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Transcript Exhibit(s)

Docket #(s): RR-03639A-11-0262

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Exhibit #: SI, AI

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Arizona Corporation Commission

**DOCKETED**

OCT 28 2011

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DOCKET CONTROL  
ARIZONA CORPORATION COMMISSION

2011 OCT 28 PM 2:19

**RECEIVED**

ORIGINAL

STAFF MEMORANDUM

To: THE COMMISSION

RECEIVED

From: Steven M. Olea  
Interim Director  
Safety Division

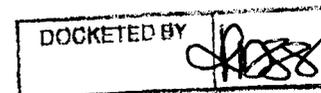
2011 SEP -8 P 2:33

Date: September 8, 2011

AZ CORP COMMISSION  
DOCKET CONTROL



SEP 8 2011



RE: IN THE MATTER OF THE APPLICATION OF THE UNION PACIFIC RAILROAD COMPANY TO ALTER AN EXISTING CROSSING OF THE UNION PACIFIC RAILROAD AT TANGERINE ROAD IN THE TOWN OF MARANA, PIMA COUNTY, ARIZONA, USDOT NO. 741-088-V.

DOCKET NO. RR-03639A-11-0262

**Background**

On June 30, 2011, the Union Pacific Railroad Company ("Railroad") filed with the Arizona Corporation Commission ("Commission") an application for approval for the Railroad to alter an existing crossing by adding a second main track through the Tangerine Road crossing, USDOT No. 741-088-V, located in Pima County ("County") in the Town of Marana ("Town").

Commission Decision No. 46978 dated May 24, 1976 approved the installation of flashing lights, automatic gates and bells at the Tangerine Road crossing.

On March 1, 2007, the Commission's Railroad Safety Staff ("Staff"), the Railroad, County, and the Town participated in diagnostic review of the proposed improvements at Tangerine Road. All parties present were in agreement with the proposed improvements at the crossing. The following is a break down of the crossing in this application, including information about the crossing that was provided to Staff by the Railroad and its contractors.

**Geographical Information**

Tangerine Road is located in the County within the Town's limits. A 2010 estimate by the U.S. Census Bureau puts the Town's population at 34,961.

The rail line in this area runs in a southeast to northwest direction, parallel to Interstate 10 ("I-10") and the I-10 Frontage Road. Tangerine Road is an east to west main arterial with an interchange at I-10. The general area surrounding the railroad crossing is a mix of commercial, industrial and some residential. (See Appendix "A")

**TANGERINE ROAD**

The proposed second main track at this crossing will be north of the existing main track. The Railroad will re-profile a portion of the two lane asphalt road to meet the new track. The Railroad's proposed upgrades will replace the existing incandescent flashing lights, gate mechanisms, bells and detection circuitry, with the latest in industry standards to include: 12 inch

LED flashing lights, automatic gates, bells, and constant warning time circuitry. A new concrete crossing surface 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 crossing upgrade is \$430,500. The Railroad is paying for the entire cost of the crossing improvements, broken down by signal and crossing surface work, with the signal work costing \$355,900 and the crossing surface \$74,600.

Traffic data for Tangerine Road was provided to the Railroad by Jennifer Crumbliss of HDR Engineering and Keith Brann, Assistant Director of Public Works, for the Town. The data provided showed the Average Daily Traffic ("ADT") for 2011 to be 6,500 vehicles per day ("vpd"). The projected 2030 ADT is 28,500 vpd. The current Level of Service ("LOS") for this two lane road is LOS A for eastbound and westbound traffic.

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 Tangerine Road is 40 MPH. Staff records, as well as the Federal Railroad Administration ("FRA") accident/incident records, indicate no accidents at this crossing.

Alternative routes from this crossing are as follows: to the west 4.03 miles is Marana Road, an at-grade crossing and to the east 4.73 miles is the Twin Peaks grade separation.

### **Train Data**

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

Train Count: 48 total average trains per day (46 freight, and 2 passenger trains)

Train Speed: 79 mph passenger / 70 mph freight

Thru Freight/Switching Moves: All moves through this crossing are thru freight. According to Union Pacific's, Director of Public Affairs, Zoe Richmond, there are no switching moves across this crossing. This crossing is used by Amtrak twice per day, three times per week.

### **Schools and Bus Routes**

There are several schools within the Town that are near the Tangerine Road crossing. They are:

- ✓ Marjorie W. Estes Elementary School – 11279 W. Grier Road
- ✓ Marana Middle School – 11279 W. Grier Road
- ✓ Marana High School – 12000 W. Emigh Road

According to Alisha Meza, Operations Manager of Transportation for Marana Unified School District, school buses cross Tangerine Road at least 16 times per day.

### Hospitals

The nearest hospital to the Tangerine Road crossing is the North West Medical Center in the Town approximately 12 miles from Tangerine Road.

### Hazardous Materials

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

*Union Pacific has been unable to obtain any information responsive to this request. It is Union Pacific's understanding that any vehicle carrying hazardous materials may utilize public crossings unless otherwise posted, but Union Pacific knows of no way it can investigate or determine whether such vehicles use these crossings or with what frequency.*

### Zoning

Staff requested the Railroad provide information regarding the type of zoning in adjacent areas from the crossing. The following was their response:

*Union Pacific believes that the second part of CW 1.9 calls for speculation as to whether new housing developments, industrial parks, or other developments will occur in the future. In addition, Union Pacific does not have access to such information, but instead must rely on information provided by others. With those caveats, Union Pacific responds as follows:*

*Pima Association of Governments has a 2007 Land Use Map that matches the field diagnostic observations. The observed land use from the field diagnostics are shown below:*

<i>Crossing</i>	<i>2007 Observed Land Use</i>	<i>2007 Existing Pima County Land Use</i>
<i>Tangerine Road</i>	<i>Agricultural/Residential</i>	<i>Agricultural/Ranching Low Residential</i>

*The Pima Association of Governments Planning Department can better answer the question of future developments. They review development impact studies and regulate zoning.*

### Spur Lines

The Union Pacific gave the following answer regarding spur lines located in the area:

*Using the definition of a "spur line" or "spur track" as "a stub track of indefinite length diverging from a main track or other track," ACC Regulation R14-5-101(20), no spur lines have been removed within the last three years inside a 10-mile radius of the crossing covered in this application.*

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

### FHWA - GRADE SEPARATION GUIDELINES

Highway-rail grade crossings should be considered for grade separation or otherwise eliminated across the railroad right of way whenever one or more of the following conditions exist:

		Tangerine 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 <sup>1</sup>
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	YES <sup>2</sup>
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	RURAL – YES <sup>3</sup>
	Crossing meets the criteria by 2030	YES <sup>4</sup>
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 <sup>5</sup>
Vehicle delay exceeds 40 vehicle hours per day	Crossing Currently meets the criteria	NO
	Crossing meets the criteria by 2030	NO <sup>6</sup>

<sup>1</sup> This table utilizes the recent projected ADT data for the year 2030 as follows: Tangerine =28,500.

<sup>2</sup> The Railroad is projected to exceed 300 million gross tons as of 2016. This projection is based on the fact that the Railroad was exceeding 217 million gross tons with 46 trains per day in 2007 and is projected to run 84 trains per day by 2016. (Train lengths will increase from 6,000 feet to 8,000 feet).

<sup>3</sup> The 2010 crossing exposure was approximately: 350,000.

<sup>4</sup> The projected crossing exposure utilizing the most recent projected VPD data for 2030 is 1,368,000

<sup>5</sup> N/A = Information was not available.

<sup>6</sup> The projected vehicle delay per day utilizing the most recent projected VPD data for 2030 is 7.14 hours

### Vehicular Delays at Crossings

Based on the current single track configuration, the railroad 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.

*Delays for vehicular (roadway) traffic caused by trains occupying a crossing depend on the length and speed of each train traversing the crossing. Because each train can be unique for these values it would be impossible for Union Pacific accurately to provide the time of delay for vehicular traffic either while allowing trains to pass the crossing or because trains are stopped in the crossing. With that caveat, Union Pacific responds as follows:*

*Union Pacific operations are governed by maximum allowable speeds as identified by timetable. Trains at the crossings involved in this application operate at timetable speeds of 65 mph and the average length of trains is currently approximately 6,000 feet. At that train length and speed, the average delay for vehicular traffic (1) to allow the train to pass at this crossing, 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, is approximately 1.549 minutes.*

*The average time vehicular traffic is delayed (2) due to trains stopped on the track for any purpose, 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, varies according to the condition creating the blockage. These varied conditions include mechanical failure such as a broken air hose, a grade crossing accident, or operations such as trains meeting or passing. Given the variety of possible conditions causing trains to be stopped on a crossing, Union Pacific does not catalog the average time vehicular traffic is delayed by stopped trains. With that caveat, Union Pacific responds as follows:*

*A.R.S. § 40-852 requires that, except in cases of unavoidable accident, a train blocking a crossing for more than 15 minutes must be cut to facilitate traffic flow. ACC Regulation R14-5-104(C)(7) and Union Pacific's operating practices allow a train to block a public grade crossing for no more than 10 continuous minutes, unless the train is continuously moving in the same direction during the entire time it occupies the crossing, or the blockage is caused by wrecks, derailments, acts of nature, mechanical failure, or other emergency conditions.*

Current delays fall well below the FHWA recommended threshold of 40 delay hours per day. The 2030 projected vehicle delay per day is 7.14 hours; also well below the 40 delay hours per 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 currently met at this crossing. 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 Railroad gave the following response:

*Union Pacific understands that whether a grade separation is needed is primarily a question of mobility and convenience for vehicular traffic on the roadway, not safety. That is because an at-grade crossing can be safe without constructing a grade separation and*

*eliminating the grade crossing. Based on this understanding, Union Pacific believes the question of whether a grade separation is needed is irrelevant to Union Pacific's application to add a second mainline track at this grade crossing.*

*In addition to the foregoing, grade separation at this crossing is not appropriate for determination at this time because, as Union Pacific understands the situation, the local communities and roadway authorities have not finally determined what priority grade separations at various crossings would have with respect to other public projects, when construction of grade separations could be begun and finished, and how grade separations would be funded. Grade separation was not decided on at this time for this crossing because the communities and roadway authorities should decide the final timing of any proposed grade separations. Before they have done so, it would be premature to consider grade separation now in connection with Union Pacific's application to double-track and improve this crossing.*

*Furthermore, Union Pacific believes the crossing involved in this application is safe without constructing a grade separation. This conclusion is supported by the fact that the Federal Highway Administration authorizes the use of gates and lights at multiple-track grade crossings as proposed in this application. With those caveats, Union Pacific responds as follows:*

*Union Pacific is aware that a new grade separation has opened to traffic at Twin Peaks / Camino do Manana Road. Union Pacific is also aware that grade separations are planned at Ina Road and Ruthrauff Road as part of a joint ADOT/RTA project that includes four interchanges and I-10 reconstruction. The Preliminary Engineering and Environmental Assessment for this project is currently underway and is due to be completed in September 2011. The final design will begin in early 2012 with a potential construction start after 2020. The project is currently locally and federally funded.*

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 one of the nine criteria for consideration of grade separation. Projected data indicates that this crossing may meet two of the nine criteria by the year 2030. Staff does not believe a grade separation is warranted at this time.

#### **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.

#### **Tangerine Road Grade Separation**

The Town of Marana along with several private entities were planning to build a grade separation that would span the I-10 freeway as well as the Railroad's tracks. It was to be located approximately one tenth of a mile to the west of the existing Tangerine Road grade crossing. The Town intended on leaving the existing grade crossing open at Tangerine Road due to the amount of local business traffic that would be affected by closing the crossing. According to Keith Brann of the Town, the project has been postponed due to the lack of funding.

**Staff Conclusions**

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



Brian H. Lehman  
Railroad Safety Supervisor  
Safety Division

Originator: BHL

COPIES of the foregoing mailed  
this 8th day of September, 2011 to:

Docket No. RR-03639A-11-0262

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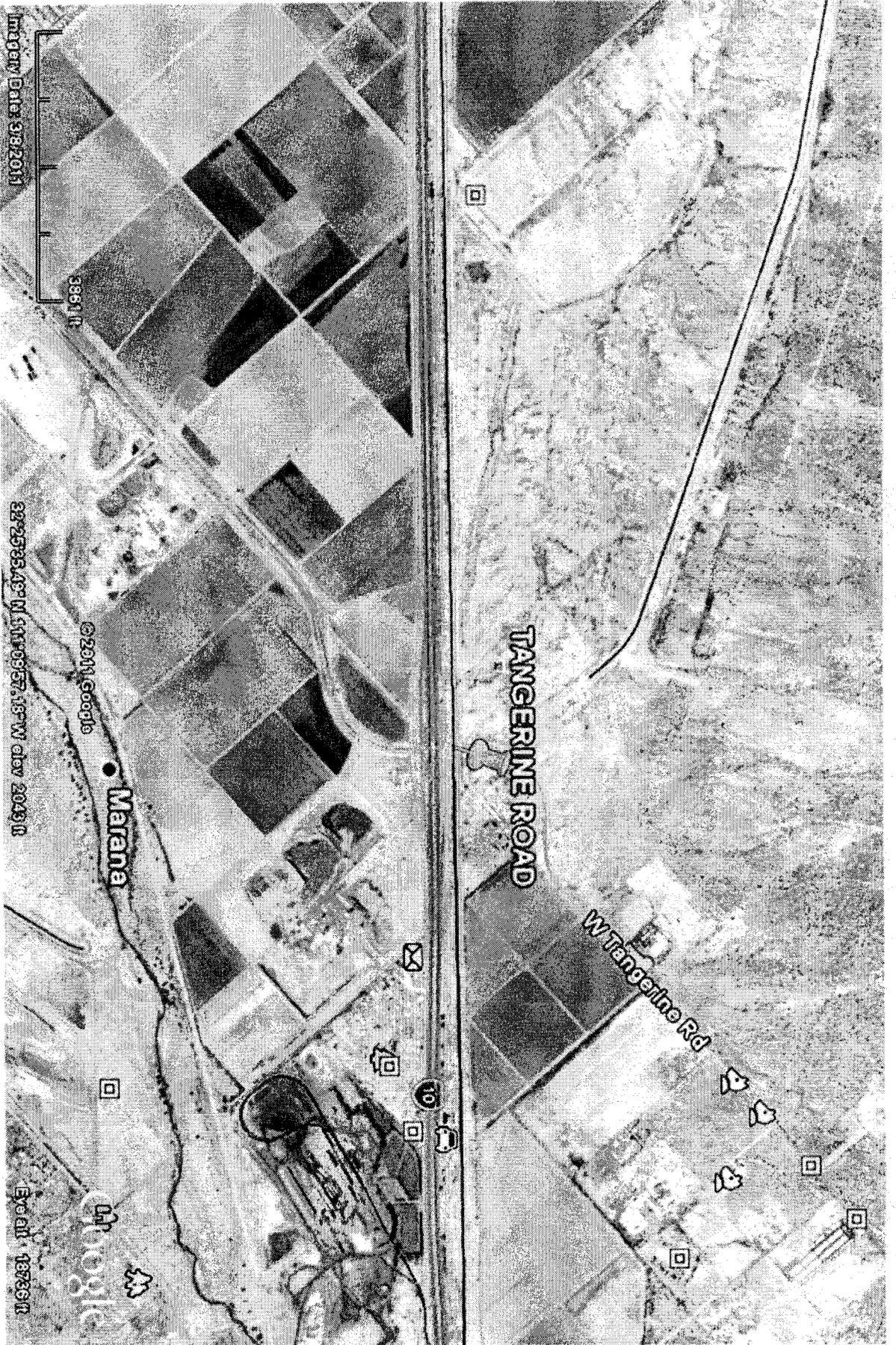
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Pima County  
1313 South Mission Road  
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# Appendix "A"





TANGERINE ROAD

W Tangerine Rd

Marana

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Imagery Date: 3/8/2011

386.1 ft

32°23'35.43" N 111°09'57.15" W elev 2043 ft

Exalt 18735 ft



TOWN OF MARANA  
DEVELOPMENT SERVICES

October 6, 2011

Mr. Brian Lehman, Supervisor  
Railroad Safety Section  
Arizona Corporation Commission  
2200 North Central Avenue, #300  
Phoenix, Arizona 85004

Re: Docket No. RR-03639A-11-0262, Union Pacific's Application to Double Track the  
Tangerine Crossing

Dear Mr. Lehman,

The purpose of this letter is to inform you and the Arizona Corporation Commission that the Town of Marana fully supports Union Pacific Railroad Company's application to construct a second mainline railroad track through the Town of Marana, and specifically through the at-grade crossing of Union Pacific's tracks at Tangerine Road. The Town therefore respectfully requests that the Arizona Corporation Commission approve Union Pacific's application referred to above to construct a second mainline track at the Tangerine Road crossing.

If you have any questions or if I can provide any additional information concerning the Town's support of Union Pacific's double-track project, please feel free to contact me.

Sincerely,

Keith Brann, P.E., CFM  
Town Engineer

