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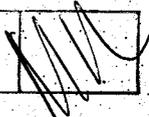
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Arizona Corporation Commission

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AUG 08 2007

Docket #(s): RR-03639A-07-0334

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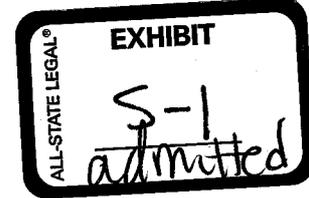
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ARIZONA CORPORATION COMMISSION



DAVID RADER  
Safety Division

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Staff Memorandum

Arizona Corporation Commission

ARIZONA CORPORATION COMMISSION  
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To: THE COMMISSION

DOCKETED

DOCKET NO. RR-03639A-07-0334

From: Safety Division

JUL 11 2007

Date: July 12, 2007

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RE: IN THE MATTER OF THE APPLICATION OF PINAL COUNTY, ARIZONA  
TO UPGRADE A CROSSING OF THE UNION PACIFIC RAILROAD AT  
GANTZEL ROAD IN PINAL COUNTY, ARIZONA,  
AAR/DOT NO.176-281-Y.

On May 30, 2007, Pinal County ("County") filed with the Arizona Corporation Commission ("Commission") an application for approval for the Union Pacific ("Railroad") to upgrade an existing crossing at Gantzel Road in Pinal County, Arizona at AAR/DOT No. 176-281-Y. Commission Safety Division Staff ("Staff") issued data requests and those data requests and the County's responses (without attachments), are included as attachments to this memorandum.

Pinal County has jurisdiction over Gantzel Road where the Union Pacific Railroad tracks and the roadway meet at grade, at railroad milepost 943.85. Decision No. 60409 (September 26, 1997) approved the installation of the at grade crossing as it exists today with flashing lights and gates. Commission Rail Safety Section accident/incident records indicate one accident at this grade crossing in 2004. No fatalities have occurred at this crossing.

Pinal County's filing in this application requests approval for the Union Pacific to install new flashing lights, cantilevers and gate arms to accommodate a road widening project being done by the County. The County has already widened Gantzel Road on the North and South sides of the crossing from two lanes to four lanes of traffic, and is now seeking to widen the railroad crossing. The widening of the crossing is necessary to eliminate the bottleneck that exists at the crossing now. Pinal County stated that a grade separation at this location is being considered in the next five to ten years. The county plans to widen Gantzel Road again in the future, from the proposed four lanes, to six lanes. At that time the county says they will consider grade separation.

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Executive Director  
  
**DAVID RABER**  
Director, Safety Division

The proposed safety devices for the at-grade crossing will include new 12' LED flashing lights, new cantilevers and automatic gate arms. Along with the new warning devices being installed, a new concrete crossing surface will be installed. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the state.

Traffic data provided by Pinal Counties Public Works Department estimates the Average Daily Traffic ("ADT") for this crossing to be 17,000. This count was taken in June of 2006. The County is projecting an average increase in traffic of 5% per year, which puts the traffic count at 29,000 in ten years. The County also states that the current Level of Service ("LOS") for the two lane road is LOS C. With the addition of two lanes at the crossing, making it a four lane road, they are estimating that a LOS B will be achieved. The expected level of service in 10 years with the same four lane road will be LOS C.

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.

Data provided by the Railroad states that the number of trains per day at this intersection is between 6 and 8. There are no passenger trains that operate on this railroad line. The maximum allowable timetable speed for this location is 60 miles per hour.

There are two alternate routes available that can be used if necessary on either side of Gantzel road. On the north side of the crossing is Riggs Road approximately 1.65 miles away, and on the south side of the crossing is Bella Vista Road approximately 3.34 miles away. Neither of these alternative crossings is grade separated.

The estimated cost of the proposed railroad crossing upgrade is \$570,000.00. Pinal County will be paying for the entire project. The Railroad will maintain all railroad equipment after the project is finished, including the flashing lights, cantilevers, gate arms, and the newly installed concrete surface.

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 Director, Safety Division

With regard to grade separating this crossing, the County provides several reasons why it is not considering grade separation at this time. As stated by the County, "Pinal County had known that a grade separated crossing was considered to be the ultimate solution for road/railroad intersections but did not give this serious consideration for the following reasons:

1. There was an existing functional at-grade crossing that simply needed to be widened to conform to the widened road which had already been designed and was under construction.
2. The cost of a grade separated crossing was exorbitant and funds were just not available for such a crossing.
3. There was no formal regulation or statute that required a grade separated crossing.
4. Rail traffic was minimal so that road traffic interruption was not a significant factor.
5. Because of the very light rail traffic safety was also not considered to be a significant factor."

The County estimates that due to the large amount of property acquisition needed in order to grade separate this intersection, the cost would be nearly forty million dollars. They do plan to look at grade separating this crossing within the next five to ten years, when they anticipate a need to widen the roadway from four lanes to six lanes to accommodate increased development in the area. The County says that this time frame will enable them to obtain the necessary funding from impact fees, taxes, bond issues and other sources to fund a grade separation project. Staff agrees with the reasons cited by the County and recommends not grade separating the crossing at this time.

Utilizing the Exposure Index (the product of daily road traffic and the daily number of trains as a simplified method or "quick check" to indicate the potential for a grade separation) described in the report Grade Separations – When Do We Separate? by Nicholson and Reed (this report was provided to Commissioner's Offices on June 22, 2007), we have determined the following for this crossing:

Year	Average Daily Traffic	Average Daily Trains	Exposure Index
2006	17,000	7	119,000
2016	29,000	7	203,000

The authors of the above-referenced report state that, "when a predetermined value of the index is reached, further investigation is triggered. Examples of predetermined values range in one state from 15,000 for rural conditions to 30,000 for urban conditions, in another from 50,000 for roads on the state highway system to 100,000 for all other roads, and in a third, by speed (15,000 for

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rural conditions where roadway vehicle speeds are greater than 50 MPH).” The report further indicates that, “investigation described in this section has shown this method is quick, easy, and sufficiently accurate to represent an adequate initial or general screening tool to be used prior to proceeding with more detailed technical analysis.”

Although Staff agree that the Exposure Index should not be used as the sole decision-making tool for determining the appropriateness of a grade separation, we note that the current Exposure Index of 119,000 warrants further investigation of grade separation of this crossing now or in the future by the County. As stated previously, the County intends to consider grade separation in the next five to ten years, when Gantzel Road is widened again from four lanes to six lanes.

Having reviewed all applicable data, Staff supports the upgrade to the crossing at Gantzel Road as presented by Pinal County’s application. Staff believes that the upgrade is in the public interest and is reasonable. However, Staff feels that Pinal County should consider grade separation of this crossing in the next five to ten years. Therefore, Staff recommends approval of Pinal County’s application.

  
Dave Raber  
Director  
Safety Division

  
Brian H. Lehman  
Railroad Supervisor  
Safety Division

DR: BHL: cbw

Originator: Chris B. Watson

**Response to Arizona Corporation Commission (ACC) Questionnaire**

CW 1.1 Provide Average Daily Traffic Counts for this location.

ADT for this section of the road was 17,000. This was measured in June, 2006.

CW 1.2 Provide Annual Average Traffic Counts.

Annual Average Traffic Count is 6,205,000. This is a calculated number since actual counts have not been performed.

CW 1.3 Provide a ten year traffic projection for this area.

The ten year traffic projection for this area is 29,000 ADT. This is based on an average increase of about 5% per year.

CW 1.4 Provide distances in miles to the next public crossing on either side of the proposed project location. Are either of these grade separated?

To the North the next crossing is at Riggs Road, a distance of about 1.65 miles.

To the South the next crossing is at Bella Vista Road, a distance of about 3.34 miles.

Neither one of these is a grade separated crossing.

CW 1.5 How and why was grade separation not decided on at this time? Please provide any studies that were done to support these answers.

Pinal County had known that a grade separated crossing was considered to be the ultimate solution for road/railroad intersections but did not give this serious consideration for the following reasons:

1. There was an existing functional at-grade crossing that simply needed to be widened to conform to the widened road which had already been designed and was under construction.
2. The cost of a grade separated crossing was exorbitant and funds were just not available for such a crossing.
3. There was no formal regulation or statute that required a grade separated crossing.
4. Rail traffic was minimal so that road traffic interruption was not a significant factor.
5. Because of the very light rail traffic safety was also not considered to be a significant factor.

As a result no studies were performed in the matter of grade separation. The design of the at-grade crossing was initiated and subsequent correspondence indicates that both the UPRR and the ACC concurred with this design. More recently, in April 2007, Pinal County was informed that grade separated crossings are now a concern of the ACC.

CW 1.6 If this crossing was grade separated, provide a cost estimate of the project.

It is estimated that it will cost about 40 million dollars to construct a grade separated crossing at this location. The existing road was configured as-is based on representations of the ACC Staff and Union Pacific personnel. The 40 million dollars includes acquisition of additional Right of Way. A brand new design would be required and this is complicated by the fact that Empire Road is so close to the crossing. Everything in this segment of the road is complete except for the final improvements at the crossing itself. Delays to go to grade separation would be at least one year.

CW 1.7 In regards to grade separation, your application stated that "it is definitely our intention to address this issue when the crossing is further widened from 4 lanes to 6 lanes in the comparatively near future." Please define "near future". Also in your application you state "We are already looking into funding sources with this eventuality in mind." Please further explain where you are looking to fund this future project.

By "near future" we meant within the next five to ten years because we believe that within this period of time there will be sufficient development within the area to justify the widening of the road from 4 to 6 lanes and to enable us to obtain the necessary funding from impact fees, taxes, bond issues and other sources to enable us to construct the grade separated crossing.

CW 1.8 Please request the following information from the railroad: 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).

The following information was provided by UPRR:

No. of daily train movements through the crossing = 6 to 8  
Speed of the trains = 60 mph maximum  
Type of movements being made = Freight

CW 1.9 Please provide the Design Concept Report (DCR) for this project.

There is no Design Concept Report for this project. However, a copy of the list of factors that were taken into consideration prior to, and during, the crossing design process is attached for reference. An electronic copy (CD) is also

attached of the Area Transportation Study that was performed for Pinal County in August 2006 by the County's design consultant.

CW 1.10 Please provide total costs to the County for the project.

The total cost to the County for the proposed at-grade railroad crossing improvement consists of UPRR's costs, which are preliminarily estimated by UPRR to be about \$ 510, 000.00, plus the Design Consultant's cost of \$ 25,000.00, plus the road construction contractor's cost which is estimated at \$ 35,000.00, for a total estimated cost of \$ 570,000.00 for the at-grade railroad crossing improvement project..

List of Design Factors considered in designing the At-grade Railroad Crossing on Gantzel Road.

1. The northbound alignment was already set and the southbound pavement was to be dictated by the ultimate 6-lane typical section. The northbound pavement was constructed using the ultimate median centerline. The 16 foot median defined the location of the southbound lanes and the at-grade crossing.
2. The full 150 foot R/W for both northbound and southbound widening was already acquired or in the process of being acquired when design for the southbound lanes was initiated.
3. The existing lanes, built in 1995, were granted an at-grade crossing based on a design which included proposed R/W for the future addition of the southbound lanes.
4. The New Magma Irrigation ditch is in close proximity to the eastern edge of the existing lanes. This limited the expansion of additional lanes to the west side of the existing lanes unless a significant realignment were designed and/or the ditch was enclosed or relocated.
5. Chosen southbound alignment has very few utility conflicts which require relocation.
6. The right turn lane into Circle Cross Ranch was extended Northward to the R/R so the pavement would be in continuous use and not need to be barricaded off while only two southbound lanes were in operation.
7. The proximity of the Circle Cross Ranch makes an overpass difficult to construct, requiring retaining walls and, potentially, noise/screen walls along the existing alignment.
8. An underpass would have significant drainage, maintenance, and constructability issues (R/R shoofly would be needed). Again the proximity to the Circle Cross Ranch would have required significant retaining wall structures.
9. Gantzel Centerline follows the section line. Realignment would require significant lengths of the roadway to be off of section line.
10. Realignment would likely require the full acquisition of at least one major property already under development. The cost of this acquisition would have been inflated due to the developer's initial costs.
11. Realignment would require significant amounts of throw away pavement for existing roadway which would need to be rebuilt at higher costs and thicker pavement depths based on current geotech data.