



Evaluation of Railroad Crossing

400 North Vineyard Road
Vineyard, Utah

*Prepared for
Anderson Geneva Development, Inc.*

May 2010

RB&G
ENGINEERING, INC.

Evaluation of Railroad Crossing

400 North Vineyard Road

Vineyard, Utah

Prepared for: Anderson Geneva Development, Inc.

May 2010

Table of Contents

INTRODUCTION	1
CROSSING GEOMETRY, FEATURES, AND USAGE	1
Prior to Mill Closure	1
During Demolition/Remediation.....	3
Current Conditions	4
Future Planned Use	4
CROSSING SAFETY NEEDS AND IMPROVEMENTS	4
UDOT POLICY AND PROCEDURE FOR CLOSING CROSSINGS	6
Required Procedures	7
UDOT and UTA Actions – 400 North Crossing Surveillance.....	8
UDOT Actions – 400 North Crossing Temporary Closure.....	10
PARTIES RESPONSIBLE FOR IMPROVEMENTS	11
COMPARISON WITH SIMILAR CROSSINGS	12
PUBLIC CROSSING STATUS	12
CONCLUSIONS	13

List of Figures

Existing Site
1993 Aerial Photograph

Appendices

Figures
USDOT FRA Inventory
FRA Office of Safety Analysis Accident Database
Vineyard Master Plan
Utah Administrative Code R930-5, Effective June 10, 2008 through February 8, 2010

**Evaluation of Railroad Crossing
400 North Vineyard Road
Vineyard, Utah**



INTRODUCTION

The Town of Vineyard, Utah lies east of Utah Lake and west of Orem City in Utah County. The area has historically been used primarily for agriculture, until the steel mill and related industrial facilities were constructed in the mid 1940s. 400 North in Vineyard was historically used by farmers and the general public as a public highway, extending from Geneva Road on the East to Utah Lake on the west, with a section of 400 North being severed in 1942 for construction and use of the steel mill. Just east of the intersection of 400 North with Vineyard Road, the Union Pacific Railroad (UPRR) tracks are crossed by a public road along the easterly extension of 400 North.

This report addresses the following:

1. An analysis and summary of the applicable geometry, features, and usage at this crossing (United States Department of Transportation Crossing Number 254903N), currently owned by UPRR, together with plans for Utah Transit Authority (UTA) use once FrontRunner South commuter rail construction is completed
2. An analysis of safety concerns and past improvements at the crossing
3. A description of the typical Utah Department of Transportation (UDOT) policy and procedures regulating crossings and particularly for closing existing public grade crossings
4. A comparison of the 400 North crossing and how it is being treated versus other public crossings which UTA is impacting with FrontRunner construction between Salt Lake City and Provo, for those crossings with similar features and characteristics

CROSSING GEOMETRY, FEATURES, AND USAGE

Prior to Steel Mill Closure

From 1922 or earlier, evidence shows that the 400 North roadway in Vineyard, Utah served as a public highway. The highway crossed the Union Pacific Railroad tracks just east of the intersection of 400 North and Vineyard Road with a public, at-grade crossing. The layout of the area is shown on the Existing Site Figure in the appendix. Public rail crossing signs existed at the crossing since at least 1927, as shown on a map developed by the D&RG Railroad, predecessor to Union Pacific Railroad. Around 1940, the Utah State Road Commission in cooperation with the Denver and Rio Grande Western railroad added flashing light signals at the crossing.

Vineyard Road and the 400 North roadway consist of approximately 24 feet of asphalt pavement, with one lane of traffic in each direction. 400 North is paved on both approaches to the grade crossing (East and West). Southerly from the intersection on Vineyard Road, and east of the crossing on 400 North, the roadway is planar with the surrounding grade. West of the intersection on 400 North, the roadway falls away to match the grade of the adjacent fields. The 2:1 to 3:1 side slopes of the elevated roadway are protected by guardrail in the immediate vicinity of the crossing. The posted speed has been as high as 40 mph, but it is currently posted at 35 mph with an advisory speed of 20 mph through the intersection of Vineyard Road and 400 North. The crossing consisted originally of a single set of tracks, with a second spur line being added in 1943. Other than reducing the skew of the crossing (see below), no significant changes to the geometry of the roadway have occurred since the construction of the Geneva steel mill.

In 1941, the Defense Plant Corporation spent \$200 million for new a steel-making facility in Utah to support the World War II effort. In August 1942, property east of Vineyard Road was purchased by the United States Government for construction of the steel mill, which later became known as Geneva Steel. As part of the acquisition, all county highways and easements located within the property boundaries were vacated. No other streets were vacated, including the crossing itself. More than 10,000 workers were employed at the site during the two year construction period. The mill displaced approximately 40 farmers who had previously used 400 North and the railroad crossing regularly.

In 1943 the railroad came to the Public Service Commission to request permission to add a spur track to service the steel mill. Local agencies including the State Road Commission and Utah County approved this addition after requesting minor improvements to the area. All these entities, including the railroad, referenced this crossing as a public highway in documents related to this work. The steel mill began operation in 1944 to provide steel for the war. After the end of the war in 1945, production at the mill decreased significantly. The mill was operated by the government until 1946, when it was sold to United States Steel Corporation, a unit of USX Corporation. At maximum operating capacity, as late as the 1970s, the mill regularly employed 4,200 or more workers. During the early 1980s, the mill regularly employed approximately 3,000 workers. Vehicles coming from the south on Vineyard Road or from the west on 400 North would cross the railroad crossing and almost immediately access a lot with approximately 300-400 stalls and a frontage road leading north to a second parking lot with approximately 250 stalls. The 1993 aerial image (see appendix) shows the grade crossing, the parking lots and access road east of the tracks. Many employees were dropped off east of the parking lots at the gated entrance to the mill by family members or other members of the general public.

In 1969, it is believed that a fatal accident occurred at the crossing, though this could not be confirmed through currently available public accident or fatality records. Apparently in response to this accident, work was undertaken to improve safety at the crossing and occurred in the early 1970s. This effort involved lessening the skew at the crossing and installation of the crossing gates. Previously the crossing may have only had flashing light signals.

In July 1986, USX decided to sell the mill, placing it on hot idle while waiting for a buyer. The mill was sold to a group of local investors, who went into business as Geneva Steel on August 31, 1987. After this time, approximately 2,400 workers were regularly employed at the mill. The 1988 Average Annual Daily Traffic (AADT) reported at the 400 North crossing was 3725 vehicles, approximately 10 percent of which were estimated to be trucks.

In 1974, the United States Department of Transportation Federal Railroad Administration (FRA) implemented a railroad crossing inventory system. Only UDOT and UPRR can file inventory documents for the inventory system. From 1974 to 1988, the crossing (crossing number 254903N) was listed as a Public At Grade crossing at 4000 North. This address system was likely based on the Utah County coordinate system for unincorporated areas. The track type was shown as a switching track. The typical train speed over the crossing was 45-50 miles per hour. Approximately 8-20 freight trains went through the crossing daily. The inventory shows the crossing had bells, two gates with two mast mounted flashing lights, and the track was equipped with train signals. The inventory indicated that the roadway approaching the crossing had no advance warning signs and no pavement markings. The number of traffic lanes crossing the railroad was shown as 2. The crossing surface was listed as timber and the smallest crossing angle was 60° to 90°.

In 1988 the FRA Inventory record was updated to show a maximum time table speed (maximum allowable speed) of 70 miles per hour over the crossing. The crossing was shown to have advance warning signs. Other data remained the same from the previous record. In 1994 the address of the crossing was changed to 400 North. The Town of Vineyard incorporated in 1989, changing the address

coordinate system. The track type was updated as siding instead of switching. No significant changes were made to the inventory record until December 8, 2008, when the database was updated as a result of UPRR initiating a change to the type of the crossing, changing it to Private At Grade. This likely stemmed from an effort undertaken as part of UTA design occurring along the corridor for FrontRunner construction. Other information about the railroad, traffic control devices, physical characteristics, and highway information, was not changed. The complete FRA inventory record from 1974 (Effective Begin-Date of Record is listed as 01/01/70 even though the inventory was not implemented until 1974) to May 8, 2010 is included in the Appendix.

Little information exists with Utah County or Vineyard Town to verify maintenance efforts on the adjacent roadways. Railroad accident reports submitted to the Interstate Commerce Commission and the State of Utah were located for the years 1941-1943, 1950-1954, 1956-1960, and 1963-1967. There were no accidents reported at the crossing during these years. The Federal Railroad Administration Office of Safety Analysis Accident database indicates that no accidents have been reported at this crossing since 1975 (see appendix). The federal Fatality Analysis Reporting System shows no fatalities at this crossing from 1994 through 2008 (the most recent year available). UDOT crash data shows no crashes at the crossing from 1996 through 2008. Since 1941, accident records have been located for 52 of the 68 years through 2008. No accidents were reported during these 52 years.

Geneva Steel filed bankruptcy in 1999 but was able to restructure and continue operations. Geneva Steel again filed bankruptcy in 2002 and never re-opened. The mill was slowed to warm idle and the number of employees decreased correspondingly. Efforts to restructure and resume production failed, and the mill soon ceased operations completely. Anderson Geneva acquired the Geneva property in December 2005 and supervised demolition and initiated environmental remediation and re-development.

During Demolition/Remediation (2005-2009)

After the plant was closed, the gate and fence on the west side of the property started being closed regularly to control access during this idle period, to control vandalism, protect the public and manage the demolition and remediation on the east (Geneva side) of the 400 North railroad crossing. Demolition, construction and remediation workers, and owners and their agents continued to use the crossing and gate until jersey barriers were placed at the crossing in early 2010 by UPRR or others. Probably less than 100 trips per day have occurred since the demolition was completed in 2007. The crossing geometry, traffic control devices, and physical characteristics described previously did not change during this period. As previously noted, there are no known accidents at the crossing during the years 1941-1943, 1950-1954, 1956-1960, and 1963-1967 or since 1975 based on the public records system. The current owners are unaware of any accidents or fatalities.

In 2007 or 2008, UTA's design work on the FrontRunner South commuter rail project triggered a surveillance review of all affected crossings between Salt Lake City and Provo. For the Lindon/Orem/Vineyard area, this resulted in a letter dated April 4, 2008 from Eric Cheng, UDOT Chief Railroad Engineer, to Jason Bleyl, head of the FrontRunner South project, listing required improvements for four crossings in Lindon and Orem. For the 400 North Vineyard crossing, no improvements were listed. The letter merely stated "This crossing is to be closed", with no explanation.

In 2008 UTA began construction of the commuter rail track west of the UPRR track. Between late 2008 and July 2009, public versus private designation of the crossing and its usage was scrutinized and debated between multiple parties. In July 2009, UDOT notified Anderson Geneva that the crossing is indeed public but conditions were unsafe for the public and ordered the temporary closure of the crossing. In the later half of 2009, the locked gate on the west side of the Geneva property was permanently opened and a turnaround area was created in order to ensure the safety of any vehicles crossing the railroad and needing

to turn around without having to turn around partially or completely on the tracks. These actions, from 2008 on, are discussed in further detail later in this report.

Current Conditions (2010)

By early 2010, UPRR had placed jersey barriers in front of the crossing, removed all of the active warning facilities (flashing lights, gates, bells, etc.), removed the pavement in between the UPRR and UTA tracks, and removed the pavement directly west of the UTA track. UTA construction is still ongoing.

Future Planned Use

Vineyard Town has presently approved over 300 acres for 1200 residential units, and the former Geneva property is now master planned and zoned for a mixed use, residential, commercial, and industrial development. The master plan for the Geneva property contemplates over 27,000 residents, together with over 1,000,000 square feet of commercial uses, over 1,000,000 square feet of office uses, and over 1,000,000 square feet of industrial/light industrial uses.

Significant development is expected as population in Salt Lake and Utah counties increases. Vineyard Town's Roadway Master Plan, approved November 2008 (see attached), utilizes 400 North as a primary east-west collector. Currently the next closest existing railroad crossings are at Geneva Road, 1.3 miles south of 400 North, and at 1600 North, 2.7 miles north of 400 North (along the roadway). The Geneva Road and 1600 North crossings are approximately 2.8 miles apart (along the rail). Without the 400 North collector running across the railroad tracks and connecting to Geneva Road and Orem, this poses an increasingly serious public safety risk for growing populations west of the railroad tracks, as emergency responders are not able to reach the areas in between the railroad crossings in a timely manner. The Master Plan does anticipate grade-separated crossings at Vineyard Center Street (currently no funding and no date for construction) and at Vineyard 800 North (part of Vineyard Connector). It is likely that substantial residential development west of Geneva Road will occur before either of these crossings is constructed, leaving the Geneva Road and 1600 North crossings as the only available alternate crossings at this time. Further, construction of the 800 North/Vineyard Connector grade separated crossing is dependent on funding from the State of Utah and priorities established by UDOT and Mountain Association of Governments. There are no current plans to construct this crossing.

CROSSING SAFETY NEEDS AND IMPROVEMENTS

Section V of the *FHWA Railroad-Highway Grade Crossing Handbook (2007 Revision)* includes policy and procedure for selecting from various levels of improvement for a railroad-highway grade crossing. Within this section, Table 42 identifies that the UPRR track at the 400 North, Vineyard crossing is categorized as a Class 4 Track (based on typical track speeds up to 60 mph for freight, or 80 mph for passenger trains as identified in the crossing inventory). As such, the minimum active controls that would have historically been required for this class of public crossing include both approach gates and flashers. Flashers and gates were present and operational from approximately 1972 to 2009 (and may have been present earlier). Also within this section, the criteria for closure of an existing public access grade crossing of a Class 4 Track include an acceptable alternate crossing within ¼ mile, and a median trip length increase of no more than ¾ mile for vehicles using the alternate crossing. Neither of these criteria is met at this location. The nearest alternate crossings are 1.3 miles away by road (1.1 miles by rail) near 400 South on Geneva Road; and 2.7 miles away by road (1.7 miles by rail) at 1600 North 2000 West.

Historically, during full plant operation, this segment of track would also have been categorized a Class 4 Track, with train speeds between 40 and 60 mph. This is consistent with the active warning devices (flashers and gates) that were present in the recent history. As noted below, while the west approach leg

was short, sufficient space existed between Vineyard Road and the west most set of UPRR tracks that 1 to 2 vehicles could turn and be oriented more or less perpendicular to the tracks before crossing. While a longer west leg approach to the crossing may have been desirable, the historical condition meets the geometric recommendations of the 2003 United States Department of Transportation Federal Highway Administration's Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) for 21 feet from the tracks to the stop bar.

Based on Equations (5) and (7) in Section III of The *FHWA Railroad-Highway Grade Crossing Handbook (2007 Revision)*, the sight triangle for the crossing (from the perspective of the vehicle) should extend 270 feet along the roadway and 500 feet along the tracks (based on 35 mph roadway speed, and 60 mph track speed). This sight triangle appears to be provided for the west approach. For the east approach, the existing hard surfaced parking area lies within the 270 foot distance from the tracks, beginning at about 170 feet from the stop bar location. Visibility of the tracks from the east approach is essentially unimpeded in both directions (north and south), so a sight triangle conflict does not appear to be a concern. The south approach parallels the tracks, and as such, north bound vehicles would have adequate visibility extending north of the crossing; but would essentially have to turn and look behind to see a train approaching from the south. The presence of flashing lights and gates would mitigate this to some degree. Vehicles were also required to slow to a low speed to make a right angle turn toward the track, thereby coming into the west approach to the track and providing for visibility to the south. There is no north approach to the crossing at this time.

The design criteria for sight triangles included in the *UTA Commuter Rail Design Criteria (Revision 1, November 2007)* is 45 feet on all sides of the triangle (See paragraph 9.5). It is reasonable, although not explicit, that the shortened sight distance for the UTA project is because that project typically includes for public grade crossings full improvements with gates, flashing warning signals, and channelizing medians which mitigates the need for the full sight triangle. The clearing sight distance (from a stopped condition at the gate/stop bar) historically was, and remains unimpeded along this segment; and does not present any special safety concerns.

Section III includes the requirements to evaluate Crossing Safety and Operation of an existing crossing, and contains several detailed equations to predict accident frequency and severity. Based on the historically safe performance of the crossing, the existing flashing warning lights and gates (required for Class 4 track) would have met the requirements based on predicted accidents and severity from the calculated values.

While Geneva Steel was in bankruptcy proceedings and the mill was subsequently being dismantled, and with ongoing environmental cleanup, no changes were made to the crossing geometry or warning systems. After demolition, crossing traffic would have been reduced to less than 100 vehicles per day, from the historically approximately 3000 to 4000 vehicles per day during plant operation, and as a result, the adequacy of the existing warning systems would remain sufficient. No efforts from UPRR, UDOT, or others were made during this time (from plant construction beginning in 1942 to as recently as 2005) to eliminate this public access grade crossing, or to change its classification from public to private. However, after closure and during the dismantling operations, security concerns prompted the gate across the east approach to be closed and locked. The location of the locked gate was later identified by UDOT as a safety concern, and the locked gate was permanently opened to allow a vehicle to turn around between the east most UPRR tracks and a bermed area to the east (rather than forcing this to occur on or very near the tracks). Had a crossing diagnostic / surveillance review been performed after that time (as requested) with a view toward the crossing remaining open, other needed improvements that may have been identified are 1) illumination of the crossing area, 2) reapplication of railroad warning pavement markings (east and west legs only), 3) addition of advance warning signs on the approaches consistent

with current MUTCD requirements, and 4) a second set of flashing lights oriented toward the south approach (rather than just the single set of flashing lights turned at approximately 45 degrees).

During the same time frame the steel mill was being dismantled, the UTA commuter rail project was moving through final design with a design / surveillance review held April 4, 2008. This surveillance review was not conducted with proper notice and no notice was given to the landowner or Vineyard Town (see UDOT policy and procedure discussion below). The installation of the new set of UTA tracks west of the UPRR tracks created a condition where the existing active warning system (flashing lights and gates) fell between the UPRR Tracks and the UTA tracks and required relocating. In addition, the already short west approach to the crossing was made worse because the UTA tracks are now 25 feet closer to the north bound travel lane on Vineyard Road, leaving essentially no room for a north bound vehicle to turn east and get oriented perpendicular to the tracks prior to entering the crossing. The 2003 MUTCD recommends the stop bar be placed approximately 21 feet from the nearest rail (6 feet from the gate). Historically, the crossing geometry allowed for 24 feet on the west approach between the assumed Vineyard Road lane line and the railroad crossing stop bar for eastbound traffic. The current geometry with the UTA tracks in place allows only approximately 1 foot from the Vineyard Road lane line (assuming 11 foot lanes). This forces the roadway to be relocated further westerly as it approaches 400 North, and the installation of all other prescribed active warning features identified as general requirements in the April 4, 2008 design/surveillance review for other grade crossings.

The design/surveillance review for this crossing performed in 2008 was made presuming the crossing would be closed, so no improvement recommendations were made with an expectation of the crossing remaining open. Conversely, the crossing was later cited as being unsafe in July 2009. No reasons were cited in that letter as to what conditions suddenly made it unsafe. It appears that with the exception of the location of the locked gate entering the Geneva Steel property (which has since been left permanently open) and construction of the UTA facilities, no other changes have been made that would have altered the safe operation of this public access grade crossing from what was historically (and under the 2003 MUTCD standards) acceptable.

As previously described, the NHTSA maintains the searchable Fatality Analysis Reporting System crash database that includes information on grade crossings by identification number. In the searchable history on that database from 1994 to 2008, there are no records of any fatalities occurring at this crossing. In addition, there were no accident reports submitted to the Interstate Commerce Commission for this crossing during the years 1941-1943, 1950-1954, 1956-1960, and 1963-1967. The Federal Railroad Administration Office of Safety Analysis Accident database indicates that no accidents have been reported at this crossing since 1975. However, it is our understanding (anecdotally) that a fatality occurred about 1969. As a result, shortly thereafter (probably during 1972) the crossing skew was reduced, and other improvements were made to the crossing, probably including the addition of gates to the flashing light active controls. The flashing lights had been present since about 1940.

UDOT POLICY AND PROCEDURE FOR CLOSING CROSSINGS

In December 2008, Vineyard Town and Anderson Geneva, a landowner in Vineyard, became aware of the intent of UPRR and UTA to cause the closure of the 400 North crossing preliminary to improvements for UTA's FrontRunner South Commuter rail project. Eventually, the crossing was temporarily closed by order of UDOT in early 2010. As part of this evaluation we have reviewed the UDOT policy for regulating crossings, especially where closures are contemplated, and whether that process was followed for the 400 North crossing.

UDOT oversees all public highway-rail grade crossings in the State of Utah. Private crossings are administratively regulated solely by the relevant railroad through private agreements with landowners. The policies and procedures governing UDOT's interaction with railroad crossings are detailed in Utah Administrative Code Rule R930-5 Establishment and Regulation of At-Grade Railroad Crossings (All portions of Utah Administrative Code Section R930 cited in this discussion are from the version in effect from June 10, 2008 through February 8, 2010; see appendix.)

UDOT's goals are to provide for safe, efficient operation of vehicles and pedestrians through those crossings. As part of this effort, UDOT promotes the elimination of crossings (R930-5-3) with safety improved by consolidating crossings with nearby crossings, and then making more extensive improvements to the fewer remaining crossings.

Required Procedures

Per section R930-5-5, UDOT utilizes a diagnostic/surveillance team as an "appointed group of knowledgeable representatives of the parties of interest in a highway/railway crossing or group of crossings" to make recommendations to UDOT for changes needed at crossings. Types of projects that would be evaluated by the diagnostic team to improve safety include elimination of at-grade crossings by combining multiple crossings, elimination of at-grade crossings by the relocation of a highway, elimination of an at-grade crossing by the construction of a new grade separation, improvements to existing at-grade crossings with advance warning signs, pavement markings, other passive controls or new/improved active controls, reconstruction of an existing grade separation structure, construction of raised median curb islands or other channelizing devices, and installation of lighting. The team may also review railroad crossings when railroad traffic is proposed to significantly increase, such as when rail service or frequency is increased or when a new rail is added at an at-grade crossing (R930-5-7).

Recommendations for improvements that would typically be made by the diagnostic/surveillance team include recommending the elimination of at-grade crossings, recommending that passive railroad warning devices including signs or pavement markings be installed, recommending installation of active railroad warning devices (flashing lights/gates), recommending the type of railroad crossing materials to be installed at crossings, recommending the improvement of the highway approach grades to the tracks to improve sight distance, recommending removal of trees, brush and foliage, recommending changes to improve pedestrian safety, recommending new grade separation structures, and recommending the installation of street lighting (R930-5-7).

The diagnostic team is composed of the following team members: UDOT Chief Railroad Engineer, representative from the railroad, representative from the local government agency (preferably from engineering or public works), and representatives from the local school district, if the crossing is located on an approved school walking route. Section R930-5-7 states that UDOT "shall consider all recommendations made by the team members, and input received from the public at large (in accordance with section R930-5-14) before issuing final orders for the improvement of grade crossings [*including closures*]" (italics added). The Section also states that UDOT "may also make formal findings and rulings as part of its routine inspection of railroad crossings, independent of the Diagnostic/Surveillance Review Team."

Section R930-5-14 Notice of Intended Action Process details the requirements that must be met when UDOT is considering a proposal to close a crossing. R930-5-14(1) states that UDOT "shall advertise a notice of its intended action in a newspaper of general circulation, and if available, a newspaper of local circulation in the area affected, at least twice with a provision that written protests may be filed with the Department 15 days from the date of the last publication of the notice. The local public authority shall provide written notice to all property owners within one-half mile of the crossing area. The notice shall identify the project, briefly describe the changes proposed, who to contact for information, where to file

complaints or comments, and contain general information relating to the proposed action.” Section R930-5-7(4)(a)(vi) clarifies that it is the UDOT Chief Railroad Engineer’s responsibility to initiate all notices of intended action for railroad projects.

This requirement can be waived only in instances where the closure does not substantially affect the general public. In this instance, all parties affected must concur in writing with the action proposed. Parties affected include “railroads or other common parties, state, county, city or other environmental agencies, boards or commissions, having jurisdiction over any property rights of facilities, and private persons or directly affected” (R930-5-14(4)).

UDOT and UTA Actions – 400 North Crossing Surveillance

In October and/or November of 2008, the Utah Department of Transportation released a legal notice entitled “Notification of Changes to At-Grade Crossings Between Salt Lake City and Provo Per Utah Administrative Rule R930-5-14” in the Salt Lake Tribune and the Deseret News as well as on the UTA website. The notification gave an overview of the FrontRunner South Commuter rail line project and stated the construction of the line will change the current state of 41 at-grade crossings throughout Salt Lake and Utah counties. The notice went on to say that “A Surveillance Review Team that included representatives from each local jurisdiction, UDOT, UPRR and UTA, has evaluated each of the 41 crossings affected by construction of the project to ensure that final design meets all applicable safety requirements. Proposed crossing changes include new track, minor grade changes and adding safety upgrades including construction of raised medians (60 to 100 feet in length) and active warning devices at each applicable crossing.” The newspaper notice and website listed each of the 41 affected crossings. Under the heading “Vineyard” two crossings were listed – Geneva Road and 4000 North. The notice incorrectly identified the crossing as being located at 4000 North rather than 400 North. This designation may be based on the County coordinate system for unincorporated areas. Vineyard 400 North is approximately equivalent to 4000 North on the County system. However, Vineyard has been incorporated since 1989, and the correct street name is 400 North. In addition, the notice indicated that three crossings in Lehi were potential closures. The 400/4000 North Vineyard crossing was not listed as a potential closure.

The notification published by UDOT and UTA stated that the surveillance review team (see description above) included representatives from each local jurisdiction. A letter dated April 4, 2008 from Eric Cheng to Jason Bleyl, head of the FrontRunner South project, indicated that UDOT had reviewed the existing conditions of five crossings located in Lindon (600 South), Orem (400 South, 800 South, and 2000 South), and Vineyard (indicated as “Private Crossing to Geneva”) in conjunction with UTA, UPRR, and local jurisdictions. Representatives from Lindon and Orem were included on the list of attendees at the review. The letter listed required improvements for the four crossings in Lindon and Orem. For the 400 North crossing, no improvements were listed. The letter merely stated “This crossing is to be closed”, with no explanation. At the time UTA was reviewing the crossings to be affected by the FrontRunner project, there was no question that the crossing was listed as public in all governmental inventories, publications, and communications, and was therefore subject to all procedures outlined in R930-5.

The 400 North crossing is located entirely within the Town of Vineyard, and representatives from the Town should have been part of the surveillance meetings. No officials from the Town of Vineyard were ever notified of or invited to participate in the surveillance meeting for the crossing. Don Overson, the Engineer of Record for Vineyard, confirmed that he was not notified of any surveillance meetings discussing changes to the crossing (until July 2009 when he was notified of the meeting to consider closure treatments; see below).

No agency or authority provided written notice of the proposed changes and closure to Anderson Geneva, the property owners immediately adjacent east of the crossing, as required by section R930-5-14. There was no notice given to Homesteads Acquisitions, LLC, a landowner within ¼ mile of the crossing. It is unknown whether notice was provided to any other landowners within ½ mile of the crossing.

Section R930-5 allows UDOT to make formal rulings as part of its routine inspection of railroad crossings, independent of the diagnostic team, but there is no known record of such an inspection for the 400 North crossing and there is no indication that the proposed closure was the result of findings of such an inspection. Typically these inspections are performed for crossings ranking high on UDOT's Annual High Accident Prediction List (R930-5-9), and there is no indication that the 400 North crossing was ever ranked high on this list, even prior to the shutdown of Geneva Steel in 2002. Certainly in 2007 and 2008, the crossing would not have been ranked high on the list due to the reduced traffic volume over the crossing. In addition, the 2008 notice clearly indicated that the crossings listed were affected only due to the construction of the FrontRunner South project.

Alternatively, Section R930-5 allows the notification requirement to be waived in instances where the closure does not substantially affect the general public. However, all parties affected must concur in writing with the action proposed. The Town of Vineyard is clearly an affected party under this requirement. The Town of Vineyard considers 400 North to be a main east-west collector as shown on their approved Roadway Master Plan. Anderson Geneva, as the property owner directly adjacent to the crossing, would also clearly be an affected party. Homesteads Acquisitions, LLC, a developer within ¼ mile of the site, would also be an affected party. None of these parties was given any notice of the action proposed and no party concurred verbally or in writing with the action. It is not known whether any other affected parties were notified of or concurred in writing with the proposed action.

In December 2008, representatives of Anderson Geneva became aware of the intended change to the crossing shown on the UTA website. They investigated the crossings listed as located in Vineyard and realized that the crossing listed as 4000 North was actually the 400 North crossing. The Town of Vineyard engineer, Don Overson, was alerted about the notice around this time. On December 31, 2008, Anderson Geneva wrote a letter opposing the closing of the crossing to Eric Cheng. This was later than the date specified in the notice for comments to be received, but Anderson Geneva had never been notified of the action early enough to provide comments within the stated comment period.

On January 20, 2009, Randy Farnworth, mayor of the Town of Vineyard, wrote a letter to UDOT vigorously opposing the closure of the 400 North crossing. He indicated that the crossing was vital for access to the western portion of Vineyard and that 400 North was included as a main east-west collector on the approved Vineyard Roadway Master Plan. He also indicated that UDOT and UTA had not followed the notification procedures included in Section R930-5-14. He reiterated that no representative of the Town of Vineyard was ever included as part of a diagnostic/surveillance team.

On January 20, 2009, Eric Cheng wrote a letter to Anderson Geneva in response to their December 31, 2008 letter. His letter stated that "We have investigated the status of the crossing and found out that this crossing is not recognized as a public crossing. It enters private property with gates that are generally locked." He indicated that since the crossing was considered private, it was no longer under the authority of UDOT. That UDOT would not have authority over a private crossing is consistent with Section R930-5, which indicates that UDOT is only involved in evaluation and approval of actions concerning public at-grade crossings. However, there is no known record of UDOT performing a site visit or undertaking any other formal evaluation to determine that the crossing designation should be changed from public to private. Other than stating the crossing enters private property, the reasons for changing the designation of the crossing from public to private were not stated in the letter. The Public Service Commission (PSC) conducts hearings and investigations of complaints against UDOT and serves as an appeal authority.

Anderson Geneva and Vineyard Town initiated an appeal against UDOT with the PSC on February 9, 2009. This was dismissed when UDOT reversed their position and made a formal finding that the 400 North crossing was a public crossing later in February 2009.

Prior to construction of the Geneva Steel mill, the crossing was considered public on all correspondence and blueprints found for the crossing. In the Denver and Rio Grande Western Railroad's 1943 (subsequent to the mill property acquisition by the government) request to install a spur track to service the steel mill, the crossing is described as a public highway crossing. Local agencies including the State Road Commission and Utah County participated in correspondence stating the crossing was public. Even after the mill had been in business for many years, the crossing was considered as public on all documents and correspondence from the railroad, UDOT, and other local governmental agencies. The crossing was listed as public in the USDOT FRA Inventory from 1974 through 2008. During these years, updates to the inventory were made by both UDOT and UPRR, and the crossing remained listed as public. In the January 2009 letter, Mr. Cheng indicated that UPRR authorities had forwarded documentation to State and Federal railroad authorities to modify their records to show the crossing was private. However, this documentation was not included and it is not known what evidence UPRR had provided that demonstrated the crossing was private. The crossing status was shown as private in the USDOT FRA inventory beginning on December 8, 2008.

Anderson Geneva provided information to Eric Cheng demonstrating that the crossing should be classified as public, and on February 25, 2009, Mr. Cheng notified Anderson Geneva and Vineyard Town that upon review UDOT considers the crossing public unless other information was submitted demonstrating the crossing was private. This review by UDOT occurred because the PSC was petitioned by Anderson Geneva and others to evaluate the actions occurring which had led to the crossing being designated private and the threatened closure. The petition was withdrawn when UDOT reversed the designation of the crossing back to public. As of the date of this report, because of the recent filing by UPRR, the USDOT FRA inventory still shows the crossing as private, and it is not known whether information to correct this has been submitted by UDOT or UPRR.

In the February 25 letter Mr. Cheng also stated that UDOT would conduct another surveillance review on the crossing based on the crossing being public and needing to remain functional. He indicated that Union Pacific Railroad, UTA, the Town of Vineyard, and Anderson Geneva would be involved in the review with UDOT and that as part of the review, a meeting would be held at the site of the railroad crossing. No officials from Anderson Geneva or the Town of Vineyard are aware of a surveillance meeting with this purpose in mind ever taking place.

Between February and July 2009, Anderson Geneva submitted additional information to UDOT demonstrating that the crossing was public. Union Pacific Railroad submitted information intended to demonstrate that the crossing was private. In March 2009 a meeting involving UDOT, UTA and their consultants, UPRR, and the Vineyard Town Engineer was held at Vineyard Town Hall to discuss the crossing. The meeting included discussion of whether the crossing was public or private. However, this meeting did not include a site visit and would not be considered a diagnostic/surveillance review. On April 8, 2009, Eric Cheng wrote a letter to Anderson Geneva and Vineyard Town indicating that in light of the information received, UDOT would complete a thorough evaluation of the crossing.

UDOT Actions – 400 North Crossing Temporary Closure

On July 13, 2009, UDOT issued a finding affirming that the crossing was considered public, but indicated that current conditions at the crossing were unsafe for the public and the crossing would be temporarily closed. Anderson Geneva and Town of Vineyard representatives were never invited to a diagnostic/surveillance team meeting leading to the conclusion that the crossing was unsafe. Again, Section R930-5 does allow UDOT to make rulings as part of its routine inspection of crossings,

independent from the diagnostic team, but it is clear that this ruling was not made as part of a routine inspection, and a diagnostic team including a representative from at least the Town of Vineyard should have been included in this decision. In the July 13 letter, UDOT did notify Anderson Geneva that a diagnostic/surveillance review meeting would be held to discuss treatments for the closure of the crossing. It did not state when the meeting would take place. The letter also indicated that the crossing would remain closed until Vineyard constructed the approach roadways on either side of the crossing consistent with the planned improvements in their Roadway Master Plan. Don Overson, Vineyard Town Engineer, was also invited to this meeting. However, this is the first meeting that either Anderson Geneva or Vineyard Town was notified of. Anderson Geneva wrote a letter to UDOT on August 7, 2009, indicating that they had never been notified of any meeting to discuss the safety at the crossing or to consider its closure. They reminded UDOT that they had agreed earlier that neither a formal review of safety issues nor an on-site surveillance review had taken place.

During the August 6, 2009 surveillance meeting to discuss treatments used for the closure of the crossing, the only safety concern expressed by members of the diagnostic team was the presence of a locked fence east of the crossing, on the Anderson Geneva property. Don Overson states that at the meeting, the team members were unwilling to discuss Vineyard Town's desire that the crossing remain open. On August 25, 2009, Eric Cheng wrote a letter to Don Overson, Vineyard Town Engineer, summarizing the decisions from the meeting and listing recommended work elements to close the crossing. Subsequent to the diagnostic meeting, Anderson Geneva permanently opened the gate and created a turnaround in order to improve safety at the crossing. Regardless of any improvements, they were informed by UDOT in a letter dated September 1, 2009 that the temporary closure decision was final and would not be reconsidered.

The previous discussion demonstrates that UDOT and UTA did not provide notification as required by Section R930-5 to the Town of Vineyard or to Anderson Geneva or fully follow established policy, legal procedure, and administrative rule during the process culminating in the decision to "temporarily" close the 400 North crossing.

PARTIES RESPONSIBLE FOR IMPROVEMENTS

Section R930-5-13 apportions costs for improvements at railroad highway crossings to the responsible parties. If improvements are initiated by the state or local highway agency, as is generally the case, costs are typically the responsibility of the highway agency. If improvements are initiated by the railroad, as in the current project, costs are the responsibility of the railroad.

Section R930-5-7(5) states that where a new railroad crosses an existing highway, 100 percent railroad participation shall be required for any necessary railroad warning devices and any pavement work at the crossing. Definitions in R930-5 state that these warning devices include flashing light signals, automatic gates, manually operated devices, as well as signs, markings, and other devices located at or in advance of grade crossings. Pavement work would include pavement, curb and gutter, channelizing medians, and all similar or related activities. Section R930-5-9 details the responsibility of the various parties to arrange for installation of railroad material and devices. Section R930-5-13 details the apportionment of costs associated with these improvements when the local agency widens a roadway, reconstructs a roadway, approves development near a roadway, or changes the crossing conditions by increasing traffic volumes. This section notes that the local agency is responsible for installation of all passive railroad warning devices (signs, markings, etc.). In accordance with these sections, it follows that improvements undertaken by UTA at the 400 North crossing would fall under cost apportionment to the railroad, and responsibility for these costs would fall to them.

COMPARISON WITH SIMILAR CROSSINGS

We evaluated several crossings included in the current UTA commuter rail corridor with similar geometry problems (a nearby roadway closely paralleling the rail corridor immediately before turning to cross the tracks). Typically, the mitigation for these short approach lengths is a realignment of the parallel roadway (600 South, Lindon; 500 South, American Fork; 500 West, Lehi; Mill Pond Road, Lehi; 4500 South, Murray). This realignment pulls the intersection of the crossing roadway and the parallel roadway far enough from the tracks that a vehicle can safely turn onto the crossing roadway, become oriented roughly perpendicular to the tracks, and have the opportunity to stop, and evaluate if it is safe to proceed. This strategy seems most appropriate to mitigate the conditions created by the recent construction of the UTA tracks at this location.

Several public grade crossings are being closed along the UTA corridor (primarily in Lehi) as part of the commuter rail project (1220 North, 300 South, and 300 East Lehi). At the crossing locations being closed, alternate crossings exist within no more than ¼ mile, and frequently within only a block or two. The notable difference between these locations, and the 400 North grade crossing in Vineyard, is the proximity of alternate crossings. Also of significance is the notice of the closure of these grade crossings sent to Lehi City from UDOT. No input was solicited from Vineyard to participate in the design/surveillance review for the 400 North crossing and no notice of intended closure was provided.

Public grade crossings of the railroad corridor throughout the UTA commuter rail corridor in semi-urban areas are generally spaced about 1/2 mile apart, decreasing to ¼ mile as the degree of urban development increases. With a few rare exceptions (through the Jordan Narrows, between Sandy and Murray, and between Murray and Salt Lake City), grade crossings don't exceed 1.9 miles (10,000 feet) in separation. If the 400 North, Vineyard crossing was eliminated, a nearly 4 mile stretch (along the roadway) would be created with no crossing in this rapidly developing area.

PUBLIC CROSSING STATUS

The 400 North crossing meets all requirements in the *FHWA Railroad-Highway Grade Crossing Handbook (2007 Edition)* for being classified as a public crossing. The Handbook states that "Public crossings are those on highways under the jurisdiction of and maintained by a public authority and open to the traveling public" and that "Private highway-rail grade crossings are on roadways not open to use by the public nor maintained by a public authority." 400 North has always been under the jurisdiction of and maintained by Utah County or the Town of Vineyard. 400 North and the crossing have also always been open to the traveling public.

The Handbook notes that "Usually an agreement between the land owner and the railroad governs the use of the private crossing." There is no agreement between the land owner and the railroad for the 400 North crossing, though there are agreements in place for other crossings located on the Anderson Geneva property which are clearly private. Finally, the Handbook lists typical types of private crossings, including "Farm crossings that provide access between tracts of land lying on both sides of the railroad, industrial plant crossings that provide access between plant facilities on both sides of the railroad, residential access crossings over which the occupants and their invitees reach private residences from another road, and temporary crossings established for the duration of a private construction project or other seasonal activity." The 400 North crossing does not fall into any of these types.

The MUTCD defines a Highway-Rail Grade Crossing as "the general area where a highway and a railroad's right-of-way cross at the same level, within which are included the railroad tracks, highway, and traffic control devices for highway traffic traversing that area." The MUTCD goes on to define

“Highway” as “a general term for denoting a public way for purposes of travel by vehicular travel, including the entire area within the right-of-way” and “Public Road” as “any road or street under the jurisdiction of and maintained by a public agency and open to public travel.” The MUTCD does not define “railroad”, or “private.” The MUTCD does not make any determinations about whether a crossing should be considered public or private.

The United States Department of Transportation Federal Railroad Administration’s final report entitled “Private Highway-Rail Grade Crossing Safety Research and Inquiry” dated May 2008 states “Private highway-rail grade crossings are intersections of highways and railroads on roadways either not open to public travel or not maintained by a public authority.” This is consistent with the definition in the FHWA Handbook. The FRA report quotes the four typical types of crossings from the FHWA Handbook (as listed above). The report cites the MUTCD definition for public road and then states that “If either approach to a crossing does not qualify as a public roadway, then the crossing is typically classified as a private crossing.” Neither the FHWA Handbook nor the MUTCD include this statement. The FRA report goes on to reiterate this position by stating “The FHWA Manual on Uniform Traffic Control Devices (MUTCD) defines a public highway-rail grade crossing as any intersection between a public roadway and railroad. The roadway on either side of the crossing must be a public roadway, i.e., under the jurisdiction of, and maintained by, a public authority and open to public travel. If either approach to a crossing does not qualify as a public roadway, then the crossing is typically classified as a private crossing.” The MUTCD does not define a public highway-rail grade crossing. As noted previously, it defines highway-rail grade crossing and public road, but it does not combine these definitions to define public highway-rail grade crossing, and it does not make any determination about the roadway on each side of the crossing.

The FRA report eventually concludes that “A clear, national definition of private crossings is not currently available. Most authorities apply the MUTCD’s definition of a public roadway to determine whether a crossing is a public crossing. The MUTCD defines a public roadway as any road or street under the jurisdiction of and maintained by a public agency and open to public travel. If either approach to a crossing does not qualify as a public roadway, then the crossing is typically classified as a private crossing regardless of whether the crossing is open to public travel or provides public access.” The FRA is correct that a clear definition is not available. The FRA’s determination that both approaches to a crossing must be public roadways for the crossing to be considered public is not supported by definitions from the FHWA Handbook or the MUTCD.

CONCLUSIONS

Based on our review of the crossing history, physical site review of the existing crossing, review of the documented actions of UDOT, UPRR, and UTA, and comparison with other crossings which are included in the UTA FrontRunner South commuter rail project, we make the following conclusions:

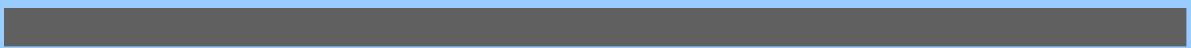
1. Procedures identified in Utah Administrative Code Section R930-5 (effective June 10, 2008 through February 8, 2010), which UDOT is bound to follow when conducting surveillance reviews and especially when considering crossing closures, were not fully followed in making a temporary closure of 400 North. This is primarily related to UDOT/UTA’s failure to give proper notice to and involve all affected parties in surveillance review, particularly if closures are considered, coupled with lack of reasons cited for the “unsafe” designation.
2. At the time of closure, the 400 North crossing met applicable standards for public safety except for lacking some advance warning signing and pavement markings, which are easily rectified. The crossing had existed with this layout and active warning device condition since at least 1972 when the

gates were likely installed and the skew angle lessened. For the nearly 40 years subsequent to 1972, the crossing was not designated as unsafe by any regulatory agency. Neither Vineyard Town nor Anderson Geneva has made traffic changes that would require modifications to the crossing or roadway.

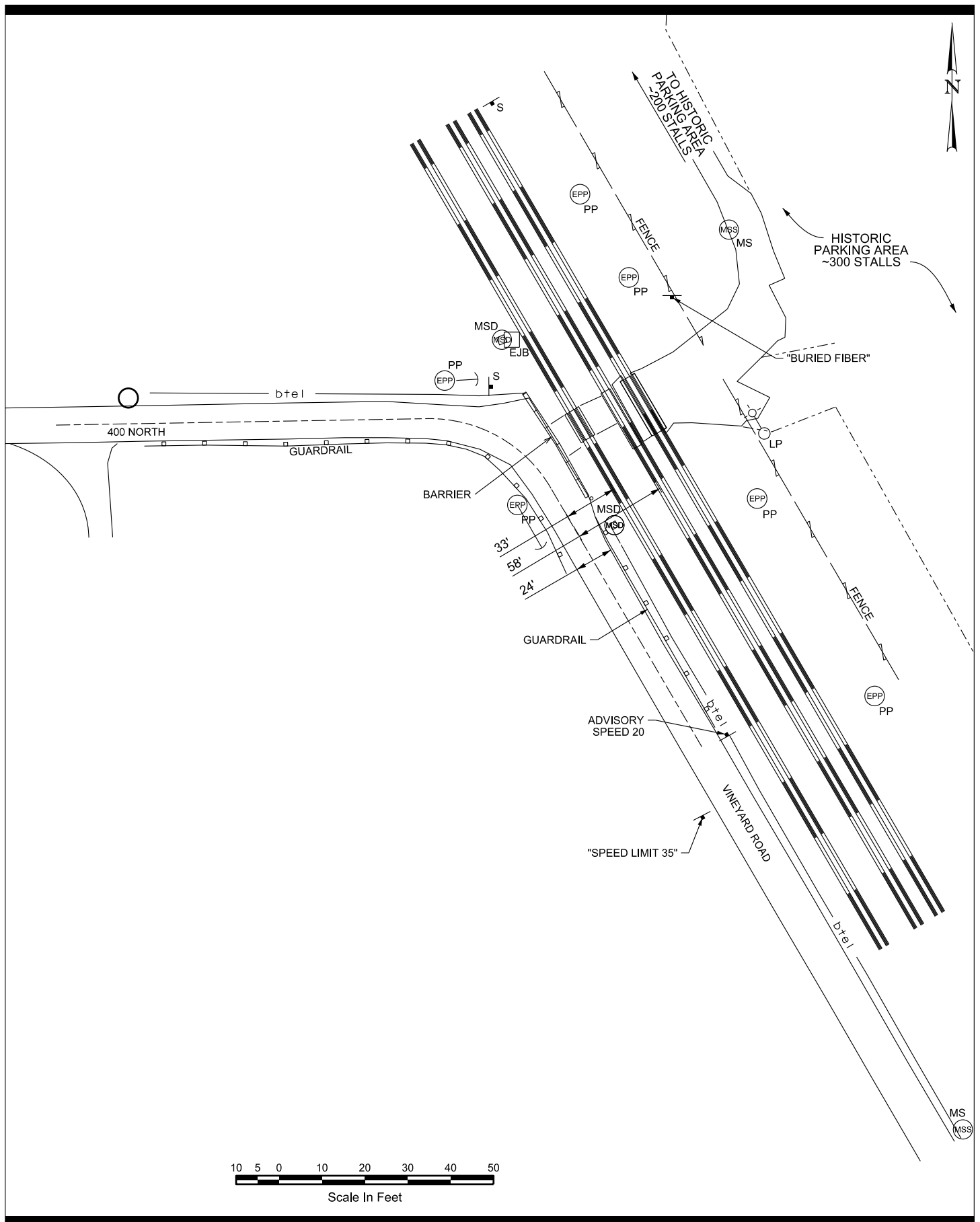
3. When taking into account the new additional track and train traffic created by the railroad (UTA), then the crossing would need safety modifications, likely including realigning the roadway. These modifications would normally be paid for by the entity making the changes, which in this case is UTA.

4. With the exception of Lehi 300 East, UTA is making changes to five other comparable crossings involved in the FrontRunner South commuter rail project by shifting roads and adding appropriate warning devices to meet safety standards for crossings. UTA is refusing to make similar changes to the 400 North crossing.

5. There is no basis within Utah Administrative Code Section R930 or within the FHWA Railroad-Highway Grade Crossing Handbook for the change in status from public to private that was filed by UPRR with the Federal Railroad Administration. This change in status is also contrary to the final decision and designation of UDOT for the crossing made in July 2009.



Figures



Sep 9, 1993

W 4000 N

N Vineyard Rd

Image U.S. Geological Survey

© 2010 Google

Imagery Date: Sep 10, 1993

40°18'15.76" N 111°44'37.02" W elev 0 ft

© 2009 Google

Eye alt 2978 ft

USDOT FRA Inventory

U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 5/4/2010

Crossing No.: **254903N** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **12/08/08**
Railroad: **UP Union Pacific RR Co. [UP]** End-Date of Record:
Initiating Agency **Railroad** Type and Position: **Private At Grade**

Part I Location and Classification of Crossing

Division:	DENVER	State:	UT
Subdivision:	6	County:	UTAH
Branch or Line Name:	MAINLINE	City:	Near OREM
Railroad Milepost:	0708.19	Street or Road Name:	PRIVATE GENEVA
RailRoad I.D. No.:	WA 708.19	Highway Type & No.:	
Nearest RR Timetable Stn:		HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	25-3-11
Crossing Owner:		Latitude:	40.2918010
ENS Sign Installed:		Longitude:	-111.7331010
Passenger Service:		Lat/Long Source:	Neither
Avg Passenger Train Count:	0	Quiet Zone:	No
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category:	Industrial	Public Access:	Unknown
Signals	Specify Signs:	Specify Signals:	BELLS, GATES

ST/RR A	ST/RR B	ST/RR C	ST/RR D
---------	---------	---------	---------

Railroad Use:

State Use:

Narrative:

Emergency Contact: **(800)848-8715** Railroad Contact: State Contact:

Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains:	20	Total Switching:	0
Typical Speed Range Over Crossing: From	45	Day Thru:	10
	to 50 mph	Maximum Time Table Speed:	70
Type and Number of Tracks:	Main: 1	Specify:	SIDING
	Other 1		
Does Another RR Operate a Separate Track at Crossing?	No		
Does Another RR Operate Over Your Track at Crossing?	No		

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **254903N**

Continued

Effective Begin-Date of Record: **12/08/08**

End-Date of Record:

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0	Highway Stop Signs:	0
Advanced Warning:	Yes	Hump Crossing Sign:	
Pavement Markings:	No Markings	Other Signs:	0 Specify:
			0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	
Mast Mounted FL:	2	Total Number FL Pairs:	0
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	0	Specify Other Flashing Lights:	
Highway Traffic Signals:	0	Wigwags:	0 Bells: 1
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:		Type of Train Detection:	DC/AFO
Track Equipped with Train Signals?	Yes	Traffic Light Interconnection/Preemption:	N/A

Part IV: Physical Characteristics

Type of Development:	Industrial	Smallest Crossing Angle:	60 to 90 Degrees
Number of Traffic Lanes Crossing Railroad:	4	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Timber	Is it Signalized?	
Nearby Intersecting Highway?	Less than 75 feet	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Urban Local
Is Crossing on State Highway System:	No	AADT Year:	1988
Annual Average Daily Traffic (AADT):	003725	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	10		
Posted Highway Speed:	0		

U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 5/4/2010

Crossing No.: **254903N** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **04/01/99**
Railroad: **UP Union Pacific RR Co. [UP]** End-Date of Record: **12/07/08**
Initiating Agency **State** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	DENVER	State:	UT
Subdivision:	6	County:	UTAH
Branch or Line Name:	MAINLINE	City:	Near OREM
Railroad Milepost:	0708.19	Street or Road Name:	WGATE ON WGENEVA
RailRoad I.D. No.:	WA 708.19	Highway Type & No.:	
Nearest RR Timetable Stn:		HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	25-3-11
Crossing Owner:		Latitude:	40.2918010
ENS Sign Installed:		Longitude:	-111.7331010
Passenger Service:		Lat/Long Source:	
Avg Passenger Train Count:	0	Quiet Zone:	No
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category:

Specify Signs:

Public Access:

Specify Signals:

ST/RR A

ST/RR B

ST/RR C

ST/RR D

Railroad Use:

State Use:

Narrative:

Emergency Contact: **(800)848-8715**

Railroad Contact:

State Contact:

Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains:	20	Total Switching:	0
Typical Speed Range Over Crossing: From	45	Day Thru:	10
	to 50 mph	Maximum Time Table Speed:	70
Type and Number of Tracks:	Main: 1	Specify:	SIDING
	Other 1		
Does Another RR Operate a Separate Track at Crossing?			No
Does Another RR Operate Over Your Track at Crossing?			No

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **254903N**

Continued

Effective Begin-Date of Record: **04/01/99**

End-Date of Record: **12/07/08**

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0	Highway Stop Signs:	0
Advanced Warning:	Yes	Hump Crossing Sign:	
Pavement Markings:	No Markings	Other Signs:	0 Specify:
			0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	
Mast Mounted FL:	2	Total Number FL Pairs:	0
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	0	Specify Other Flashing Lights:	
Highway Traffic Signals:	0	Wigwags:	0 Bells: 1
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:		Type of Train Detection:	DC/AFO
Track Equipped with Train Signals?	Yes	Traffic Light Interconnection/Preemption:	N/A

Part IV: Physical Characteristics

Type of Development:	Industrial	Smallest Crossing Angle:	60 to 90 Degrees
Number of Traffic Lanes Crossing Railroad:	4	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Timber	Is it Signalized?	
Nearby Intersecting Highway?	Less than 75 feet	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Urban Local
Is Crossing on State Highway System:	No	AADT Year:	1988
Annual Average Daily Traffic (AADT):	003725	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	10		
Posted Highway Speed:	0		

U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 5/4/2010

Crossing No.: **254903N** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **04/01/98**
Railroad: **UP Union Pacific RR Co. [UP]** End-Date of Record: **03/31/99**
Initiating Agency **Railroad** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	DENVER	State:	UT
Subdivision:	6	County:	UTAH
Branch or Line Name:	MAINLINE	City:	Near OREM
Railroad Milepost:	0708.19	Street or Road Name:	400 NORTH
RailRoad I.D. No.:	WA 708.19	Highway Type & No.:	
Nearest RR Timetable Stn:		HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	25-3-11
Crossing Owner:		Latitude:	40.2918010
ENS Sign Installed:		Longitude:	-111.7331010
Passenger Service:		Lat/Long Source:	
Avg Passenger Train Count:	0	Quiet Zone:	
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category:

Specify Signs:

Public Access:

Specify Signals:

ST/RR A

ST/RR B

ST/RR C

ST/RR D

Railroad Use:

State Use:

Narrative:

Emergency Contact:

Railroad Contact:

State Contact:

Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains:	20	Total Switching:	0
Typical Speed Range Over Crossing: From	45	Day Thru:	10
	to 50 mph	Maximum Time Table Speed:	70
Type and Number of Tracks:	Main: 1	Specify:	SIDING
	Other 1		
Does Another RR Operate a Separate Track at Crossing?			No
Does Another RR Operate Over Your Track at Crossing?			No

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **254903N**

Continued

Effective Begin-Date of Record: **04/01/98**

End-Date of Record: **03/31/99**

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0	Highway Stop Signs:	0
Advanced Warning:	Yes	Hump Crossing Sign:	
Pavement Markings:	No Markings	Other Signs:	0 Specify:
			0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	
Mast Mounted FL:	2	Total Number FL Pairs:	0
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	0	Specify Other Flashing Lights:	
Highway Traffic Signals:	0	Wigwags:	0 Bells: 1
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:		Type of Train Detection:	DC/AFO
Track Equipped with Train Signals?	Yes	Traffic Light Interconnection/Preemption:	

Part IV: Physical Characteristics

Type of Development:	Industrial	Smallest Crossing Angle:	60 to 90 Degrees
Number of Traffic Lanes Crossing Railroad:	4	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Timber	Is it Signalized?	
Nearby Intersecting Highway?	Less than 75 feet	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Urban Local
Is Crossing on State Highway System:	No	AADT Year:	1988
Annual Average Daily Traffic (AADT):	003725	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	10		
Posted Highway Speed:	0		

U.S. DOT - CROSSING INVENTORY INFORMATION

AS OF 5/4/2010

Crossing No.: **254903N** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **07/15/94**
Railroad: **DRG Denver & Rio Grande Western RR Co. [DRGW]** End-Date of Record: **03/31/98**
W
Initiating Agency **Railroad** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	DENVER	State:	UT
Subdivision:	6	County:	UTAH
Branch or Line Name:	MAINLINE	City:	Near OREM
Railroad Milepost:	0708.19	Street or Road Name:	400 NORTH
RailRoad I.D. No.:	WA 708.19	Highway Type & No.:	
Nearest RR Timetable Stn:		HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	25-3-11
Crossing Owner:		Latitude:	40.2918010
ENS Sign Installed:		Longitude:	-111.7331010
Passenger Service:		Lat/Long Source:	
Avg Passenger Train Count:	0	Quiet Zone:	
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category:

Specify Signs:

Public Access:

Specify Signals:

ST/RR A

ST/RR B

ST/RR C

ST/RR D

Railroad Use:

State Use:

Narrative:

Emergency Contact:

Railroad Contact:

State Contact:

Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains:	20	Total Switching:	0
Typical Speed Range Over Crossing: From	45	Day Thru:	10
	to 50 mph	Maximum Time Table Speed:	70
Type and Number of Tracks:	Main: 1	Specify:	SIDING
	Other 1		
Does Another RR Operate a Separate Track at Crossing?			No
Does Another RR Operate Over Your Track at Crossing?			No

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **254903N**

Continued

Effective Begin-Date of Record: **07/15/94**

End-Date of Record: **03/31/98**

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0	Highway Stop Signs:	0
Advanced Warning:	Yes	Hump Crossing Sign:	
Pavement Markings:	No Markings	Other Signs:	0
		Specify:	0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	
Mast Mounted FL:	2	Total Number FL Pairs:	0
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	0	Specify Other Flashing Lights:	
Highway Traffic Signals:	0	Wigwags:	0
Other Train Activated Warning Devices:		Bells:	1
Channelization:		Special Warning Devices Not Train Activated:	
Track Equipped with Train Signals?	Yes	Type of Train Detection:	DC/AFO
		Traffic Light Interconnection/Preemption:	

Part IV: Physical Characteristics

Type of Development:	Industrial	Smallest Crossing Angle:	60 to 90 Degrees
Number of Traffic Lanes Crossing Railroad:	4	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Timber	Is it Signalized?	
Nearby Intersecting Highway?	Less than 75 feet	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Urban Local
Is Crossing on State Highway System:	No	AADT Year:	1988
Annual Average Daily Traffic (AADT):	003725	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	10		
Posted Highway Speed:	0		

U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 5/4/2010

Crossing No.: **254903N** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **12/02/88**
Railroad: **DRG Denver & Rio Grande Western RR Co. [DRGW]** End-Date of Record: **07/14/94**
W
Initiating Agency **State** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	UTAH	State:	UT
Subdivision:	6	County:	UTAH
Branch or Line Name:	MAINLINE	City:	Near OREM
Railroad Milepost:	0708.19	Street or Road Name:	4000NORTH
RailRoad I.D. No.:		Highway Type & No.:	
Nearest RR Timetable Stn:	GENEVA	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	25-3-11
Crossing Owner:		Latitude:	40.2918010
ENS Sign Installed:		Longitude:	-111.7331010
Passenger Service:		Lat/Long Source:	
Avg Passenger Train Count:	0	Quiet Zone:	
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category:

Specify Signs:

Public Access:

Specify Signals:

ST/RR A

ST/RR B

ST/RR C

ST/RR D

Railroad Use:

State Use:

Narrative:

Emergency Contact:

Railroad Contact:

State Contact:

Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains:	20	Total Switching:	0
Typical Speed Range Over Crossing: From	45	Day Thru:	10
	to 50 mph	Maximum Time Table Speed:	70
Type and Number of Tracks:	Main: 1	Specify:	SWITCHING
	Other 1		
Does Another RR Operate a Separate Track at Crossing?			No
Does Another RR Operate Over Your Track at Crossing?			No

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **254903N**

Continued

Effective Begin-Date of Record: **12/02/88**

End-Date of Record: **07/14/94**

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0	Highway Stop Signs:	0
Advanced Warning:	Yes	Hump Crossing Sign:	
Pavement Markings:	No Markings	Other Signs:	0
		Specify:	0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	
Mast Mounted FL:	2	Total Number FL Pairs:	0
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	0	Specify Other Flashing Lights:	
Highway Traffic Signals:	0	Wigwags:	0
Other Train Activated Warning Devices:		Bells:	1
Channelization:		Special Warning Devices Not Train Activated:	
Track Equipped with Train Signals?	Yes	Type of Train Detection:	DC/AFO
		Traffic Light Interconnection/Preemption:	

Part IV: Physical Characteristics

Type of Development:	Industrial	Smallest Crossing Angle:	60 to 90 Degrees
Number of Traffic Lanes Crossing Railroad:	2	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Timber	Is it Signalized?	
Nearby Intersecting Highway?	Less than 75 feet	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Urban Local
Is Crossing on State Highway System:	No	AADT Year:	1988
Annual Average Daily Traffic (AADT):	003725	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	10		
Posted Highway Speed:	0		

U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 5/4/2010

Crossing No.: **254903N** Update Reason: **New Crossing** Effective Begin-Date of Record: **01/01/70**
Railroad: **DRG Denver & Rio Grande Western RR Co. [DRGW]** End-Date of Record: **12/01/88**
W
Initiating Agency **Original** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	UTAH	State:	UT
Subdivision:	6	County:	UTAH
Branch or Line Name:	MAINLINE	City:	Near OREM
Railroad Milepost:	0708.19	Street or Road Name:	4000NORTH
RailRoad I.D. No.:		Highway Type & No.:	
Nearest RR Timetable Stn:	GENEVA	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	25-3-11
Crossing Owner:		Latitude:	
ENS Sign Installed:		Longitude:	
Passenger Service:		Lat/Long Source:	
Avg Passenger Train Count:	0	Quiet Zone:	
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category:

Specify Signs:

Public Access:

Specify Signals:

ST/RR A

ST/RR B

ST/RR C

ST/RR D

Railroad Use:

State Use:

Narrative:

Emergency Contact:

Railroad Contact:

State Contact:

Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains:	20	Total Switching:	0
Typical Speed Range Over Crossing: From	45	Day Thru:	10
	to 50 mph	Maximum Time Table Speed:	70
Type and Number of Tracks:	Main: 1	Specify:	SWITCHING
	Other 1		
Does Another RR Operate a Separate Track at Crossing?			No
Does Another RR Operate Over Your Track at Crossing?			No

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **254903N**

Continued

Effective Begin-Date of Record: **01/01/70**

End-Date of Record: **12/01/88**

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0	Highway Stop Signs:	0
Advanced Warning:	No	Hump Crossing Sign:	
Pavement Markings:	No Markings	Other Signs:	0
		Specify:	0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	
Mast Mounted FL:	2	Total Number FL Pairs:	0
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	0	Specify Other Flashing Lights:	
Highway Traffic Signals:	0	Wigwags:	0
Other Train Activated Warning Devices:		Bells:	1
Channelization:		Special Warning Devices Not Train Activated:	
Track Equipped with Train Signals?	Yes	Type of Train Detection:	DC/AFO
		Traffic Light Interconnection/Preemption:	

Part IV: Physical Characteristics

Type of Development:	Industrial	Smallest Crossing Angle:	60 to 90 Degrees
Number of Traffic Lanes Crossing Railroad:	2	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Timber	Is it Signalized?	
Nearby Intersecting Highway?	Less than 75 feet	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Urban Local
Is Crossing on State Highway System:	No	AADT Year:	
Annual Average Daily Traffic (AADT):	003725	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	10		
Posted Highway Speed:	0		

FRA Office of Safety Analysis Accident Database



Federal Railroad Administration Office of Safety Analysis

You are Visitor# 6885842

[Home](#) [Crossing](#) [Forms/Publications](#) [Downloads▼](#) [Data▼](#) [Documents▼](#) [Policies▼](#) [Support▼](#)

5.02 - Generate Crossing Inventory and Accident Reports

Please click on one of the links below or enter a crossing number, pick the report type and click on the **Generate Report** button to produce the Report.

Report Type: ☐ Inventory ☒ Accident ☐ Contact Sheet

Crossing#: 254903n Crossing number is valid but not in the accident file.

[Generate Report](#)[Generate Map](#)

Additional Links

[Query by Location\Railroad](#)
[Query by Crossing](#)
[Accident Prediction \(WBAPS\)](#)
[Crossing Inventory Data File Reconciliation \(CIR\)](#)
[DOT Crossing Inventory Information](#)
[Crossing Data help](#)
[Maps](#)
[Notice](#)
[Using this Site](#)

Inventory file as of:3/31/2010

Accident file as of:2/28/2010



Federal Railroad Administration Office of Safety Analysis

You are Visitor# 6885824

[Home](#) [Crossing](#) [Forms/Publications](#) [Downloads▼](#) [Data▼](#) [Documents▼](#) [Policies▼](#) [Support▼](#)

FAQs:

Q1. Where can I find statistics on accidents/incidents at highway-rail grade crossings?

A1. Information regarding highway-rail grade crossings, crossing accidents and accident prediction can be obtained on the FRA's Office of Safety Analysis [Highway-Rail Crossing Inventory and Accidents](#) page.

Q2. I need information on an accident that occurred in 1974, but can't find any. Where can I obtain this information?

A2. Our records date back to 1975.

However, some records relating to railroad accident reports can be obtained at the following addresses and phone numbers:

National Archives and Records Administration
Textual Reference Branch (NNR2)
National Archives at College Park
8601 Adelphi Road
College Park, MD 20740-6001
Phone (301) 837-3480 (main) or (301) 837-2052 (This is the phone number for David Pfeiffer who deals with railroad records.)

Additionally, you could try,

National Railway Historical Society Library
100 North 17th Street, 12th Floor,
Philadelphia, PA 19103
Phone (215) 557-6606
(they have copies of published railroad accident reports dating from 1901-1993.)

The National Transportation Safety Board
Public Inquires Branch
490 L'Enfant Plaza, SW
Washington, DC 20594
Phone (202) 382-6735 or 1 800 877-6799

The California State Railroad Museum
111 I Street,
Sacramento, CA 95814
Phone (916) 323-8073
(they have copies of the published ICC railroad accident reports dating from approximately 1918-1960.)

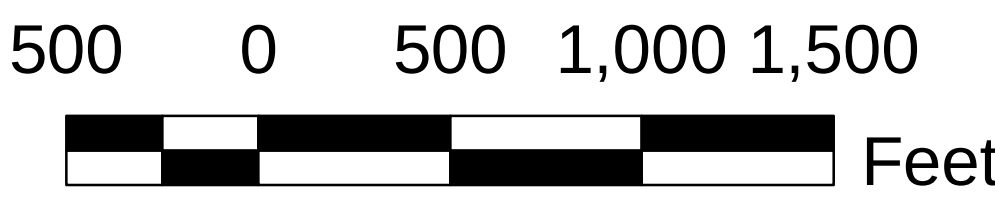
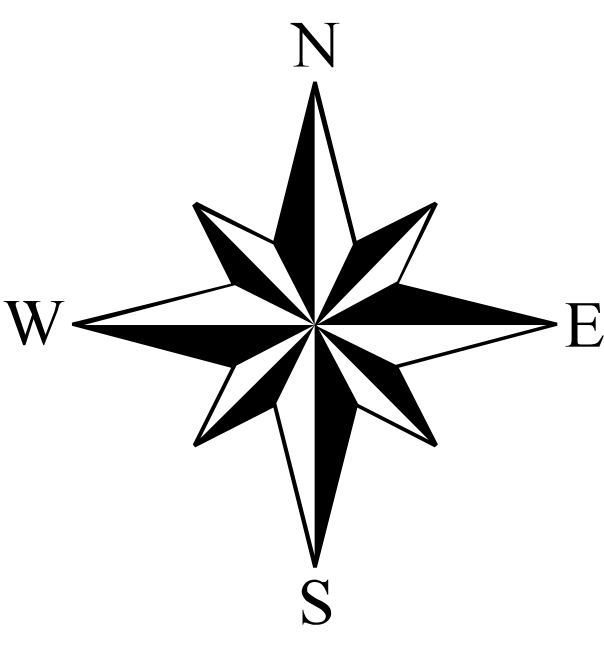
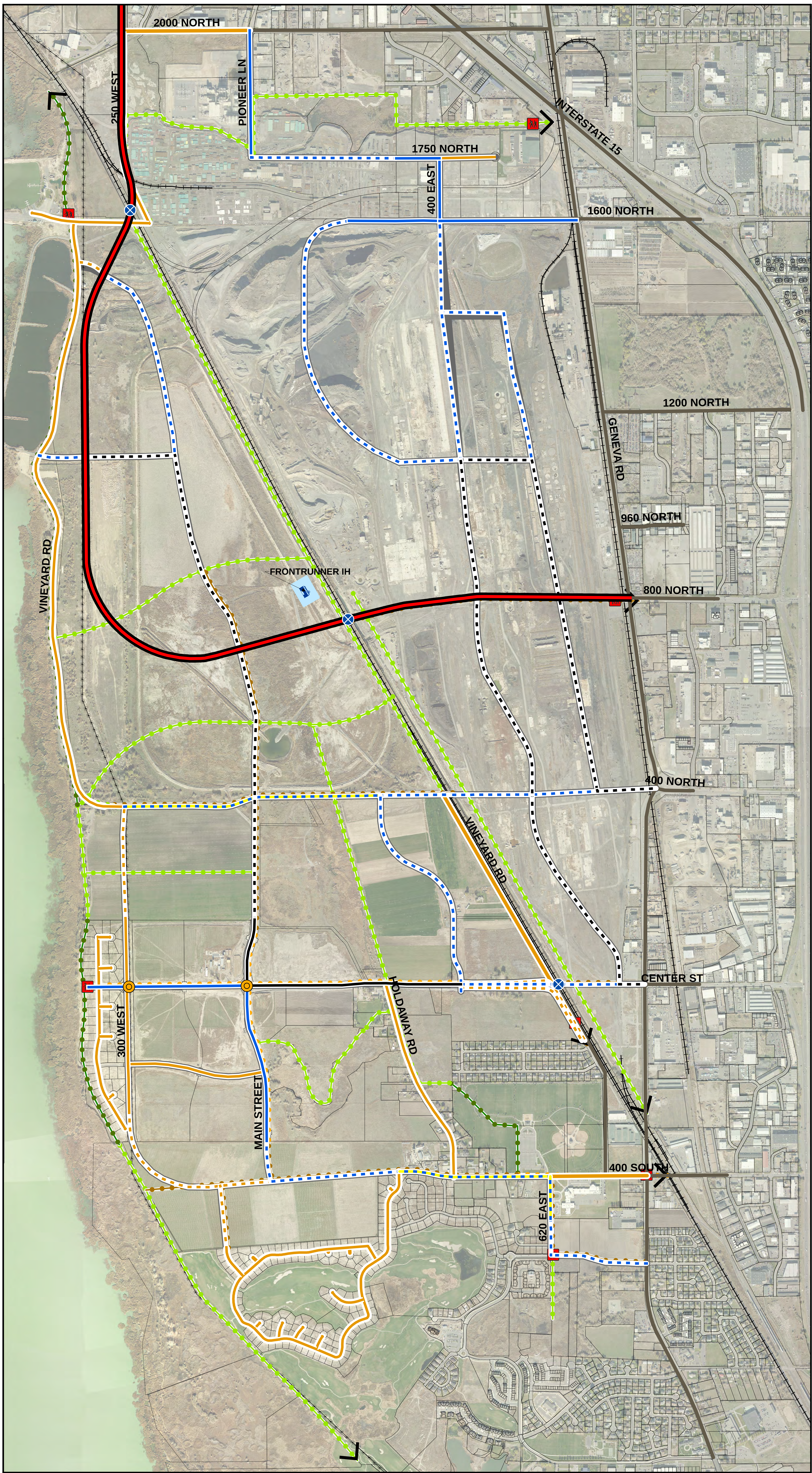
And finally,

The Department of Transportation has a library with a collection of reports and records. They are located in SW Washington and can be reached on (202) 366-0746.

Q3. Recently, I've had my accident/incident reports returned as undeliverable. What is the correct FRA mailing address?

A3. Federal Railroad Administration
4601 N. Fairfax Dr
Suite 1100
Arlington, VA 22203

Vineyard Master Plan



1 inch = 500 feet

TRANSPORTATION

- ROUNDABOUTS
- ⊗ GRADE-SEPARATED RR CROSSING

VINEYARD CONNECTOR

ARTERIAL

- EXISTING
- - - - FUTURE

COLLECTOR

- EXISTING
- - - - FUTURE
- · - · - RECONSTRUCT

LOCAL

- EXISTING
- - - - FUTURE
- TRAIL ACCESS

TRAILS

- DEDICATED EXISTING
- DEDICATED FUTURE
- ON STREET EXISTING
- ON STREET FUTURE

■ FRONTRUNNER INTERMODAL HUB

— Power Lines

— RAILROAD



J-U-B ENGINEERS, Inc.
ENGINEERS • SURVEYORS • PLANNERS

TOWN OF VINEYARD ROADWAY PLAN

APPROVED 26 NOV 08

Utah Administrative Code R930-5

(Effective June 10, 2008 through February 8, 2010)

R930. Transportation, Preconstruction.

R930-5. Establishment and Regulation of At-Grade Railroad Crossings.

R930-5-1. Policy.

(1) At regular intervals, the Department: (a) reviews for safety all existing public at-grade highway/railway crossings in the state in accordance with the Manual on Uniform Traffic Control Devices; (b) evaluates and approves the location of new crossings; (c), prescribes the types of at-grade crossing railroad warning devices; and (d) determines maintenance and funding apportionments for all highway/railway projects.

(2) Highway/railway projects that use federal railroad safety funds shall be carried out in accordance with 23 CFR Part 646 Subpart B.

R930-5-2. Authority.

This rule is authorized by Utah Code Ann. Section 54-4-15. Additional sections in the Utah Code and Federal rules supporting this rule are found in sections 10-8-34, 10-8-82, 41-6-19, 72-1-102, 72-2-112; 23 CFR 924 and 23 CFR 646.

R930-5-3. Purpose.

(1) Department oversees all at-grade public highway/railway crossings in the state of Utah and provide for the safe, efficient operation of vehicles and pedestrians through highway/railway intersections. Department also promotes elimination of at-grade highway/railway crossings when possible, elimination of hazards to improve at-grade crossings, and recommends the construction of grade separation structures to replace at-grade crossings pursuant to this rule.

(2) This rule describes procedures for the selection of highway/railway crossings for improvement, the selection of passive and active railroad warning devices, design, maintenance operations and the funding sources for the improvement of crossings.

R930-5-4. Incorporation by Reference.

The following federal law, federal agency manuals and association standards, and technical requirements are adopted and incorporated by reference:

- (1) 23 CFR 646 "Railroads" (2005);
- (2) 23 CFR 924 "Highway Safety Improvement Program" (2005);
- (3) "A Policy on Geometric Design of Highway and Streets", American Association of State Highway and Transportation Officials (AASHTO) (2004);
- (4) Preemption of traffic signals near railroad crossings, Institute of Traffic Engineers (ITE) (2004); and
- (5) Guidance for traffic control devices at Highway/Railroad Grade Crossings, FHWA (2000).

R930-5-5. Definitions.

(1) "Active warning devices" means those types of traffic control devices activated by the approach or presence of a train, such as flashing light signals, automatic gates and similar

devices, as well as manually operated devices and crossing watchmen, all of which display to motorists positive warning of the approach or presence of a train;

(2) "At-Grade Crossing" means the crossing of a highway and railway at approximately the same elevation;

(3) "Clear zone" means an area along the road that is clear of obstructions and required by the Department in order to make the roadway safer for errant vehicles; Department

(4) "Company" means any railroad, special transit district, or utility company including any wholly owned or controlled subsidiary thereof;

(5) "Diagnostic/Surveillance team" means an appointed group of knowledgeable representatives of the parties of interest in a highway/railway crossing or group of crossings;

(6) "FHWA" means the Federal Highway Administration, an agency within the United States Department of Transportation

(7) "Local Agency" means a local governmental entity that owns a highway;

(8) "Main line railroad track" means a track of a principal line of a railroad, including extensions through yards, upon which trains are operated by timetable, train order or both, or the use of which is governed by block signals or by centralized traffic control;

(9) "MUTCD" means the Manual of Uniform Traffic Control Devices as adopted in Utah Code Ann. Section 41-6a-301;

(10) "Passive warning devices" means those types of traffic control device, including signs, markings and other devices located at or in advance of grade crossings to indicate the presence of a crossing but which do not change aspect upon the approach or presence of a train;

(11) "Preliminary engineering" means the work necessary to produce construction plans, specifications, and estimates to the degree of completeness required for undertaking construction, including locating, surveying, designing, and related work;

(12) "PSC" means the Public Service Commission of the State of Utah;

(13) "Roadway" means that portion of the highway, including shoulders, intended for vehicular use;

(14) "Railroad" means all rail carriers, whether publicly or privately owned, and common carriers, including line haul freight and passenger railroads, switching and terminal railroads and passenger carrying railroads such as rapid transit, commuter and street railroads;

R930-5-6. Types of Projects.

(1) Projects for the elimination of hazards for both vehicles and pedestrians at highway/railway crossings may include the following:

(a) Elimination of at-grade highway/railway crossings by combining multiple crossings;

(b) Elimination of at-grade highway/railway crossings by the relocation of a highway;

(c) Elimination of an at-grade crossing by the construction of a new grade separation where full access control is required

regardless of the volume of train or highway vehicles;

(d) Improvements to existing at-grade highway/railway crossings;

(e) Reconstruction of an existing highway/railway grade separation structure;

(f) Construction of raised median curb islands or other channelizing devices;

(g) Installation of lighting to improve visibility of crossings or safety devices;

(2) Other projects that require Department approval prior to construction include, but are not limited to the following projects:

(a) Highway/railway projects that use railroad properties or involve adjustments to railroad facilities required by highway construction, but do not involve the elimination of hazards of railway/highway crossings;

(b) Construction of new highway crossings over a railroad track where a new street or highway is proposed that is not essentially a relocation of an existing street;

(c) Construction of a new railroad crossing of an existing highway or street.

R930-5-7. Diagnostic/Surveillance Review Team.

(1) The Department shall have a program for the identification of highway/railway crossings for improvement. Crossings may be identified for improvement upon recommendation from the diagnostic/surveillance review team, or by formal finding of the Department. The role of the Diagnostic/Surveillance Review Team is to make recommendations to the Department for changes needed at railroad crossings. The team serves as a venue where different agencies and railroads may come together and discuss options and alternatives for safety improvement. The Department shall consider all recommendations made by the team members, and input received from the public at large (in accordance with section R930-5-14) before issuing final orders for the improvement of grade crossings. Suggested improvements at all highway/railway intersection crossings are evaluated by a Diagnostic/Surveillance Review Team. The team reviews railroad crossings when requested by local agencies, when significant changes in highway traffic patterns are proposed, or when railroad traffic is proposed to significantly increase. The Department may also make formal findings and rulings as part of its routine inspection of railroad crossings, independent of the Diagnostic/Surveillance Review Team.

(2) The Diagnostic/Surveillance Team is composed of the following team members:

(a) Chief Railroad Engineer for the , Department;

(b) Representatives from the railroad company;

(c) Representatives from the local government agency (preferably from engineering or public works), and when available the local law enforcement groups where the highway/railway crossing is located and

(d) Representatives from the local school district, if the crossing is located on an approved school walking route.

(3) The Diagnostic/Surveillance Team shall, when

appropriate:

(a) Recommend the elimination of at-grade highway/railway crossings;

(b) Recommend that passive railroad warning devices be installed at crossings in accordance with the MUTCD;

(c) Recommend installation of active railroad warning devices at highway/railway crossings. Active warning devices include flashing lights, flashing lights with gates, flashing lights with gates and overhead cantilever lights, three- or four-quadrant gates with gate management system, or other active warning device as defined in the MUTCD;

(d) Recommend the type of railroad crossing materials to be installed at highway/railway crossings;

(e) Recommend the improvement of the highway approach grades to the tracks to improve sight distance;

(f) Recommend removal of trees, brush and foliage from the highway and railroad rights-of-way and private properties to provide better sight distance for motor vehicles;

(g) Recommend changes needed to improve pedestrian safety, and to comply to the extent possible with the Americans with Disabilities Act;

(h) Review all requests for new at-grade crossings of existing railroads. The highway agency making the request for a new crossing shall provide a master street plan showing the agency's plan to eliminate or combine existing railroad crossings before new crossings will be approved;

(i) Review change of use of highway/railway crossings. The local agency shall verify the permitted use, public or private, of any highway/railway crossing in writing from the authorized owner of the track prior to approval of new development or change in land use or ownership;

(j) Recommend new overpass or other grade separation structures;

(k) Recommend the installation of street lighting to improve visibility;

(l) Recommend any other safety mitigation requirements in order to improve vehicle and pedestrian safety.

(4) Duties of individual Diagnostic/Surveillance Team members include:

(a) The Chief Railroad Engineer shall:

(i) notify team members who are to attend the review;

(ii) conduct the reviews and issue team reports within two weeks after the review and send copies to all those attending the review;

(iii) establish requirements for horizontal and vertical alignments of the roadway;

(iv) determine passive and active railroad warning device locations on the roadway;

(v) determine funding apportionments on federal railroad safety projects;

(vi) initiate all Notices of Intended Action for railroad projects;

(vii) review the plans and contractual agreement requirements on projects demanding federal funds from local

agencies;

(viii) obtain all necessary field data for plan site maps and take photographs of the existing conditions of all quadrants of the intersection.;

(b) The Railroad Company Representative shall provide train volumes, accident data, and any other pertinent data regarding the railroad crossing;

(c) The Local Agency Representative shall provide highway traffic volumes, proposed road construction activities on the highway, or an approved master plan for the highway, in addition to any other pertinent data regarding the crossing;

(d) The Local School District Representative shall provide school-age pedestrian traffic counts and school routing plan information.

(5) Where a new railroad crosses an existing highway, the Department will consider the new crossing in conformance with Section 54-4-15. Public notice will be made in conformance with R930-5-14, Notice of Intended Action. If approved, the required separation or railroad warning devices, and any pavement work at the crossing shall not be considered to be of benefit to the road user and 100 percent railroad participation shall be required. The determination as to separation of type of warning devices shall be according to classification and traffic volume of the highway crossed and the predicted traffic hazard and as recommended by the Surveillance Team.

R930-5-8. Design of At-Grade Highway/Railway Crossings.

(1) The Department shall oversee and approve the design of all highway/railway at-grade crossings. Facilities that are the responsibility of the railroad for maintenance and operation shall conform to the specifications and design standards used by the railroad in its normal practice. At-Grade crossings that are the responsibility of the local agency for maintenance and operation shall conform to the specifications and design standards and guides used by the highway agency in its normal practice subject to approval by the Department. Where a local agency does not have an approved standard, Department standard drawings for the design of railroad crossings apply. Traffic control devices at all grade crossing improvements shall comply with the MUTCD. Required clearances for all devices shall conform to the MUTCD, or as approved by the Department. All design plans shall include USDOT identification numbers, street addresses, railroad subdivision and railroad milepost for at-grade crossings.

(2) Railroad crossing surface materials shall be designed as follows:

(a) When it is determined that the railroad crossing material needs to be extended or replaced, the agency doing the design of the crossing shall determine the minimum length of the crossing material. The length shall be determined based on the proposed width of the new roadway or from the approved master plan roadway width. The crossing material length shall extend at least two feet from the outer edge of the roadway, beyond the roadway clear zone area, or to the back of the concrete curb and gutter or out past the sidewalks;

(b) The approach grades of the roadway to the railroad crossing material shall conform to standard drawings published by the Department, to the extent practical;

(c) When the existing railroad crossing material is to be extended but the existing material is too old and cannot be connected to the new material, complete replacement of the railroad crossing material is required;

(d) New railroad crossing materials shall use insulated concrete panels. Other materials may be used, if approved by the Department.

(3) Active railroad warning devices shall be designed as follows:

(a) The railroad company is responsible for the design of the railroad activation circuitry, hardware, and software necessary to comply with requirements of the Department. Clearances for active warning devices shall comply with requirements of the MUTCD, unless otherwise specifically authorized by the Department;

(b) Three- and four-quadrant gate systems: Designs for these systems shall be in conformance with the MUTCD. Exit gates for these systems shall be designed to fail in the upright position. Time-delayed exit gates shall not be used in these systems, except for locations with a single track that is nearly perpendicular to the highway. In these cases, where practical, the exit gate shall be placed at a distance from the track to allow for a single design vehicle to exit the crossing area safely. The Diagnostic/Surveillance Review Team shall recommend delay times to be used in these applications. For all other installations (single track skewed crossings, multi-track crossings, etc.) a dynamic exit gate system shall be used. The exit gate system shall employ a method (as approved by the Department) of detecting vehicles stalled on the tracks and shall raise exit gates to allow for vehicles to exit the crossing area.

When the active warning devices are placed within the roadway clear zone, appropriate attenuation devices shall be installed;

(c) When an existing roadway is to be widened, the new location of the active railroad warning devices shall be determined by the railroad and highway agency. The railroad company shall relocate the devices;

(d) When active warning devices are within 200 feet of a traffic signal, the local authority shall provide the type and amount of preemption time needed to the Diagnostic Review Team. The railroad company shall design the crossing per the specification of the local authority. The local authority shall provide an interconnect to the traffic signal controller. The local authority is responsible for programming traffic signal controller;

(e) Design plans shall show the location of active devices by both highway station and railroad milepost.

(4) The following passive warning devices shall be designed, installed, and maintained by the railroad company in accordance with the MUTCD:\

(a) Sign R15-1 (crossbuck);

(b) Sign R15-2 (number of tracks);

- (c) Sign R1-1 (STOP);
- (d) Sign R1-2 (Yield);
- (e) Sign R15-3 (Exempt);
- (f) Sign R8-9 (Tracks out of Service)
- (5) Design, installation, and maintenance of all other passive railroad warning devices, signs, and pavement markings is the responsibility of the highway agency that crosses the railroad tracks. Design and location of the devices shall be in accordance with the MUTCD and as engineering studies indicate necessary, or as required by the Diagnostic Review Team.

R930-5-9. Responsibility to Arrange for the Installation of Railroad Materials and Devices.

(1) Responsibility for installation of railroad crossing material is as follows:

(a) When a roadway is widened by a local agency, the local agency shall be responsible to arrange by agreement with the railroad company to install the railroad crossing extension.

(b) When local agencies reconstruct a roadway and new railroad crossing material is required, the local agency shall arrange by agreement with the railroad company for the complete replacement of the railroad crossing material when material cannot be extended.

(2) Responsibility for installation of active warning devices is as follows:

(a) When a local agency widens a roadway which changes the existing conditions of the highway/railway crossing and it requires active warning devices, the local agency shall be responsible to arrange by agreement with the railroad company for the installation of the active railroad warning devices after their plans are approved by the Department.

(b) When a local agency widens a roadway that has existing active railroad warning devices, the local agency shall have their plans approved by the Department and arrange by agreement with the railroad company for the relocation of the devices.

(c) Prior to approving new residential, commercial or industrial development within 1000 feet of a railroad crossing, the local agency shall request a Diagnostic/Surveillance Review of the proposed development to assess the potential traffic impacts at the railroad crossing. When a local agency approves increased development that changes the conditions of a highway/railway at-grade crossing by increasing traffic volumes and/or by adding new access openings onto a highway within 250 feet, the agency plans shall be approved by the Department. The local agency shall arrange by agreement with the railroad company for any required railroad changes.

(d) When a highway/railway at-grade crossing is listed in the Department's Annual High Accident Prediction List and active warning devices are required, the Department shall arrange by agreement with the railroad company for the installation of the active railroad warning devices.

(e) When a local agency requests a surveillance review of a highway/railway intersection or a corridor of intersections and the Diagnostic/Surveillance Team recommends that a crossing or

crossings can be eliminated and other crossings can be upgraded, the Department shall determine if Federal Railroad Safety Funds (also know as "Section 130 funds") may be used for any or all of the improvements. If Federal funding is available, the Department shall also arrange by agreement with the railroad company for the installation of the active railroad warning devices.

(3) The Local Agency is responsible for the installation of all passive railroad warning devices.

R930-5-10. Maintenance.

(1) Responsibility for maintenance is as described in this section unless a separate agreement has been executed between the railroad and the owner of the road.

(2) The maintenance of automatic signal devices and the pavement area from end of tie to end of tie, including space between multiple tracks if the railroad company owns the easement rights between the multiple tracks, and two feet beyond each outside rails is the responsibility of the railroad company.

(3) Signals and pavement between end of ties on temporary highway detours shall in all cases become the responsibility of the railroad company at the expense of the highway agency owning the roadway.

(4) Maintenance of the crossing approaches up to end of tie is the responsibility of the agency owning the roadway. When the railway is raised due to track and ballast maintenance, the railroad company shall coordinate their work with the agency owning the roadway so the pavement on the approaches can be adjusted to provide a smooth ride for motorists. When the agency owning the roadway changes the road profile (through construction or maintenance activities) the approaches to the tracks must be adjusted to provide a smooth and level crossing surface.

(5) Responsibility for maintenance of a grade separation structure is as follows:

(a) Where a separation facility overpasses a railroad, maintenance responsibility for the entire structure and approaches is assumed by the agency owning the structure and roadway.

(b) When a grade separation structure underpasses a railroad and the railroad owns the right of way fee title, maintenance of the roadway and the entire structure below and including the deck plate, girders, handrail, and parapets, is the responsibility of the owner of the roadway. Maintenance of the waterproofing, ballast, ties, rails and any portion of the supporting structure above the top of the ballast deck plate between parapets is the responsibility of the railroad company. If the owner of the roadway owns the right of way fee title, the railroad is responsible for the maintenance of the entire structure.

(c) Cost of repairing damages to a highway or a highway structure, occasioned by collision, equipment failure or derailment of the railroad's equipment shall be borne by the railroad company.

(6) Responsibility for maintenance of private industrial trackage not owned by a railroad company that crosses public highways shall be as follows:

(a) When a facility, plant or property owner receives goods

and services from a railroad company train over private industrial trackage that crosses a public highway, maintenance of the crossing shall be the responsibility of those companies receiving the goods and services.

(b) When the highway/railway crossing becomes a safety hazard to vehicles and is not maintained, the Department and the railroad company shipping the goods and services shall notify the facility, plant or property owners in writing to maintain or replace the railroad crossing material.

(c) If the owner of the private trackage does not maintain or replace the crossing material by a specified date, the Department shall order the railroad company to cease and desist operations across the highway/railway crossing.

(d) If the owner still does not respond to the order to maintain or replace the railroad crossing material the following action shall be taken by the highway agency owning the roadway. The highway agency shall arrange to have the crossing replaced, and bill the facility owner of the trackage for the expenses to repair the trackage.

R930-5-11. FHWA Authorizations.

(1) The costs of preliminary engineering, right-of-way acquisition, and construction incurred after the date each phase of the work is included in an approved program and authorized by FHWA are eligible for federal participation. Preliminary engineering and right-of-way acquisition costs which are otherwise eligible, but incurred by the railroad prior to authorization by FHWA, although not reimbursable, may be included as part of the railroad share of the project cost where such share is required.

(2) Prior to issuance of authorization by FHWA either to advertise the physical construction for bids, to proceed with force account construction for railroad work or for other construction affected by railroad work the following must be accomplished:

(a) Plans and specifications and estimates must be approved by FHWA.

(b) A proposed agreement between the state and the railroad company must be found satisfactory by FHWA. Before Federal funds may be used to reimburse the state for railroad costs the executed agreement must be approved by FHWA.

R930-5-12. Railroad Agreements.

(1) Where construction of a federal aid project requires use of railroad properties or adjustments to railroad facilities, the Department shall prepare an agreement between it and the railroad company.

(2) Master agreements between the Department and a railroad company on an area wide or statewide basis may be used. These agreements shall contain the specifications, regulations and provisions required in conjunction with work performed on all projects.

(3) On a project-by-project basis, the written agreement between the Department and the railroad company shall, as a minimum, include the following, where applicable:

- (a) Reference to appropriate federal regulations;
 - (b) detailed statement of the work to be performed by each party;
 - (c) Method of payment shall be actual cost;
 - (d) For projects which are not for elimination of hazards of highway/railway crossings, the extent to which the railroad is obligated to move or adjust facilities at the expense of the agency owning the roadway;
 - (e) The railroad's share of the project cost;
 - (f) An itemized estimate of the cost of the work to be preformed by the railroad;
 - (g) Method to be used for performing the work, either by railroad forces or by contract;
 - (h) Maintenance responsibility;
 - (i) Form, duration, and amounts of any needed insurance;
 - (j) Appropriate reference to or identification of plans and specifications.
- (4) On matching fund agreements between the Department and the Local Agency, on a project-by-project basis the written agreement shall include the following:
- (a) Description of work and location, city, county, state;
 - (b) Reference to federal regulations that matching funds will be provided by the agency having jurisdiction over the street or highway right-of-way where improvements are desired;
 - (c) Detailed statement of work to be preformed by each party regarding design engineering, agreements, inspection and maintenance;
 - (d) Statement of finances of project and matching funds to be provided by local agency, deposits, invoices and cost overruns or underruns.
- (5) Agreements prepared for local government and industrial trackage crossing are prepared between the agency owning the street or highway right-of-way and the industry on forms furnished by the railroad companies.
- (6) In order that a highway/railway project shall not become unduly delayed, the Department shall consider a six-month period of time from issuance of the railroad agreement to be adequate for completion of execution by the railroad company involved. Should more than the specified period of time elapse, the Department shall require the railroad to proceed with the work covered by the agreement under the authority contained in Section 54-4-15 and approval from the FHWA will be solicited in conformance with 23 CFR 646.

R930-5-13. Apportionment of Costs.

- (1) Paragraphs 2-7 of this section apply when highway projects are constructed in whole or in part with Federal funds.
- (2) Apportionment of costs for installation, maintenance, and reconstruction of active and passive railroad warning devices at highway/railway intersections shall be in accordance with 23 CFR 646.
- (3) When a roadway is widened by the state or local governmental agency, that agency shall fund all passive and active warning devices as recommended by the Diagnostic/Surveillance Team

and as determined necessary by the Department.

(4) When a roadway is widened by a local agency, and the existing railroad crossing material is old and cannot be attached to the new material, the local agency shall fund the replacement of all new existing crossing material.

(5) When a highway/railway at-grade crossing is listed on the Department's Annual High Accident Prediction List, and it is determined by the Department that the crossing shall be upgraded, it shall be funded by federal railroad safety funds and local highway agency matching funds.

(6) If approved construction of a separation structure or the installation of a signal device at such crossing is not considered a benefit to the railroad, railroad participation shall not be required.

(7) A project to reconstruct an existing overpass or underpass shall include the entire structure and railway and the highest approaches thereto. Since there is no railway liability for such projects, it is considered that there shall be no benefit to the railroad and railroad participation shall not be required.

(8) This paragraph applies when no federal funds are used on a project to reconstruct an existing overpass or underpass. The project shall include the entire structure and railway and the highest approaches thereto. If the railroad owns the fee title right of way, no railroad participation is required. If the railroad does not own the fee title right of way, all costs will be the responsibility of the railroad.

R930-5-14. Notice of Intended Action Process.

(1) Public notification is required when the Department is considering proposals to close public streets at crossings, removal of tracks from crossings, addition of tracks at crossings, or construction of new public at-grade crossings. The Department shall advertise a notice of its intended action in a newspaper of general circulation, and if available, a newspaper of local circulation in the area affected, at least twice with a provision that written protests may be filed with the Department 15 days from the date of the last publication of the notice. The local public authority shall provide written notice to all property owners within one-half mile of the crossing area. The notice shall identify the project, briefly describe the changes proposed, who to contact for information, where to file complaints or comments, and contain general information relating to the proposed action.

(2) Construction of a new highway crossing of a railroad track where a new street or highway is proposed which is not essentially a relocation of an existing street, the the Department will consider the new crossing in conformance with Section 54-4-15. Public notice will be made in conformance with this rule.

(3) All requests for a public meeting shall be in writing and shall detail how a proposed action will adversely affect a group of people, firm or corporation, and if it appears that the adverse affect cannot be alleviated by the Department. Such a hearing will be conducted informally by the Department. Any party aggravated by any determination made by the Department shall have their statutory right under Section 54-4-15, as amended, to

petition the PSC for a hearing to be governed by the procedures of the PSC.

(4) In instances where the action proposed by the Department does not substantially affect the general public, The Department may waive the requirement to public notice, provided all parties affected concur in writing with the action proposed. For the purposes of this section, parties affected shall mean railroads or other common parties, state, county, city or other environmental agencies, boards or commissions, having jurisdiction over any property rights of facilities, and private persons or directly affected.

R930-5-15. Clearances.

(1) Unless otherwise noted, all clearances apply to tracks carrying freight or passengers.

(a) Overhead clearances. Overhead clearance is measured as the minimum clearance from the top of rail to the lowest point on a structure.

(i) For tracks carrying freight cars, 23'6";

(ii) For tracks carrying only passenger cars, 14';

(b) Side Clearances. Side clearance is measured from the centerline of tangent standard gauge tracks. Increase clearances on all structures adjacent to curved track by 12 inches.

(i) Posts, pipes, warning signs, other small obstructions, 10';

(ii) Freight platforms, 8 inches or less above top of rail, 4'8";

(iii) Freight platforms, between 8 inches and 21 inches above top of rail, 5'8";

(iv) Freight platforms, between 21 inches and 48 inches above top of rail, 7'3";

(v) Refrigerated freight platforms, between 48 inches and 54 inches above top of rail, 8'0";

(vi) All other structures, near freight tracks, 8'6";

(vii) Poles supporting electrical conductors for use in supplying motive power to tracks, 7'6";

(viii) All other poles supporting cables or wires, 8'6";

(ix) Through bridges and tunnels supporting track affected, 8'0";

(x) Switch boxes, operating mechanisms, and appurtenances necessary for the operation of switches, turnouts, or interlocking devices, less than 4 inches above top of rail, 3'0";

(xi) Block signals and switch stands, three feet or less above top of rail and located between tracks, 6'0";

(xii) Block signals and switch stands, used in operation of Light Rail Transit, 7'6";

(xiii) All other block signals and switch stands, 8'6";

(xiv) Water and oil columns, 8'0";

(xv) Hand rails on bridges or trestles, less than four feet above top of rail, 7'6";

(xvi) Fences of cattle guards, 6'9";

(xvii) Doors and entrances to repair shops or maintenance buildings, 7'6";

(xix) All other objects and articles, 8'6".(c) Overhead and

side clearances. Minimum overhead and side clearances may be decreased to the extent defined by the radius of a circle with the appropriate side clearance, with the center-point of the circle set at the appropriate minimum clearance height. Overhead and side clearances do not apply to shops and buildings in which rail equipment is moved for repairs

(d) Clearances for parallel tracks. Clearance is measured from centerline of tracks.

(i) Tracks used for freight transportation, mainline or siding tracks, 15';

(ii) Tracks used for passenger transportation, mainline or siding tracks, 15';

(iii) Tracks used as team or freight house tracks may be reduced to 11'6" provided that all other side clearances are maintained;

(iv) Between adjacent ladder or yard tracks, 20'. Between ladder or yard tracks and other (mainline or siding) tracks, 17.

(e) Minimum clearances for public roads, highways, and streets.

(i) Where railroads cross overhead, 17';

(ii) Where railroads cross overhead, side clearances are based on the width of the road and the number of lanes crossing under the structure. Minimum widths are determined by the Department of Transportation on a case-by-case basis;

(iii) Where roads cross overhead, use the minimum clearances as provided in this rule.

R930-5-16. Accident Reporting.

Railroad companies are required to report all accidents occurring at highway-rail grade crossings to the Department's Chief Railroad Engineer within 2 hours of the incident. Initial notification must include the USDOT crossing number, street address, municipality, time of incident, train identifier, and contact phone number for further information. Written accident reports shall be submitted to the Department within 30 days of the incident. Current Federal Railroad Administration (FRA) form F 6180.57 shall be used to report accidents.

R930-5-17. Exemption of Railroad Crossings.

Under Section 41-6a-1205, Utah Code, certain vehicles are required to stop at all railroad crossings, unless a crossing is signed as exempt from this requirement. Recommendation to exempt a crossing is made by the Diagnostic/Surveillance team to the Department. Certain crossings are not eligible for exemption from Section 41-6a-1205:

- (1) Mainline crossings with passive protective devices only;
- (2) Crossings within approved quiet zones;
- (3) Crossings where insufficient sight distance exists;
- (4) Notification under section R930-5-14 shall be performed prior to authorization of exempting crossings.

KEY: railroads, transportation, safety

June 10, 2008

Notice of Continuation November 29, 2006

10-8-34

10-8-82

41-6-19
54-4-15
72-1-102
72-2-112