1:

- 300 feet** when traveling
- 50 feet** when working *
- 50 feet** when bunched at crossings *

*** This distance may be reduced when having a good reason, and as covered in your job safety briefing. This exemption is not to be used on a routine basis.**

The work zone extends 15 feet longitudinally to the front and rear of on-track work equipment. The safe working zone to the sides of on-track work equipment varies based on movements of machine parts. A job safety briefing needs to be conducted with the machine operator prior to entering this work zone.

Note: A similar safety zone needs to be established around rubber tired equipment, at distances established by contractor personnel during job safety briefings.

Remember, that in addition to on-track safety issues, job safety briefings need to cover other aspects of the work being performed and emergency preparedness issues.



Follow-up job safety briefings need to be conducted when conditions or procedures change, or the method of on-track safety is changed, extended, or to be released.

Working Under Protection

Contractor employees working **foul of the track** may work under the protection of a BNSF Maintenance of Way Rules - Qualified lookout when

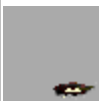
- performing routine inspections or minor work when: the work does not affect the movement of trains - create the potential for derail; **and**
- trains can be visually detected moving at maximum timetable speed; **and**
- the ability to see is not impaired; **and**
- the ability to hear is not impaired *

*** When working under lookout protection, power tools may be used on other than main track.**

When working under lookout protection, train crews are not aware of work group locations.

A lookout

During the job safety briefing the BNSF Maintenance of Way Rules - Qualified lookout, who is qualified in judging distances and has current status in on-track safety training:



- Identifies the place of safety
- communicates to workers the method of warning
- devotes full attention to the detection of trains; and,
- completes the Statement of On-Track Safety, which is maintained by the lookout on-person.

IMPORTANT The warning method used by a lookout or flagger needs to be:

- **distinctive, clear**
- **non-visual** -a light or flag that is being waved; for example, would not be seen by personnel who may be turned and working or walking in the opposite direction.
- **distinguishable above background noise**
- identified in the job safety briefing

Contractor employees will not be able to serve as lookouts or lone workers.

Statement of On-Track Safety:

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- completed by the lookout prior to the work group fouling the track
- the lookout obtains the appropriate timetable and General Order information to complete the Statement of On-Track Safety
- a copy of the completed Statement of On-Track Safety is maintained with the lookout.

NOTE: The timetables list the maximum allowable track speed. General Orders provide up-to-date information of conditions that affect train movement.



Referencing the Statement of On-Track Safety: workers need to be in their place of safety **prior** to a train reaching the site distance specified on the form.

Maximum Authorized Speed in MPH	Minimum Separation Upon Reaching Place of Safety in Feet	Maximum Authorized Speed in MPH	Minimum Separation Upon Reaching Place of Safety
5	110	50	1,100
10	220	55	1,210
15	330	60	1,320
20	440	65	1,430
25	550	70	1,540
30	660	75	1,650
35	770	80	1,760
40	880	85	1,870
45	990	90	1,980

Protection may be provided on other than main tracks or controlled sidings for contractor work groups when switches providing direct access to the tracks:

- are lined against movement, properly tagged spiked, clamped or locked.
- have a red flag/ light with a derail in place.



This is performed by a BNSF Maintenance of Way Rules - Qualified employee.

Options When Not Working Foul of Track

Where contractor employees are working in the 25 foot from centerline zone, yet will not be fouling the track, BNSF project representatives have some additional options including:

- Installing a construction fence, or the equivalent, to serve as a barrier to keep contractor personnel from getting foul of track. Fence needs to be installed far enough

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- from track that is will not be struck by trains or on-track equipment.
- Designating a contractor employee to serve as a lookout to keep his co-workers in the immediate work area and not allow them to approach foul of track. This is not a lookout as defined in the FRA Roadway Worker Protection Standards.
- Obtaining a commitment from the contractor that the work group will specify in their job safety briefing the need to stay in the immediate work area and not approach foul of track.

The FRA's "foul of track" zone has no vertical limit. When involved in the construction of an overpass, for example, and when working above the immediate track area, the same requirements apply as if working "foul of track" at ground/track level. Common sense dictates, however, that when an overpass is complete except for minor tasks, and there is no potential for material, equipment or personnel fouling the track, it is not necessary for workers, upon notification of the approach of a train, to leave the overpass area above the "foul of track" zone and move to a place of safety. The BNSF Project Representative or flagger needs to concur with such a plan, and expectations need to be clearly communicated during the job safety briefing.

While contractors may offer suggestions regarding on-track safety strategies, the BNSF Project Representative has the absolute final decision. Different BNSF Project Representatives will not necessarily select the same on-track safety strategy option in like situations.

THIS SHOULD NOT BE DONE



THIS SHOULD NOT BE DONE

Other Information

As information, when workers are crossing the track for example: to go from a job-site to a

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BNSF building or to their vehicle, the FRA Roadway Worker Protection Standards do not apply. It is critical, however, that workers look both ways and ensure that the track is clear in both directions. ***Expect movement on any track, at any time, and in either direction!***

Where large numbers of workers are required to frequently cross the track for reasons stated above - including work groups with job-sites outside the 25 foot from track centerline zone - the BNSF Project Representative may need to consider options such as providing parking/access for workers' vehicles on the same side of track as the job-site, providing temporary toilet facilities on the same side of the track, and/or providing a flagger.

Workers crossing the track are not to be carrying heavy and/or awkwardly shaped work materials, equipment, or objects which, hinder their smooth movement across the track, or where - should they drop the item, it would foul the track and create a hazard for trains and on-track equipment.

The FRA Roadway Worker Protection Standards require that operators of on-track equipment be:

- Trained and certified as competent to operate on-track equipment.
- Operators are to be familiar with the information in a machine's operating manual; manuals are carried on items of work equipment.

Notes:

Contractors need to have a program in-place to establish competency in work equipment operators.

This training, when applicable is listed in a contractor's safety action plan.

These same requirements need to be applied to rubber-tired work equipment.

In all cases of doubt or uncertainty...take the safest course!

The BNSF course is divided into three sections and the course evaluation, where do you want to go now?

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[Section TWO](#)

[Section THREE](#)

[Course Evaluation](#)

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