

STAFF MEMORANDUM



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To: THE COMMISSION

From: Robert Marvin
Director
Safety Division

Date: August 8, 2014

RE: IN THE MATTER OF THE APPLICATION OF THE TOWN OF GILBERT TO UPGRADE EXISTING CROSSINGS OF THE UNION PACIFIC RAILROAD COMPANY AT COOPER ROAD, DOT NO. 741-816-D, AND GUADALUPE ROAD, DOT NO. 741-815-W, IN THE TOWN OF GILBERT, MARICOPA COUNTY, ARIZONA.

DOCKET NO. RR-03639A-14-0157

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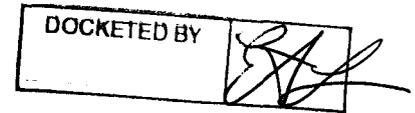
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ORIGINAL

Background

On May 12, 2014, the Town of Gilbert ("Town") filed with the Arizona Corporation Commission ("Commission") an application for approval for the Union Pacific Railroad ("Railroad") to upgrade the existing crossings in Gilbert, Arizona located at Cooper Road, DOT No. 741-816-D, and Guadalupe Road, DOT No. 741-815-W.

On March 5, 2013, the Safety Division's Railroad Safety Section ("Staff") the Railroad, and the Town participated in diagnostic review of the proposed improvements at Cooper and Guadalupe Roads. All parties present were in agreement to the proposed improvements at the crossings. The following is a break down of the crossings in this application, including information about the crossings that was provided to Staff by the Town and its consultants.

Geographical Information

Incorporated on July 6, 1920, the Town is a relatively new community that has seen tremendous growth during the past two decades. The Town has experienced a rapid transition from a historically agriculture-based community to an urban center and suburb in the Phoenix Metropolitan Area. In the last two decades, the Town has grown at a pace unparalleled by most communities in the United States, increasing in population from 5,717 in 1980 to over 229,972 in 2014.

Cooper/Guadalupe Roads

The rail line in this area runs in a southeast to northwest direction. The Railroads tracks intersect two of the four legs of the intersection of Cooper and Guadalupe. This project will improve the operational characteristics and capacity of the Cooper/Guadalupe intersection. The proposed roadway work includes adding a through vehicular lane in each of the four directions, adding raised medians, and improving pedestrian crossings. Each crossing will be widened thirty-five feet asymmetrically from the centerline of each roadway. The majority of the added

width will be to the north on Guadalupe, and to the east on Cooper. Railroad proposed upgrades will replace the existing flashing lights, gate mechanisms, bells and detection circuitry, with the latest in industry standards to include: 12-inch LED flashing lights, cantilevers with 12-inch LED flashing lights, median and curb-side automatic gates, bells, and constant warning time with advanced preemption circuitry. New concrete crossing surfaces will be added, along with replacing any impacted pavement markings. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the State. The estimated cost of the proposed railroad crossings upgrades is \$1,980,514. The Town is paying for the entire cost of the crossing improvements through Proposition 400, Maricopa Association of Governments ("MAG") monies. The Railroad will maintain the warning devices and the crossing surface.

Average Daily Traffic ("ADT") was provided by the Town. As of April 2014, the ADT for Cooper Road is 32,488 vehicles per day ("vpd"), and for Guadalupe Road, 18,846 vpd. The current Level of Service ("LOS") for the Cooper/Guadalupe intersection is LOS D during AM peak hours and LOS E during PM peak hours.

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" or how "bad" traffic is projected to be.

The posted speed limit on both Cooper and Guadalupe Roads is 45 mph. Staff records, as well as Federal Railroad Administration ("FRA") accident/incident records, indicate on Guadalupe Road, 4 accidents, with one fatality and one injury. The first incident occurred on April 29, 1994, and resulted in one injury caused by the person driving around the downed gate. The second incident occurred on March 14, 1997 with no injuries and was caused by the driver, driving around the downed gate. The third incident occurred on April 6, 2005 with no injuries and was also caused by the driver, driving around the lowered gate. The fourth incident occurred on November 2, 2005 and resulted in a fatality. It was the result of the driver stopping on the tracks and being struck by the train. Records indicate no incidents at Cooper Road.

Alternative routes from these crossings are as follows; McQueen Road, 1.13 miles northwest of Guadalupe Road and Gilbert Road, 1.3 miles southeast of Copper Road. Both are at-grade crossings.

Train Data

Data provided by the Town regarding train movements through these crossings are as follows:

Train Count: 11 total average trains per day (all freight trains/no passenger trains)

Train Speed: 65 mph

Thru Freight/Switching Moves: All movements through these crossings are thru freight.

Schools and Bus Routes

The Town gave the following response about schools located near these crossings:

There are no schools in the immediate area of the crossings. Oak Tree Elementary is located at the corners of Neely Street and Houston Avenue approximately 0.7 miles from the intersection. Playa Del Ray Elementary is located at Horne Street and Cayman Drive approximately 0.65 miles from the intersection.

Hospitals

The Town gave the following response about hospitals in the area;

No hospitals are in the area of the Cooper Road and Guadalupe Road intersection and crossing. The Town of Gilbert has a fire station located on Guadalupe Road approximately 0.75 west of the intersection that has emergency vehicles that use the crossings. The Town of Gilbert has a fire station located on Cooper Road approximately 0.75 south of the intersection that has emergency vehicles using the crossing. The Cooper Road fire station will close and move locations in 2015.

Hazardous Materials

The Town gave the following response when asked about vehicles transporting hazardous materials through these crossings:

No known vehicles carrying hazardous materials use these crossings. The crossings are located in a light industrial section of the Town of Gilbert so there may be hazardous material delivery occasionally.

Zoning

Staff requested the Town provide information regarding the type of zoning in adjacent areas from these crossings. The following was the Town's response:

Near the Cooper Road and Guadalupe Road intersection and crossings the land is zoned commercial on the NW, NE and SW corners. It is zoned light industrial on the SE corner. Light industrial zoning follows the railroad to the north and south. A multi-family residential neighborhood is located on Guadalupe Road 200 feet west of the crossing. All of the land is adjacent to the intersection and the crossings and is currently developed. It is planned that the nursery on the NW corner of Cooper/Guadalupe will redevelop into a commercial property at some time in the future.

Spur Lines

The Town gave the following answer regarding spur lines in the area that were removed by the Railroad:

No spur removals within 10 miles of the Cooper Road and Guadalupe Road intersection are known.

Federal Highway Administration ("FHWA") Guidelines Regarding Grade Separation

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:

		Cooper/Guadalupe Road
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, the Town gave the following response about delay times for vehicles at the crossings in this application. The delay time is measured from the point that the warning devices are activated at the crossing to the time the train has cleared the crossing and the warning devices are reset.

(1) Based on 1 mile of train at 35 mph (35 mph is used in lieu of 60 mph to be conservative and account for the proximity of the junction to the north), 25 seconds of preemption time, and 15 seconds for the warning devices to reset, the average delay time per train is 2.4 minutes. At eleven trains per day, the average delay time is 26.4 minutes per day.

(2) Based on a stopping time of 28 seconds and a time of 125 seconds to accelerate and to clear the track and 25 seconds of preemption time and 15 seconds for the warning devices to reset, the average delay time per train if a train stops on the track is 3.2 minutes. These times are based on one mile of train and charts from Railroad Engineering, Second Edition, John Wiley & Sons, Inc. 1982 (Figure 10.10 to estimate deceleration time and Figure 10.4 to estimate acceleration time to clear one mile of train).

Current delays fall well below the FHWA recommended threshold of 40 delay hours per day. Future delays also do not exceed 40 hours. It is very likely that the road authority would consider some kind of roadway project to address the traffic delays before the level of delay got to the 40 hour delay period.

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 either crossing. Based on future traffic projections submitted by the Town, the Crossing Exposure Index will not be met in the year 2030. 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, the Town gave the following response:

With the proposed improvements to both Cooper and Guadalupe Roads, the locations of the at-grade crossings remain unchanged. A grade separation would have the following undesired consequences: 1) Access to existing businesses and to anticipated development would be severed for an estimated 2,000 feet along both Cooper and Guadalupe Roads; 2) There are several utilities in both Cooper and Guadalupe Roads that cannot support 30 feet of additional embankment needed for a grade separation; 3) There is insufficient right-of-way to accommodate a 30 foot high embankment slopes along both Cooper and Guadalupe Roads; and 4) The close proximity both crossings have to the intersection of Cooper and Guadalupe is inadequate to allow for the 620 feet of sight distance required by the Town with a grade-separated crossing.

Staff has utilized the FHWA Guidelines to determine the potential need for grade separation at this crossing. Based on existing conditions, the crossings in this application meet

none of the nine criteria for consideration of grade separation. Based on future projections by the Town, none of the nine criteria will be met by 2030.

Crossing Closure

The area surrounding these crossings is highly developed with both commercial businesses and residential dwellings. To close these crossings would have a negative effect on many of the local businesses and limit access to residences. Therefore, Staff would not recommend closure of these crossings.

Staff Conclusions

Having reviewed all applicable data, Staff supports the Town's application. Staff believes that the upgrades are in the public interest and are reasonable. Staff believes that the measures proposed by the Town 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 Town's application.



Brian H. Lehman
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Safety Division

Originator: BHL

Original and thirteen (13) copies
of the foregoing were filed this
_ 8th _ day of August, 2014 with:

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

Copy of the foregoing mailed
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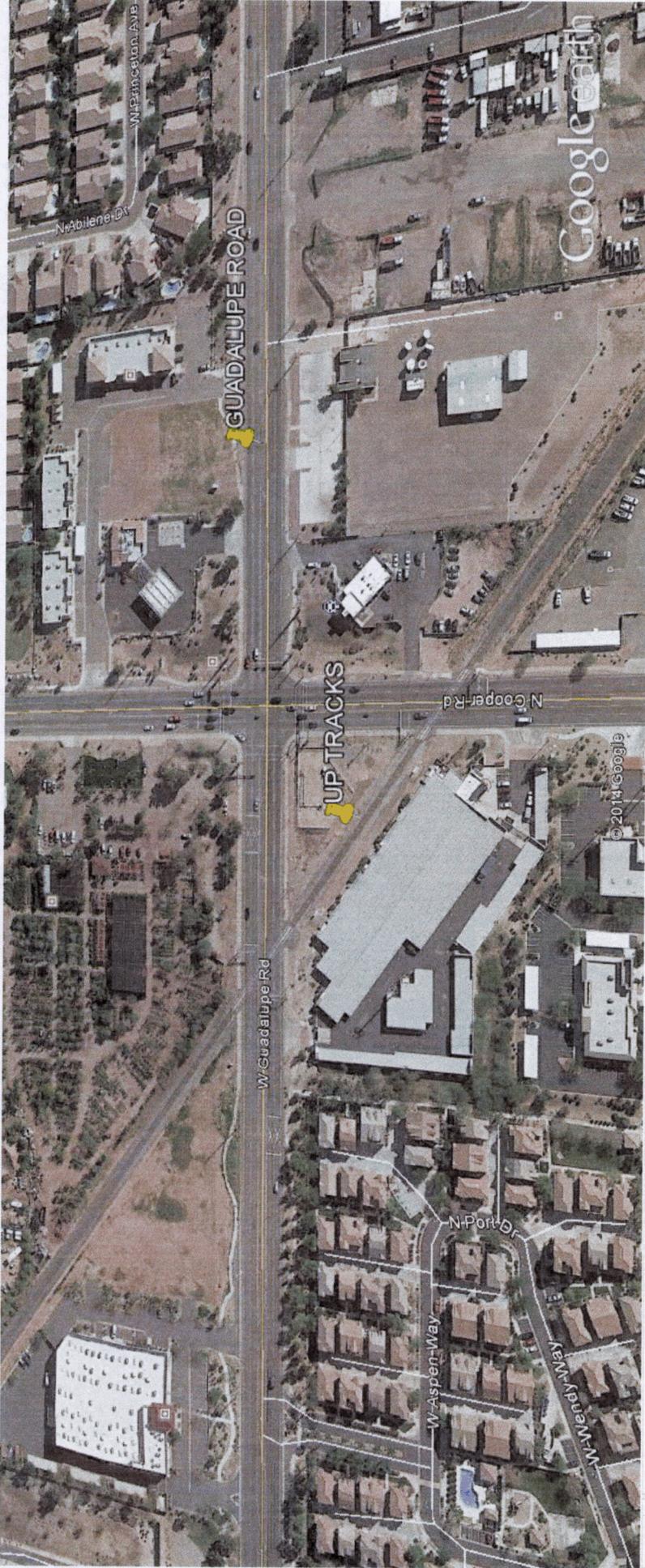
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UP TRACKS



GUADALUPE