Railroad Technical Memorandum
for the North Meadows Extension to US 85 and Interstate 25

March 2010

Prepared for:

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Douglas County
Colorado Department of Transportation
Federal Highway Administration

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CDOT Project CC 0852-095
Douglas County Project CI 05-024
FHU Project No. 07-113
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LIST OF ACRONYMS

BNSF    Burlington Northern Santa Fe Railway
CDOT    Colorado Department of Transportation
FHWA    Federal Highway Administration
FHU     Felsburg Holt & Ullevig
IREA    Intermountain Rural Electric Association
I-25    Interstate 25
NEPA    National Environmental Policy Act
UPRR    Union Pacific Railroad
US 85   US Highway 85
USFWS   US Department of Interior Fish and Wildlife Service
1.0 INTRODUCTION

The National Environmental Policy Act (NEPA) of 1969 established a mandate for federal agencies to consider the potential environmental consequences of their proposed actions, to document the analysis, and to make the information available to the public for comment prior to implementation. In accordance with NEPA and related regulations, the Federal Highway Administration (FHWA), as the Lead Agency, in cooperation with the Colorado Department of Transportation (CDOT) as a Joint Lead Agency, has prepared this Environmental Assessment (EA) for a proposed extension of North Meadows Drive from The Meadows area to US Highway 85 (US 85) and to Interstate 25 (I-25) in Douglas County, Colorado. The proposed North Meadows Extension would cross the Burlington Northern Santa Fe (BNSF) Railway, East Plum Creek, and the Union Pacific Railroad (UPRR) (Figure 1 Study Area). The project is sponsored by the Town of Castle Rock and Douglas County. The US Department of the Interior Fish and Wildlife Service (USFWS) is a Cooperating Agency.

The purpose of this technical memorandum is to document the EA alternative roadway crossings of the BNSF and UPRR relative to design requirements and necessary coordination and permits. Based on the vehicular traffic of the proposed roadway and existing railroad traffic, these crossings will be grade separated.
Figure 1  Study Area
2.0 ALTERNATIVES

The two roadway alternatives would be grade separated with the BNSF and UPRR. They travel under the BNSF tracks and over the UPRR tracks. The Refined Alternative 6 and Refined Alternative 7 would cross both the BNSF and UPRR with grade separations while maintaining the railroad’s current track locations.

BNSF and UPRR have created unified standards for grade separations, *Guidelines for Railroad Grade Separation Projects* (2007). This document details the design requirements and submittal timetable based on design phases.

2.1 BNSF Crossing

Based on the surrounding topography, the roadway will traverse under the BNSF tracks in the same location for the two build alternatives. BNSF currently has one main line and one siding at the location of the proposed road crossing. The roadway crossing under the BNSF tracks requires construction of a shoofly in order for the railroad bridge to be constructed. Further coordination needs to be completed to determine if one or two shoofly tracks are necessary.

The shoofly will be constructed in accordance with negotiated requirements of the BNSF.

The Town of Castle Rock will negotiate with BNSF a Construction and Maintenance (C&M) agreement that will define all the duties and responsibilities of each party regarding the construction of the proposed grade separation and the maintenance requirements after construction of the structure.

The design and phasing of the construction shall be completed in order to keep the railroad tracks fully operational at all times except for pre-approved construction windows to accommodate the cut over operations.

The suggested phases are as follows:

**Phase 1:** Construction of the shoofly. The grading operations cannot take place closer than ten feet from the existing tracks. The rail construction will be completed to within 14 feet of the existing tracks. When a contractor is working within 25 feet of a railroad track, a flagger must be present.
Phase 2: The rail cutovers will take place to switch the trains to the shoofly. BNSF forces will complete this work.

Phase 3: Removal of the existing track across the bridge.

Phase 4: Construct the new bridge.
Phase 5: Replace the rail across the new bridge.

Phase 6: The rail cutovers will occur to switch the trains to the old alignment. BNSF forces will complete this work.

Phase 7: Remove the shoofly track and restore grading as required. Roadway construction can begin.

The responsibility of each phase will be finalized in the C&M agreement.

Prior to any construction, the Contractor must sign the Railroad’s Contractor’s Right-of-Entry Agreement and/or obtain a valid Right-of-Entry Permit. This ensures that the Contractor complies with Railroad requirements while working within the Railroad right-of-way.
2.2 **UPRR Crossing**

The UPRR currently is located adjacent to US 85 on the west side. There are two different crossing locations of the UPRR mainline track for the two build alternatives.

- **Refined Alternative 6**—the proposed roadway extension crossing of the UPRR existing mainline track is adjacent to the existing Castlegate Drive North intersection with US 85. This alternative includes an interchange with US 85, so the roadway will also travel over the UPRR mainline track at its current location. No UPRR track adjustments are required for this alternative. The bridge will span the existing UPRR right-of-way.

- **Refined Alternative 7**—the proposed roadway extension crossing of the UPRR mainline is similar to Refined Alternative 6 except it crosses adjacent to the existing Atrium Drive intersection with US 85. No UPRR track adjustments are required and the bridge will span

**Refined Alternatives 6 and 7**

The process and coordination of the Refined Alternatives 6 and 7 would be the same, since these are crossings of UPRR’s existing mainline track without any track adjustments or construction within existing UPRR right-of-way. The UPRR will require approval of the bridge plans that span their right-of-way to verify adequate clearances horizontally and vertically. During construction a UPRR flagman will be required when setting girders, false work and shoring over their track.

The design and phasing of the construction would keep the railroad tracks fully operational at all times except for pre-approved construction windows to set the girders over the mainline track.

The suggested phases are as follows:

**Phase 1:** Construct the new roadway bridge abutments for the bridge that will traverse over the UPRR mainline. (Note that each alternative bridge location is shown in the graphic below.)

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**Diagram:**

- **Existing UPRR Mainline**
- **Construct Alt. 6 Bridge Abutments**
- **Construct Alt. 7 Bridge Abutments**
Phase 2: Construct the girders over the UPRR mainline. When a contractor is working within 25 feet of a railroad track, a flagger must be present. (Note that each alternative bridge location is shown in the graphic below.)
3.0 RAILROAD COORDINATION

BNSF and UPRR employ personnel to coordinate the construction activities. The railroads require submittal and reviews of proposed adjustments to their tracks to determine if said adjustments are acceptable. Depending on the elements of construction, various departments within the railroads will need to review and approve the proposed design. The contact for UPRR is Kelly Abaray, Manager of Industry and Public Projects, who is located in Denver, while Andy Amparan, Manager of Public Projects with BNSF is located in Kansas City.

3.1 BNSF Coordination

The BNSF shoofly and railroad underpass structure construction that is required for each build alternative will require the following coordination and submittals:

- Initial contact to discuss the shoofly needs; either one or two.
- Right-of-Entry Permit to access railroad right-of-way to perform survey and geotechnical investigations.
- Construction document approval for Underpass Structure:
  - Design Reviews at Conceptual, 30 percent, 60 percent and 100 percent.
  - Construction Reviews
    - Shoring
    - Falsework
    - Demolition
    - Erection
    - Erosion Control
    - Shop Drawings
    - Bearing Shop Drawings and Material Certifications
    - Concrete Mix Design
    - Structural Steel, Rebar and Strand Certifications
    - 28 Day Cylinder Test of Concrete Strength
    - Waterproofing Material Certification
    - Test Reports for Fracture Critical Members
    - Foundation Construction Reports (pile driving, caisson drilling, etc.)
- As Built submittal
- Construction & Maintenance (C&M) Agreement
- BNSF requires construction observation at various milestones of the bridge construction
3.2 UPRR Coordination

Previous Coordination with UPRR Regarding a Possible At-grade Crossing

In January 2009, the Town of Castle Rock requested a meeting with the UPRR to discuss possible relocation of the tracks in the project vicinity in order to allow for the construction of an at-grade intersection on US 85 at Atrium Drive. That meeting was held on March 27, 2009. At the meeting, the Town gave an overview of the project to UPRR staff. UPRR staff asked for some additional technical data and requested that the Town submit a formal request. Another meeting was held with UPRR on May 27, 2009. At that meeting, the UPRR informed the Town that they could not support relocation of the tracks. A subsequent letter stating the UPRR’s position was sent on June 12, 2009.

In September 2009, several area legislators met with Town staff and a representative from the UPRR to discuss the project. At the meeting, the UPRR representative indicated that they would be willing to meet with the Town to determine if adjustments could be made to the alternative to make it more palatable to the railroad. However, in a subsequent letter dated September 28, 2009, the UPRR indicated that they would prefer to not meet but instead have the Town submit any new revisions or concepts to them for analysis. In subsequent discussions the Town attempted to contact other UPRR staff, with consultant assistance, to determine what changes, if any, could be made to the alternative that would make it more acceptable to the UPRR. It was determined there were no changes that would make the proposal acceptable to the UPRR. On February 2, 2010, the Town Council directed staff to no longer pursue track relocation with the UPRR.

Future Coordination with UPRR Regarding a Grade-Separated Crossing

The proposed roadway would go over the UPRR for each of the build alternatives and requires the following coordination and submittals:

- Initial contact to discuss the project.
- Right-of-Entry Permit to access railroad right-of-way to perform survey and geotechnical investigations.
- Construction document approval for Overpass Structure:
  - Design Reviews at Conceptual, 30 percent, and 100 percent.
  - Construction Reviews
    - Shoring
    - Falsework
    - Demolition
    - Erection
    - Erosion Control
    - Construction Phasing Plans
- As Built submittal
- Construction & Maintenance (C&M) Agreement
- UPRR requires construction observation at various milestones of the bridge construction
4.0 REFERENCES
