

APR 12 2011

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**ARIZONA CORPORATION COMMISSION
UNION PACIFIC'S RESPONSES TO FIRST SET OF DATA REQUESTS
DOCKET NO. RR-03639A-11-0051
Ina Road in Marana, AZ and Ruthrauff Road in Pima County, AZ
April 12, 2011**

CW 1.1 Provide Average Daily Traffic Counts ("ADT") for each of the [two] locations.

Response: *Union Pacific Railroad Company ("Union Pacific") must rely on information provided by others to provide ADT's. With that caveat, Union Pacific responds as follows:*

Crossing	ADT	Source
Ina Road	35,400 (2007) 31,700 (2009) 52,090 (2040)	Traffic Count provided by Keith Brann, Town of Marana, Assistant Director of Public Works (2007)
Ruthrauff Road	22,400 (2007) 23,680 (2009) 49,170 (2040)	Traffic Count provided by Tom Cooney, PAG Travel Forecasting Manager(2007)

Source:

- 1) Jennifer Crumbliss, HDR Engineering, 8404 Indian Hills Drive, Omaha, NE 68114.
- 2) Keith Brann, Assistant Director of Public Works, Town of Marana, 11555 W Civic Center Dr. Bldg A2, Marana, AZ 85653 (Emailed Traffic Counts)
- 3) Tom Cooney, Travel Forecasting Manager, Pima Association of Governments, 177 N. Church Ave, #405, Tucson, AZ 85701 (Emailed updated Traffic Counts)
- 4) ADOT Traffic Consultant, Kittelson & Associates, 33 N. Stone Ave., Suite 800, Tucson, AZ 85701 (Final Traffic Engineering Study, August 2010))

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AZ CORP COMMISSION
DOCKET CONTROL

CW 1.2 Please describe the current Level of Service (LOS) at each intersection.

Response: *Union Pacific believes that the level of service analysis is concerned with mobility rather than safety. In addition, Union Pacific must rely on information provided by others to calculate the level of service. With those caveats, Union Pacific responds as follows:*

Crossing	LOS(AM/PM)
Ina Road	Eastbound (LOS=D/C), Westbound (LOS=B/F)
Ruthrauff Road	Eastbound (LOS=A/B), Westbound (LOS=D/C)

Source: *Traffic level of service calculations were performed using Synchro and SimTraffic programs under the direction of Heidi Schneider with HDR Engineering, Inc at 5210 E Williams Circle, Suite 503, Tucson, AZ*

85711, (520) 584-3600. The train delay times utilized in the analysis were provided by Tom Domres, with TKDA at 750 Shoreline Drive, Suite 100, Aurora, IL 60504, (630) 499-4110 via Union Pacific.

CW 1.3 Provide any traffic studies done by the road authorities for each area.

Response:

- 1) **2030 Regional Transportation Plan (Pima Association of Governments) on <http://www.pagnet.org/Programs/TransportationPlanning/PlansandPrograms/RegionalTransportationPlanandStudies/2030RegionalTransportationPlan/2030RTPDocuments/tabid/382/Default.aspx>**
- 2) **2010 Final Traffic Engineering Study, by ADOT Traffic Consultant, Kittelson & Associates, 33 N. Stone Ave., Suite 800, Tucson, AZ 85701**

CW 1.4 Provide the population of the City the crossing is located in.

Response: The 2010 US Census shows the following data for the populations of the two communities located around the crossings:

Crossing	Population (2010)
Ina Road	34,961
Ruthrauff Road	1,020,200

Note: The Town of Marana population was used for Ina Road and the City of Tucson population was used for Ruthrauff Road.

CW 1.5 Provide what warning devices are currently installed at the crossing.

Response: The current warning devices installed at the crossing are gates and flashers with advance warning signs per the MUTCD. The specific devices are noted below:

Crossing	Warning Devices
Ina Road	Dual Gates and flashers, also in median on approaches
Ruthrauff Road	Dual Gates and flashers, also in median on approaches

Note: The proposed warning devices at Ina Road will include a cantilever signal in the westbound approach direction.

Source: *Jennifer Crumbliss, Senior Transportation Engineer with HDR Engineering, Inc. at 8404 Indian Hills Drive, Omaha, NE 68114*

CW 1.6 Provide distances in miles to the next public crossing on either side of the proposed project location. Are any of these grade separations?

Response: *Union Pacific believes that the last question in CW 1.6 raises an issue that is irrelevant, namely, whether either of the next public crossings is a grade separation. With that caveat, Union Pacific responds as follows:*

<i>Crossing</i>	<i>TO THE WEST</i>	<i>TO THE EAST</i>
<i>Ina Road</i>	<i>0.65 miles to Massingale Road</i>	<i>1.32 miles to Orange Grove Rd</i>
<i>Ruthrauff Road</i>	<i>2.15 miles to Joiner Road</i>	<i>1.81 miles to Prince Road</i>

There is a grade separated crossing at Orange Grove Rd. located 2.40 miles west of Ruthrauff Road. Orange Grove Road is the only adjacent crossing that is currently grade separated.

Source: *HDR's use of the Union Pacific Straight-line Diagrams and www.MapQuest.com.*

CW 1.7 How and why was grade separation excluded as a proposal for this application? Is the Union Pacific Railroad Company aware of any plans or studies by any other entity, including state or federal agencies, to grade separate the crossing(s)? Specifically, with reference to the Ruthrauff Road crossing, is the Union Pacific Railroad Company aware of the present status of the Arizona Department of Transportation's Interstate 10 traffic interchange project and how it will affect the crossing at Ruthrauff Road? With respect to the Ina Road crossing, is the Union Pacific Railroad Company aware of the present status of the Town of Marana's RTA project and whether the Ina Road crossing is still planned to be grade separated pursuant to that project? Please provide any studies that were done to support these answers.

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 these grade crossings.*

In addition to the foregoing, grade separation 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 these 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 because the communities and roadway authorities should decide the final timing of the 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 these crossings.

Furthermore, Union Pacific believes the two crossings involved in this application are safe without constructing grade separations. 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 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. For more information please contact ADOT's project manager:

Asadul (Asad) Karim
ADOT Roadway Predesign Section A
205 S. 17th Avenue, Mail Drop 605E
Phoenix, Arizona 85007-6807
Phone: (602) 712-6799
Email: AKarim@azdot.gov

CW 1.8 If th[ese] crossings [were] grade separated, provide a cost estimate of the project.

Response: Again, 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 these grade crossings. In addition, any attempt to estimate the cost to construct a grade separation would be speculative

in the absence of a detailed study of the particular crossing in question and final design for the grade separation. With those caveats, Union Pacific responds as follows:

In connection with its recent application to upgrade the crossing of Union Pacific tracks at the intersection of Power and Pecos Roads, RR-03639A-07-0398, the Town of Gilbert estimated that a grade separation at that location would cost \$22 million. Depending on the particular crossing involved, a reasonable range for the costs of constructing a grade separation alone would be between \$20 million and \$40 million.

The ADOT Preliminary Design for the proposed grade separations at Ina and Ruthrauff Roads estimates costs of approximately \$120 million and \$140 million, respectively. This includes the cost to reconstruct the I-10 mainline, the ramps, and the frontage roads in connection with grade separating Ina and Ruthrauff Roads and the railroad tracks because the tracks are in such close proximity to the interstate.

Please contact the ADOT Project Manager for a more detailed grade separation cost at these two locations:

Asadul (Asad) Karim
ADOT Roadway Predesign Section A
205 S. 17th Avenue, Mail Drop 605E
Phoenix, Arizona 85007-6807
Phone: (602) 712-6799
Email: AKarim@azdot.gov

CW 1.9 Please describe what the surrounding areas are zoned for near this intersection.
i.e. Are there going to be new housing developments, industrial parks etc.

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>Ina Road</i>	<i>Commercial</i>	<i>Commercial</i>
<i>Ruthrauff Road</i>	<i>Commercial/Industrial</i>	<i>Commercial/Industrial</i>

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

Source: *1) PAG Land Use Modeling 2007 Land Use Map on <http://www.pagnet.org/Documents/LandUse/LandUse2007.pdf>*

CW 1.10 Please supply the following: number of daily train movements through the crossing, speed of the trains, and the type of movements being made (i.e. thru freight or switching). Is this a passenger train route?

Response: *The movements are the same for these two crossings.*

*Train Count: 48 total average trains per day (46 freight, 2 passenger)
Train Speed: 79 mph passenger / 70 mph freight
Thru Freight/Switching Moves: All moves through these two crossings are thru freight. No switching moves are made at these crossings.*

These crossings are used by Amtrak as much as twice per day, three times per week.

Source: *Union Pacific's Director of Public Affairs, Zoe Richmond*

CW 1.11 Please provide the names and locations of all schools (elementary, junior high and high school) within the area of the crossing.

Response: *There are several schools in Pima County, Town of Marana, and City of Tucson within the area of the two crossings in this application.*

*Marjorie W. Estes Elem. School @ 11279 W. Grier Rd, Marana, AZ 85653
Marana Middle School @ 11279 W. Grier Rd, Marana, AZ 85653
Marana High School @ 12000 W. Emigh Road, Tucson, AZ 85743.
Laguna Elementary School @ 5001 N. Shannon Rd, Tucson, AZ 85705
Walter Douglas Elem. School @ 3302 N. Flowing Wells Rd, Tucson, AZ 85705.
Homer Davie Elementary School @ 4250 N. Romero Rd, Tucson, AZ 85705.
Flowing Wells High School @ 3725 N Flowing Wells Rd, Tucson, AZ 85705.*

Source: 1) *Jennifer Crumbliss, Senior Transportation Engineer with HDR, Engineering, Inc. at 8404 Indian Hills Drive, Omaha, NE 68114, (402) 926-7049 used the internet site www.GoggleEarth.com also,*
2) *Juan Cruz, Roadway Designer with HDR in Tucson, physically verified hospital and school locations on June 14, 2007.*

CW 1.12 Please provide school bus route information concerning the crossing[s], including the number of times a day a school bus crosses th[ese] crossings.

Response: *School buses, combined, currently cross Ina Road at least 8 times per day.*

Source: 1) *Alisha Meza, Operations Manager of Transportation for Marana Unified School District located at 11279 W. Grier Rd., Suite 103, Marana, AZ 85653 (520) 616-6350*

Response: *School buses, combined, cross Ruthrauff Road at least 8 times per day.*

Source: 1) *Rosie Aguilar, Tucson Unified School District located at 1010 E. 10th Street, PO Box 40400 Tucson, AZ 85717*
2) *Marc Lappitt, Amphitheater School District located at 241 E. Pastime Rd. Tucson, AZ 85704*
3) *Lewis Carloss, Transportation Director for Flowing Wells Unified School District located at 1556 W. Prince Rd., Tucson, AZ 85705.*

CW 1.13 Please provide information about any hospitals in the area and whether the crossing[s] [are] used extensively by emergency service vehicles.

Response: *The nearest hospital to these crossings is NW Medical Center in Marana (approximately 3 miles southeast of Ina Road and approximately 3 miles northeast of Ruthrauff Road). To Union Pacific's knowledge, neither of these crossings is used extensively by emergency service vehicles.*

Source: *Jennifer Crumbliss, Senior Transportation Engineer with HDR, Engineering, Inc. at 8404 Indian Hills Drive, Omaha, NE 68114, (402) 926-7049 used the internet site www.GoggleEarth.com also, Juan Cruz, Roadway Designer with HDR in Tucson, physically verified hospital and school locations on June 14, 2007.*

CW 1.14 Please provide total cost of the railroad improvements to each crossing.

Response:

<i>Crossing</i>	<i>Crossing Surface</i>	<i>Signal</i>	<i>Total</i>
<i>Ina Road</i>	\$172,900.00	\$600,000.00	\$772,900.00
<i>Ruthrauff Road</i>	\$148,200.00	\$480,000.00	\$628,200.00

Source: *Union Pacific's Engineering.*

CW 1.15 Provide any information as to whether vehicles carrying hazardous materials utilize this crossing and the number of times a day they might cross it.

Response: *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.*

CW 1.16 Please provide the posted vehicular speed limit for the roadway.

Response:

<i>Crossing</i>	<i>Posted Vehicular Speed Limit</i>
<i>Ina Road</i>	<i>45 mph*</i>
<i>Ruthrauff Road</i>	<i>45 mph*</i>

* *The speed limits given are those posted for the roads intersecting each crossing. However as a practical matter, maximum speed for vehicular traffic at each crossing itself is limited to 20-25 mph at best because of the stop condition just north of the railroad tracks at I-10 Frontage Road.*

Source: *Jennifer Crumbliss, Senior Transportation Engineer with HDR Engineering, Inc. at 8404 Indian Hills Drive, Omaha, NE 68114*

CW 1.17 Do any buses (other than school buses) utilize the crossing[s], and how many times a day do they cross the crossing[s].

Response: *Union Pacific does not have access to such information, but instead must rely on information provided by others. With that caveat, Union Pacific responds that it is not aware of any public passenger buses that utilize Ruthrauff Road. Buses (other than school buses), combined, cross Ina Road an estimated twelve (12) times per day.*

- Source:**
- 1) Suntran website <http://www.suntran.com/routes.php>
 - 2) Pima County Department of Transportation's Rural Bus Route website <http://www.dot.co.pima.az.us/transsys/bus>
Contact 520-740-6403 - Patrick McGowan, Public Transportation Program Manager

CW 1.18 Please indicate whether any spur lines have been removed within the last three years inside a 10 mile radius of any crossings covered in this application. Please include the reason for the removal, date of the removal and whether an at-grade crossing or crossings were removed in order to remove the spur line.

Response: *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), Union Pacific is not aware that any spur lines have been removed within the last three years inside a 10-mile radius of the crossings covered in this application.*

Source: *Union Pacific's Engineering*

CW 1.19 Please fill in the attached FHWA Grade Separation Guidelines Table, (from FHWA's 2007 revised second edition Railroad Highway Grade-Crossing Handbook, page 151) with a yes or no answer as to [whether] each item applies. Also, please provide all information to support your answers of yes or no (i.e. vehicle delay numbers, any calculations that were performed to get the answers).

Response: *Union Pacific Railroad Company ("Union Pacific") Pacific is not involved in the preliminary design, environmental assessment, or project planning of these two future grade separation and must rely on information provided by others to provide this Grade Separation Data. With that caveat, Union Pacific responds as follows:*

The Federal Highway Administration (FHWA) Grade Separation Guidelines Table provides nine criteria for determining whether highway-rail crossings should be considered for grade separation or otherwise eliminated across the railroad right of way. Results for the nine criteria as applied to the crossings in this application are shown in the following table:

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:

		Ina Road	Ruthrauff Rd
The highway is a part of the designated Interstate Highway System	Crossing Currently meets the criteria	NO	NO
	Crossing meets the criteria by 2030	NO	NO
The highway is otherwise designed to have full controlled access	Crossing Currently meets the criteria	NO	NO
	Crossing meets the criteria by 2030	NO	NO
The posted highway speed equals or exceeds 70 mph	Crossing Currently meets the criteria	NO	NO
	Crossing meets the criteria by 2030	NO	NO
AADT exceeds 100,000 in urban areas or 50,000 in rural areas	Crossing Currently meets the criteria	NO	NO
	Crossing meets the criteria by 2030	NO	NO
Maximum authorized train speed exceeds 110 mph	Crossing Currently meets the criteria	NO	NO
	Crossing meets the criteria by 2030	NO	NO
An average of 150 or more trains per day or 300 million gross tons/year	Crossing Currently meets the criteria	NO	NO
	Crossing meets the criteria by 2030	YES	YES
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	YES	YES
	Crossing meets the criteria by 2030	YES	YES
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	NO
	Crossing meets the criteria by 2030	N/A	N/A
Vehicle delay exceeds 40 vehicle hours per day	Crossing Currently meets the criteria	NO	NO
	Crossing meets the criteria by 2030	YES	YES

1 N/A = Information was not available.

2 This table utilizes the recent projected ADT data for the year 2030 as follows: Ina = 44,400 and Ruthrauff= 44,000.

3 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).

4 The 2007 crossing exposure was approximately: Ina = 1.6 million and Ruthrauff = 1.0 million.

5 The projected crossing exposure utilizing the most recent projected VPD data for 2030 is Ina = 3.7 million and Ruthrauff = 3.7 million

6 The projected vehicle delay per day utilizing the most recent projected VPD data for Ina = 70.1 hours and Ruthrauff = 102.2 hours

CW 1.20 Based on the current single track configuration at the crossings specified by this application, please provide the current traffic blocking delay per train. Please indicate the time in which vehicular traffic is delayed (1) to allow the train to pass at a crossing and (2) due to trains stopped on the track for any purpose. The delay 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.

Response: 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 approximately 6,000 feet. At that train length and speed, the average delay for vehicular traffic (1) to allow the train to pass at these crossings, 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.

Source: Union Pacific's Engineering, in consultation with TKDA at 750 Shoreline Drive, Suite 100, Aurora, IL 60504, (630) 499-4110

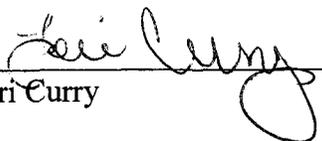
ORIGINAL AND THIRTEEN COPIES
of the foregoing filed this 12th day of
April, 2011, with:

Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

COPY of the foregoing hand-delivered and e-mailed
this 12th day of April, 2011, to:

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Lori Curry