ORIGINAL

STAFF MEMORANDUM

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To: THE COMMISSION

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AZ CORP COMMISSION
DOCKET CONTROL

From: Steven M. Olea
Interim Director
Safety Division

Date: October 6, 2009

RE: IN THE MATTER OF THE APPLICATION OF THE CITY OF EL MIRAGE TO UPGRADE TWO EXISTING CROSSINGS OF THE BURLINGTON NORTHERN SANTA FE RAILWAY AT DYSART ROAD AND THUNDERBIRD ROAD IN THE CITY OF EL MIRAGE, MARICOPA COUTNY, ARIZONA, AAR/DOT NO.025-703Y AND AAR/DOT NO.025-704F.

DOCKET NO. RR-02635B-09-0389

Background

On August 11, 2009, the City of El Mirage ("City") filed with the Arizona Corporation Commission ("Commission") an application for approval for the Burlington Northern Santa Fe Railroad ("Railroad") to upgrade two existing crossings at the Railroad's tracks at Dysart Road and Thunderbird Road, in El Mirage, Arizona at AAR/DOT No.025-703-Y and 025-704-F.

The City of El Mirage is the road authority for Dysart and Thunderbird Roads. Flashing lights, bells and automatic gates were installed at Dysart Road by Commission Decision No. 54358 on February 13, 1985. By Commission Decision No. 54359, dated February 13, 1985, flashing lights, automatic gates and bells were installed at Thunderbird Road.

On March 7, 2007, Commission Safety Division Railroad Staff ('Staff"), the Railroad, and Wood, Patel & Associates, consultants for the City, participated in a diagnostic review of the proposed improvements to the Dysart/Thunderbird intersection and the two crossings. The following is a break down of the crossings in this application, including information about the crossings, which was provided to Staff by the City and their consultants.

Geographical Information

The most recent estimate of the City's population is 40,000 residents. The Dysart and Thunderbird crossings are located within the City on the Railroad's Ennis Subdivision. The Ennis Subdivision begins near the intersection of Thompson Peak Parkway and Grand Avenue in the City and runs in a southwesterly direction through the communities of Surprise, Peoria and Waddell. This rail line extends approximately ten miles and serves numerous customers along the line before ending. At Dysart and Thunderbird Roads the rail line crosses the intersection diagonally, which creates the two

separate crossings **(See Attachment "A").** The immediate area surrounding the crossings is primarily residential and commercial developments **(See Attachment "B").**

Dysart and Thunderbird Roads

Dysart Road is a two lane paved roadway running in a north/south direction, while Thunderbird Road is also a two lane paved roadway running in an east/west direction Currently, the Dysart/Thunderbird intersection consists of one lane in each direction with a designated left turn lane. Curb, gutter and sidewalks are present in most areas. In addition, the crossings currently have the following safety features: flashing lights, automatic gates and bells as well as pavement markings and proper signage. The Dysart and Thunderbird intersection project will include improvements to Dysart Road and Thunderbird Road, ultimately widening the roadways to a 9-lane intersection with raised medians. There will be three through lanes on both roadways in each direction, two left turn lanes in each direction, as well as a single right turn lane in each direction **(See Attachment "C")**. New traffic signals will be installed at the intersection; with a simultaneous pre-emption circuit interconnected between the traffic signal controller and the train detection circuitry. The interconnected circuitry is necessary due to the close proximity of the roadway intersection and the railroad tracks. The Federal Highway Administration's "Manual on Uniform Traffic Control Devices", Part 8, Section 8D.07, sets the standard for the interconnection whenever the railroad tracks are within 200 feet of the traffic intersection.

Upgrades to the Railroad's portion of the project include: 12 inch LED flashing lights, automatic gates in the median, as well as curb-side gates, bells and a new concrete crossing surface. Additionally, there will be cantilevers with 12-inch LED flashing lights installed for all directions of traffic. Constant warning time circuitry will be installed, along with wayside horns. In 2007, the City hired Railroad Controls Limited (RCL), a railroad signal engineering group, to conduct an evaluation of the grade crossings within the City to determine appropriate treatments to create a new Quiet Zone. The use of wayside horns at all grade crossings within the City was one alternative recommended by the RCL study. Staff is not aware of a Notice of Intent by the City to create a Quiet Zone, which is required by federal regulation

The estimated cost of the proposed railroad crossing improvements is $1,299,776. The City will contribute 60% and the City of Surprise 40% toward the cost of the improvements.

Traffic Data

Traffic data for the Dysart/Thunderbird intersection was collected from the Maricopa County Department of Transportation's website. The website shows for the year 2009, that the Average Daily Traffic (ADT) for Dysart Road southbound is 5,931 vehicles per day (vpd), and 6,767 vpd for northbound traffic. According to the website, the projected ADT for Dysart Road in the year 2030 is 14,593 vpd southbound and 14,564 vpd for northbound traffic. For the year 2009 on Thunderbird Road, the ADT for eastbound traffic is 9,088 vpd and 5,400 vpd for westbound traffic. Projected ADT for the year 2030 for Thunderbird Road is 9,901 vpd eastbound and 10,474 vpd for westbound traffic. The current Level of Service (LOS) for Dysart Road southbound is

LOS C and LOS D for northbound traffic. The projected LOS for Dysart Road for the year 2030 is LOS D for north and southbound travel. For Thunderbird Road, the current LOS for eastbound travel is LOS D and LOS B for westbound traffic. For the year 2030, the projected LOS for east and westbound travel is LOS D.

The American Association of State Highway and Transportation Officials (AASHTO) Geometric Design of Highways and Streets, 2004, states that the Level of Service 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" (light traffic) or how "bad" (heavy traffic) traffic is projected to be.

The posted speed limit on Dysart Road is 40 mph, and 30 mph on Thunderbird Road. Staff, as well as Federal Railroad Administration ("FRA") accident/incident records, indicate no accidents at either crossing.

Alternative routes from this crossing are as follows; Cactus Road is 1.25 miles to the southwest, and Grand Avenue is 1.25 miles to the northeast. Both of these alternatives are at-grade crossings.

Train Data

Data provided by the Railroad regarding train movements through these crossings are as follows:
Train Count: Average of 2 trains per day
Train Speed: 10 mph
Thru Freight/Switching Moves: All train movements through these crossings are pass-through movements with no switching operations.

Schools and Bus Routes

Information about schools, and school buses, in the area was provided by the City. The proposed project is located in the Dysart Unified High School District and the Dysart Elementary No. 89 District. Schools in the vicinity are as follows:

High Schools
- ✓ Dysart High School, 11425 N. Dysart Road

Elementary Schools
- ✓ Dysart Elementary School, 12950 W. Varney Road
- ✓ El Mirage Elementary School, 13500 N. El Mirage Road
- ✓ West Point Elementary School, 13700 W. Greenway Road
- ✓ Surprise Elementary School, 12907 W. Greenway Road

Information given to Staff from the City states that in a 2009 bus count, 16 school busses crossed through the Dysart/Thunderbird intersection per day. However, due to the angle of the railroad tracks through the intersection, only about half of those bus trips passed over the railroad tracks.

Hazardous Materials

Staff asked the City if they knew of any hazardous material traffic across these crossings. The City responded that:

There are no facilities utilizing hazardous materials located in the vicinity of the crossings, and field observations by staff did not report any significant number of vehicles carrying such materials traversing the railway grade crossings.

Hospitals

There are two hospitals in the vicinity of these crossings; they are the Del E. Webb Memorial Hospital, 4.5 miles to the northwest, and the Boswell Memorial Hospital, 3.5 miles southeast of the crossings. The crossings are centrally located between the two hospitals. Assuming the most direct route would be taken by emergency vehicles, only emergencies within close proximity would use the crossings.

Zoning

The City gave the following response as to how the surrounding areas from these crossings are zoned:

Existing zoning of land in the immediate vicinity of the intersection and affected grade crossings are B-2(General Business), B-1(Neighborhood Business) and 1-2(General Industrial) on the El Mirage (east) side of the intersection. On the Surprise (west) side of the intersection, existing zoning is PAD (commercial) on the southwest corner, and R-2(residential) on the northwest corner. Both southwest and southeast corners are currently vacant and anticipated commercial development.

Spur Lines

No spur lines have been removed within the last three years inside a 10 mile radius of the crossings in this application.

Grade Separation

With regard to grade separating the Dysart/Thunderbird intersection, the City gave the following response:

With the proposed improvements to Dysart Road and Thunderbird intersection, the location of the at-grade crossings remains unchanged. A grade separation would have the following undesired consequences: 1) there are several utilities in this intersection that cannot support 30 feet of additional embankment needed for a grade separated crossing. 2) Existing businesses would lose driveway access from fill. 3) There is insufficient right-of-way to accommodate 30 feet high embankment slopes along both Dysart Road and Thunderbird Road.

FEDERAL HIGHWAY ADMINISTRATION ("FHWA") GUIDELINES

The 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:

FHWA - GRADE SEPARATION GUIDELINES		
		Dysart/Thunderbird Crossing
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	NO
Vehicle delay exceeds 40 vehicle hours per day	Crossing Currently meets the criteria	NO
	Crossing meets the criteria by 2030	NO

Crossing Closures

Given the amount of growth in the area, Staff would not recommend a closure of this crossing or any other crossing in the vicinity at this time.

Staff Conclusions

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

Brian H. Lehman
Railroad Supervisor
Safety Division

Originator: BHL

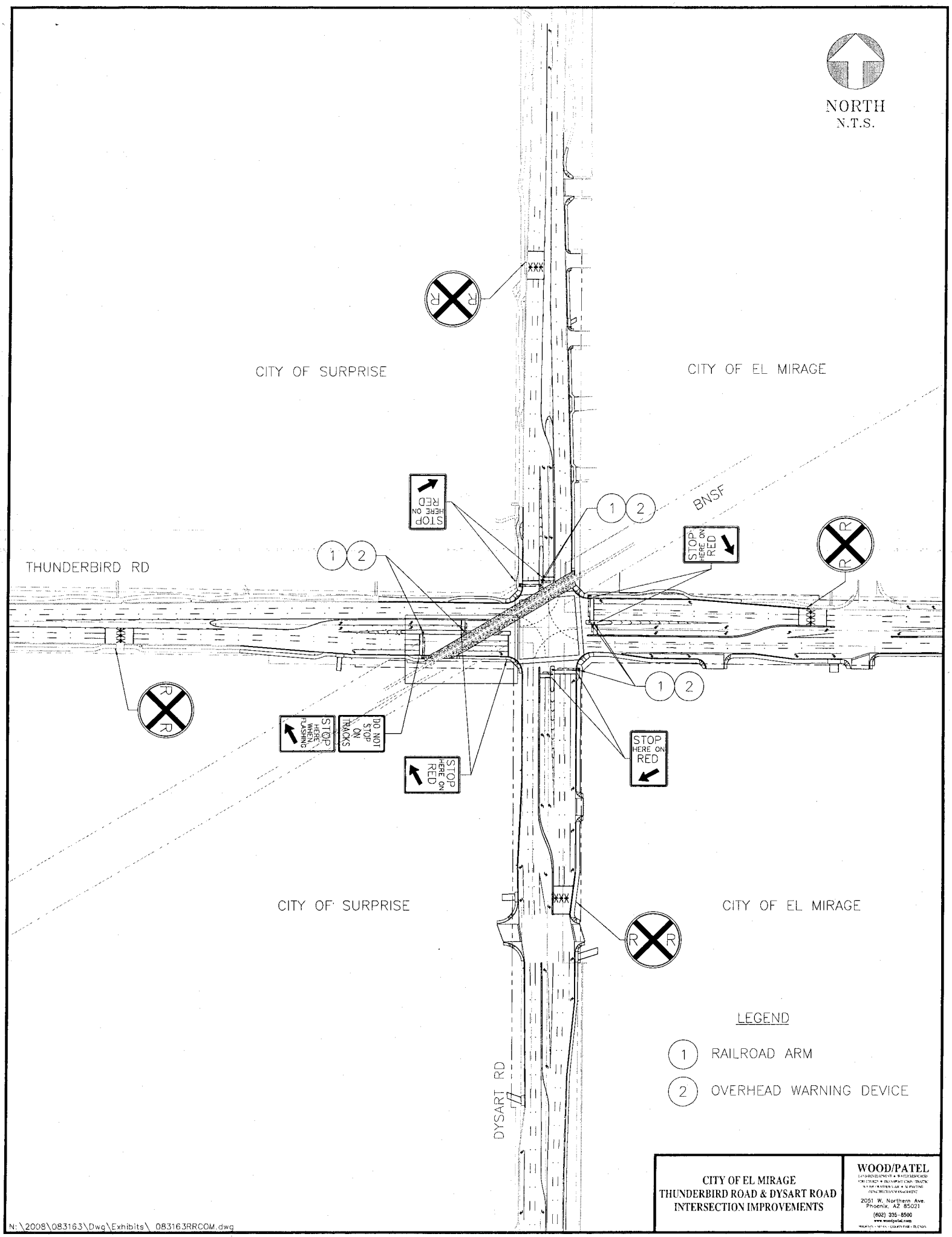
Attachment "A"

DYSART ROAD
BNSF CROSSING
BNSF CROSSING
THUNDERBIRD ROAD
© 2009 Tele Atlas
Google
Imagery Date: Nov 2005
33°36'33.10" N 112°20'30.94" W elev 1153 ft
Eye alt 1498 ft

Attachment "B"

N 131st Ln
N 132nd Ct
W Calavar Rd
WALMART SHOPPING CENTER
NEW CROSSING
W Thunderbird Rd
N Dysart Rd
N 130th Ave
© 2009 Tele Atlas
Google
Imagery Date: Nov 2005
33°36'33.27" N 112°20'29.87" W elev 1153 ft
Eye alt 2893 ft

Attachment "C"


NORTH
N.T.S.
CITY OF SURPRISE
CITY OF EL MIRAGE
BNSF
THUNDERBIRD RD
STOP HERE ON RED
STOP HERE ON RED
STOP HERE WHEN FLASHING
DO NOT STOP ON TRACKS
STOP HERE ON RED
STOP HERE ON RED
CITY OF SURPRISE
CITY OF EL MIRAGE
DYSART RD
LEGEND
1 RAILROAD ARM
2 OVERHEAD WARNING DEVICE
CITY OF EL MIRAGE
THUNDERBIRD ROAD & DYSART ROAD
INTERSECTION IMPROVEMENTS
WOOD/PATEL
2051 W. Northern Ave.
Phoenix, AZ 85021
(602) 335-8500
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Docket No. RR-02635B-09-0389

Docket Control
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Melvin V. Thomas
Manager Public Projects
BNSF
740 E. Carnegie Drive
San Bernardino, Ca. 92408-3571

Patrick J. Black
Attorney for BNSF
3003 N. Central Ave. Ste. 2600
Phoenix, Az. 85012

Robert Travis, PE
State Railroad Liaison
Arizona Department of Transportation
205 S 17th Ave, Room 357
MD 618E
Phoenix, AZ 85007

Carnell Thurman, P.E.
Wood/Patel Engineering
2051 W. Northern Ave. Ste. 100
Phoenix, Az. 85021

Lance Calvert
City of El Mirage
Public Works Director
12145 NW Grand Avenue
P.O. Box 26
El Mirage, AZ 85335

Kelly Roy
MCDOT
Utility Project Coordinator
2901 West Durango St.
Phoenix, Az. 85009-6357

Suneel Garg
City of Surprise
Engineering Department
12425 W. Bell Road Suite D100
Surprise, Az. 85374-9002