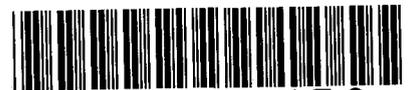


ORIGINAL



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STAFF MEMORANDUM

To: THE COMMISSION

RECEIVED

Arizona Corporation Commission

DOCKETED

From: Steven M. Olea
Interim Director
Safety Division

2010 AUG 12 A 9 51

AUG 12 2010

Date: August 12, 2010

AZ CORP COMMISSION
DOCKET CONTROL

DOCKETED BY	
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RE: IN THE MATTER OF THE APPLICATION OF THE ARIZONA DEPARTMENT OF TRANSPORTATION TO WIDEN AN EXISTING CROSSING OF THE BURLINGTON NORTHERN SANTA FE RAILWAY AT US60/ENNIS SPUR IN THE CITY OF EL MIRAGE, MARICOPA COUNTY, ARIZONA, AT USDOT NO. 025-700-D.

DOCKET NO. RR-02635B-10-0234

Background

On June 10, 2010, the Arizona Department of Transportation ("ADOT") filed with the Arizona Corporation Commission ("Commission") an application for approval for the Burlington Northern and Santa Fe Railroad ("Railroad") to widen an existing crossing at the Railroad's tracks at Grand Avenue ("U.S.60") and the Ennis Spur in the City of El Mirage ("City"), Maricopa County, Arizona, at USDOT No. 025-700-D.

Commission Decision No. 54667 authorized the installation of cantilevers and flashing lights and gates at this crossing on June 26, 1985.

The following is a break down of the crossing in this application, including information about the crossing that was provided to the Safety Division, Railroad Safety Section ("Staff") by ADOT.

Geographical Information

The Ennis Spur crosses U.S.60 in an east-west direction between the Greenway Road and Thompson Ranch Road intersections in the City (estimated population of 24,751, per 2008 census). For a map of the area, see Exhibit A.

U.S.60

The overall ADOT road improvement project will encompass widening approximately 12 miles of U.S. 60 between 99th Avenue and State Route ("SR") 303L from 4 lanes to 6 lanes. The roadway widening project is in construction and is expected to be finished by winter of 2011. No work is being done where existing railroad signals are affected until the Railroad has Commission approval. This project is funded by the American Recovery and Reinvestment Act of 2009 ("ARRA"), thru the Federal Highway Administration ("FHWA"). The project was selected for ARRA funding by the Maricopa Association of Governments ("MAG") in consultation with ADOT.

The roadway project consists of adding a traffic lane in both directions by expanding the road on both sides toward the open median in the center of U.S. 60 while leaving a small portion of the median open. The project was identified by ADOT and MAG to relieve anticipated traffic congestion along U.S.60.

The work at the U.S. 60 / Ennis Spur crossing will consist of relocating the existing automatic gate / flasher units and cantilevered flashing units from their existing locations to the median within the ADOT right of way (see Exhibit B). All flashing lights will be upgraded to LED light units. The Railroad will also install additional concrete crossing panels. ADOT's contractor will then build one new traffic lane in each direction. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the state. The estimated cost of the proposed railroad crossing improvement is \$181,357.

Traffic data for U.S.60 was provided by ADOT. The data shows the Average Daily Traffic ("ADT") for 2008 to be 39,100 vehicles per day ("vpd"). The projected ADT's for 2030 are 49,800 vpd. No Level of Service ("LOS") for the U.S.60 was provided.¹

The posted speed limit on U.S.60 is 45 mph. Staff records, as well as the Federal Railroad Administration ("FRA") accident/incident records indicate one accident at this crossing on September 16, 1981 when a vehicle did not stop for the downed gates and was struck by a train resulting in one injury. The warning devices were reported to be working as intended.

An alternative route from this crossing is as follows; U.S. 60 Frontage Road paralleling the US 60 which is 200 ft west of the crossing. Greenway Road is 0.6 miles northwest of this crossing, and Thompson Ranch Road is 0.8 miles southeast of this crossing. None of these crossings are grade separated.

Train Data

Data provided by ADOT regarding train movements through this crossing are as follows:

Train Count: 1-2 trains per day on average (all freight trains/no passenger trains)

Train Speed: 10 mph

Thru Freight/Switching Moves: All movements through this crossing are thru freight.
(No switching operations)

Schools and Bus Routes

There are several schools located within the area of the crossing, they are:

¹ The American Association of State Highway and Transportation Officials Geometric Design of Highways and Streets, 2004, states that the LOS characterizes the operating conditions on a facility in terms of traffic performance measures related to speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. This is a measure of roadway congestion ranging from LOS A--least congested--to LOS F--most congested. LOS is one of the most common terms used to describe how "good" or how "bad" traffic is projected to be.

Elementary Schools:

- ✓ Thompson Ranch Elementary School, 11800 Thompson Ranch Road
- ✓ Surprise Elementary School, 12907 Greenway Road

According to Tracy Keily, Bus Router for the Dysart School District, approximately 2 school buses use the U.S. 60 crossing and/or the frontage road crossing each day. Staff spoke with Ms. Keily and verified this information on August 4, 2010. She stated that the Dysart School District does not regularly use U.S.60 as a bus route and that is the reason for the small number of bus trips per day.

Hospitals

The nearest hospital or health facility to the U.S.60 crossing is as follows;

Hospitals:

- ✓ Sun Health Del E Webb Hospital, 4 miles to the northwest.
- ✓ Boswell Memorial Hospital, 2 miles to the southeast.

Hazardous Materials

ADOT gave the following response when asked about hazardous materials crossing this crossing:

No factual data is available. However, due to the nature of US 60, numerous vehicles carrying hazardous materials use this crossing linking Phoenix / SR 101 area with the Northwest Valley.

Zoning

Staff requested ADOT provide information regarding the type of zoning in areas adjacent to the crossing. The following was ADOT's response:

Surrounding area zoned Residential to the south and Residential/ commercial to the North. BNSF vehicle offload facility is directly north of this crossing.

Spur Lines

ADOT gave the following answer regarding spur lines located in the area:

No known data on spur closure in the last 10 years. Portion of the Ennis Spur leading into Luke Air Force Base was closed/ removed after 2001 (End of Webb Spur 6 rail miles away).

FHWA Guidelines Regarding Grade Separation

FHWA Railroad-Highway Grade Crossing Handbook (Revised Second Edition August 2007) provides nine criteria for determining whether highway-rail crossings should be considered for grade separation or otherwise eliminated across the railroad right of way. The

Crossing Handbook indicates that grade separation or crossing elimination should be considered whenever one or more of the nine conditions are met. The nine criteria are applied to this crossing application as follows:

		Grand Avenue
The highway is a part of the designated Interstate Highway System	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No
The highway is otherwise designed to have full controlled access	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No
The posted highway speed equals or exceeds 70 mph	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No
AADT exceeds 100,000 in urban areas or 50,000 in rural areas	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No
Maximum authorized train speed exceeds 110 mph	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No
An average of 150 or more trains per day or 300 million gross tons/year	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No
Crossing exposure (trains/day x AADT) exceeds 1M in urban or 250k in rural; or passenger train crossing exposure exceeds 800k in urban or 200k in rural	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No
Expected accident frequency for active devices with gates, as calculated by the US DOT Accident Prediction Formula including five-year accident history, exceeds 0.5	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	N/A ¹
Vehicle delay exceeds 40 vehicle hours per day	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No

¹ N/A = Not Applicable

Vehicular Delays at Crossings

Based on the current single track configuration, ADOT gave the following response about delay time for vehicles at the crossing in this application. The delay time is measured from the point that the warning devices are activated at the crossing to the time after the train has cleared the crossing and the warning devices are reset.

Based on information from El Mirage and FRA data, train traffic causes two, 90 second delays and one, 3 minute delay per day. Current ADT is 38,000 or 26 vehicles per minute.

Future ADT is 48,000 ADT or 33 vehicles per minute. Using Current and expected ADT, this calculates as a 5.6 hr/vehicle-day delay now and 7.4hr/vehicle-day delay in 2030, well below the FHWA threshold of 40 hr/vehicle-day.

Another commonly used measure outlined in the FHWA Guidelines; the so-called Crossing Exposure Index (which is simply the product of the number of trains per day multiplied by the number of vehicles crossing daily) is not currently met at this crossing. The current crossing exposure index is 78,200 and the projected crossing exposure index for the year 2030 is 99,600, well below the 1million threshold. It should be noted that the criteria identified in the FHWA material are not mandates, but guidelines established by the FHWA, which serve to alert those having jurisdiction that potential problems may arise.

Grade Separation

With regard to grade separating this crossing, ADOT gave the following response:

Grade separation was not considered due to the complex nature of a grade separation in this narrow ADOT right of way and the need to maintain connectivity between Grand Avenue and Primrose Road. In addition, the very low volume of train traffic and the high cost of utility relocation, right of way acquisition and possible future expansion of El Mirage Road would need to be factored into a grade separation evaluation. Unknown cost, estimated \$30,000,000++ due to the urbanized location and other issues. Other widening/ congestion mitigation projects would have to be delayed or cancelled to provide funding for a grade separation at this location.

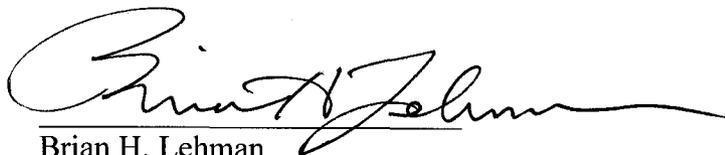
Staff has utilized the FHWA Guidelines to determine the potential need for grade separation at this crossing. Based on existing conditions, the crossing in this application meets none of the nine criteria for consideration of grade separation.

Crossing Closure

The area surrounding this crossing is highly developed with both commercial and industrial businesses. To close this crossing would have a negative affect on many of the local businesses. Therefore, Staff would not recommend closure of this crossing at this time.

Staff Conclusions

Having reviewed all applicable data, Staff supports ADOT's application. Staff believes that the upgrades are in the public interest and are reasonable. Staff believes that the measures proposed by ADOT are consistent with other similar at-grade crossings in the State and will provide for the public's safety. Therefore, Staff recommends approval of ADOT's application.



Brian H. Lehman
Railroad Safety Supervisor
Safety Division

Originator: BHL

COPIES of the foregoing mailed
this 12th day of August, 2010 to:

Docket No. RR-02635B-10-0234

Jerry Horacek
Engineering Project Manager
City of El Mirage
City Hall
12145 NW Grand Ave.
El Mirage, AZ 85335

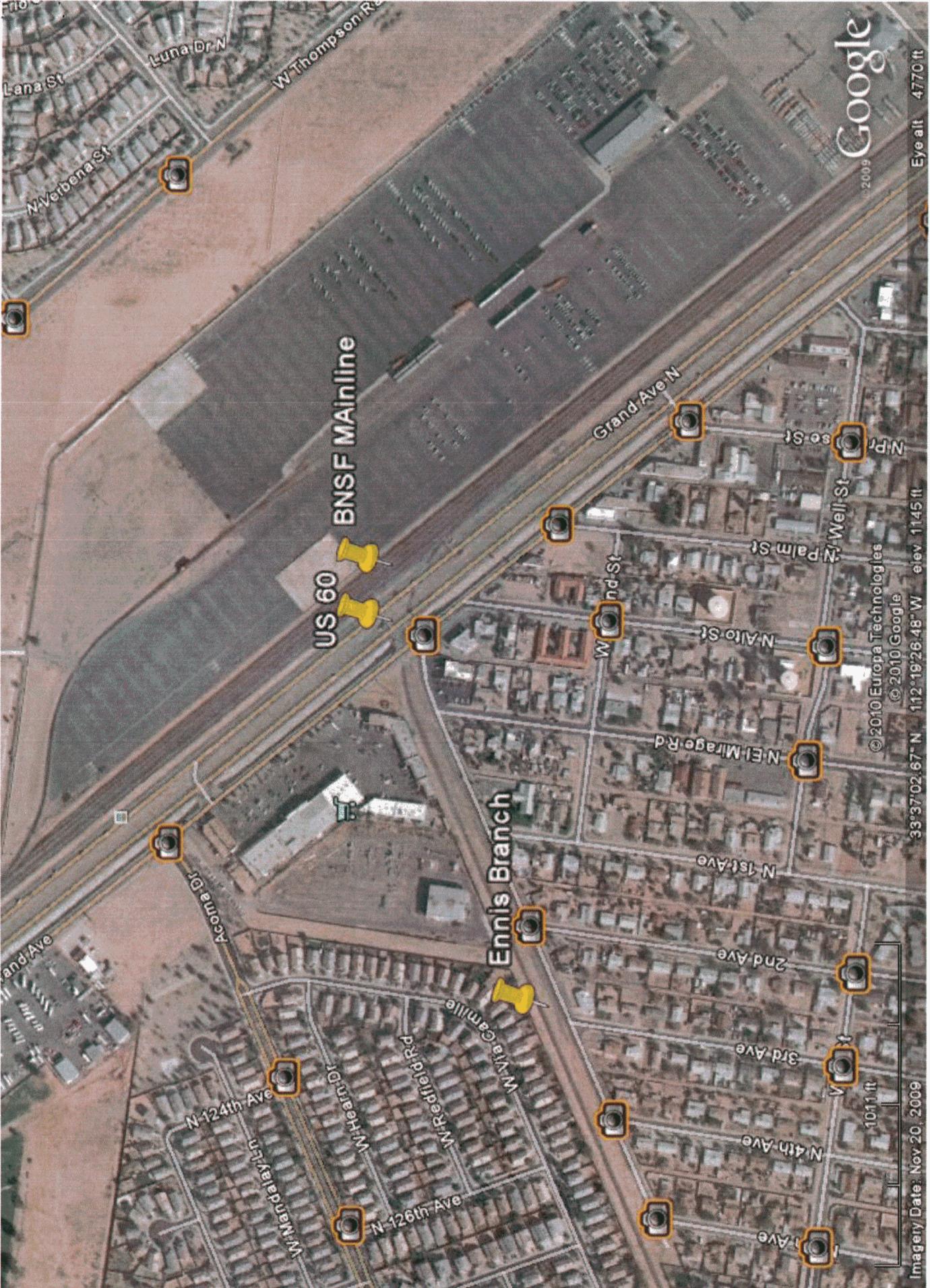
Kelly Roy - Utility Coordinator Maricopa County
2901 West Durango Street
Phoenix, Arizona 85009-6357 6/1/2010

Patrick Black
Fennemore Craig
3003 North Central Ave. Ste. 2600
Phoenix, AZ 85012
Attorney for BNSF

Robert Travis Arizona Department of Transportation
205 South 17th Avenue, Mail Drop 618E
Phoenix, Arizona 85007 6/1/2010

Melvin Thomas
Manager of Public Projects
BNSF Railway
740 East Carnegie Dr.
San Bernardino, CA 92408

Exhibit A



Google

2009

Eye alt 4770 ft

BNSF MAINLINE

US 60

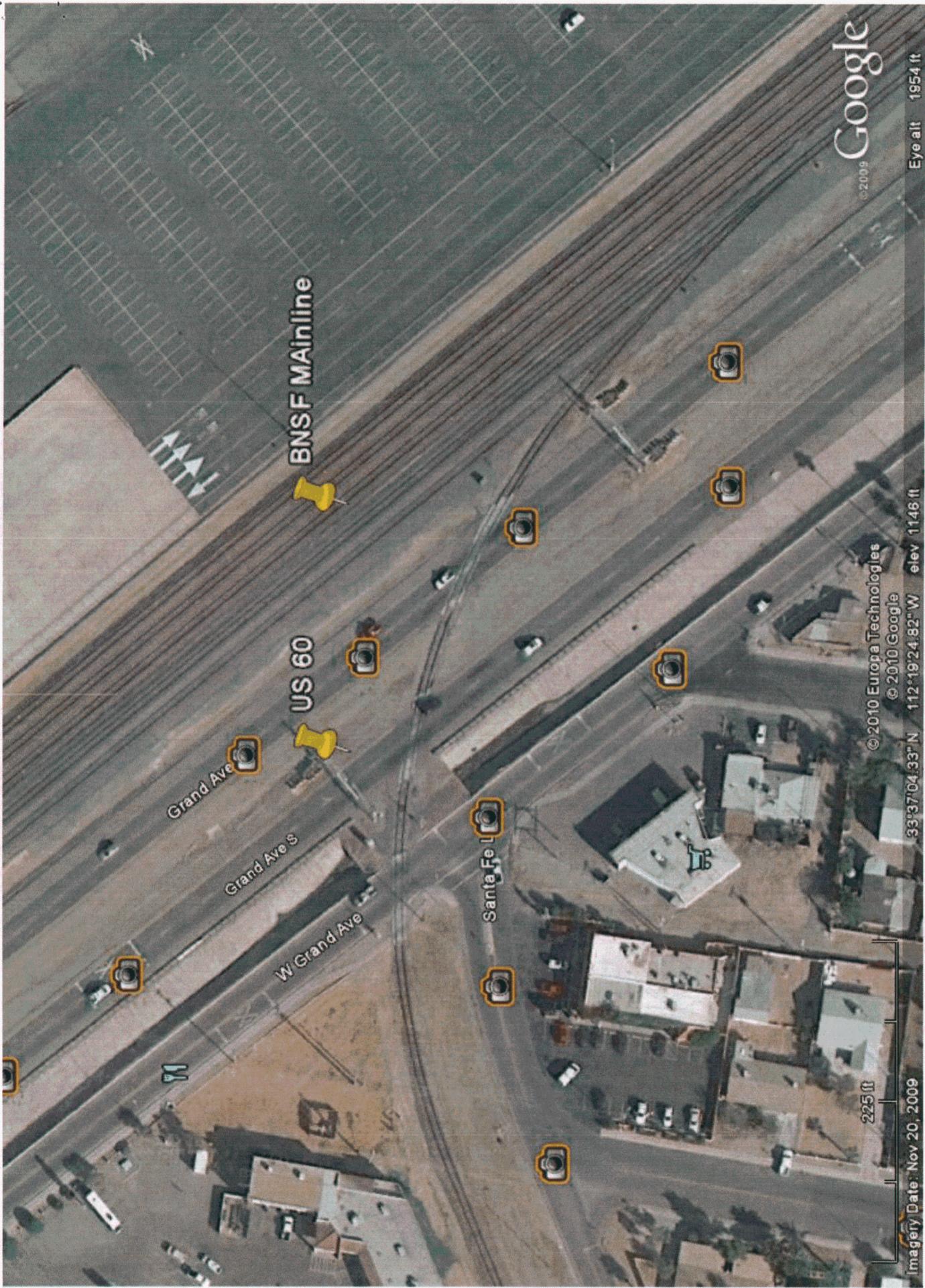
Ennis Branch

© 2010 Europa Technologies
© 2010 Google

33°37'02.67" N 112°18'26.48" W elev 1145 ft

1011 ft

Imagery Date: Nov 20, 2009



©2009 Google

Eye alt 1954 ft

BNSF Mainline

US 60

Grand Ave

Grand Ave S

W Grand Ave

Santa Fe

©2010 Europa Technologies

©2010 Google

33°37'04.33" N 112°19'24.82" W elev 1146 ft

225 ft

Imagery Date: Nov 20, 2009

Exhibit B

TO FENNERHORE

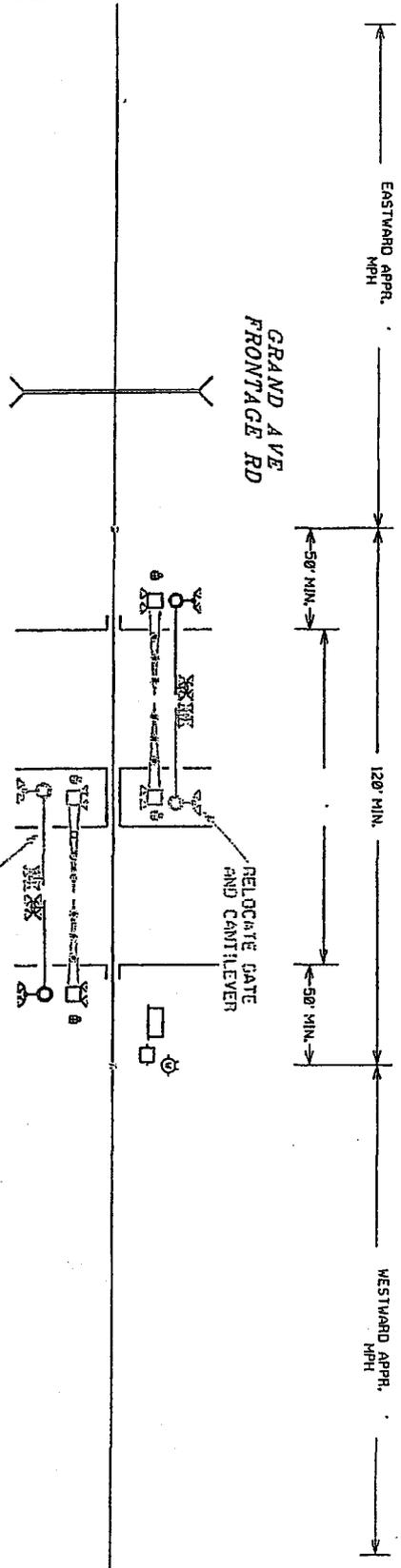
EASTWARD APPR.
MPH

The Burlington Northern & Santa Fe Railway Company

TO PHOENIX

WESTWARD APPR.
MPH

GRAND AVE
FRONTAGE RD



GRAND AVE
DOT # 025 700 D

RELOCATE GATE
AND CANTILEVER

INSTALL: CANTILEVERS, GATES & FLASHERS
CONTROL DEVICES: CONSTANT WARNING

NO. 11

OUT

SALVAGE: NONE

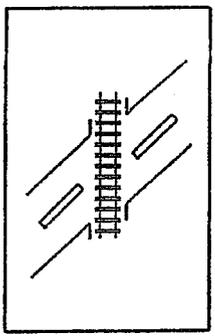
- INSTRUMENT HOUSE
- BELL
- METER
- CROSSING CONTROL CONNECTIONS
- BIDIRECTIONAL CROSSING CONTROL
- UNIDIRECTIONAL CROSSING CONTROL
- COUPLER OR TERMINATION
- GUARD RAIL

Warning device placement:

Clearance to C.L. Track = Min. 12'
Edges of Road to C.L. Foundation:

Min. 4'3" with curb,
Min. 8'3" without curb,
Max. 12'
25' Min. to Near Rail
30' Min. to Edge of Road
ALL LIGHTS TO BE LED

House Clearance:



BNSF RAILWAY CO.
 LOCATION: EL MIRAGE, AZ
 STREET: GRAND AVE.
 L.S. 7209
 M.P. 000.20
 DOT # 025-700-D
 DIVISION: SOUTHWEST
 SUBDIVISION: ENNIS
 KANSAS CITY
 ND SCALE
 DATE: 07/14/2009
 FILE: 7209000.20.dgn
 DDF/DDF

7209000_20.dgn 7/14/2009 1:07:36 PM

Exhibit D-2
 Signal Plan
 Agreement 3112-08-BNSF
 Project ARRA 060-B(201)A
 DOT # 025 700 D