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Director, Safety Division

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2008 MAY -1 P 4: 23

AZ CORP COMMISSION Staff Memorandum
DOCKET CONTROL

To: THE COMMISSION DOCKET NO. RR-02635B-08-0169

From: Safety Division

Date: May 2, 2008

RE: IN THE MATTER OF THE APPLICATION OF THE CITY OF PEORIA TO UPGRADE AN EXISTING CROSSING OF THE BURLINGTON NORTHERN AND SANTA FE RAILWAY AT 81ST AVENUE IN THE CITY OF PEORIA, MARICOPA COUNTY, ARIZONA, AT AAR/DOT NO. 025-405-Y.

Background

On March 21, 2008, the City of Peoria ("City") filed with the Arizona Corporation Commission ("Commission") an application for approval for the Burlington Northern Santa Fe Railroad ("Railroad") to upgrade an existing crossing at the Railroad's tracks at 81st Avenue, in the City of Peoria, Maricopa County, Arizona at AAR/DOT No. 025-405-Y. Commission Safety Division Staff ("Staff") issued data requests and those data requests and the City's responses (without attachments), are included as attachments to this memorandum.

The City's filing in this application requests approval for the Railroad to upgrade an existing crossing of the Burlington Northern Santa Fe Railroad where 81st Avenue intersects with the railroad tracks. The City is the road authority for 81st Avenue. Flashing lights, bells and automatic gates were first put into service at this location by Commission Decision No. 49754 on 3/13/1979.

The following is a break down of the crossing in this application, including information about the crossing that was provided to Staff by the City and the Railroad.

Geographical Information

This railroad crossing is located at 81st Avenue just east of US-60 (Grand Avenue) in Peoria, Arizona (estimated population of 151,541 as of July 1, 2007). 81st Avenue runs on a north-south trajectory with the rail line traversing 81st Avenue on a north-west angle. Once 81st Avenue crosses the tracks and Grand

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Avenue, it terminates and becomes westbound Monroe Street. For a map of the area, see Appendix A of this staff report.

81st Avenue

The City is proposing to upgrade the intersection of 81st Avenue and Grand Avenue (US60) by widening 81st Avenue to accommodate two through lanes in each direction, a left turn lane in each direction and one right turn lane in each direction. Currently, 81st Avenue is a two lane road with no dedicated turn lanes. The railroad will install new 12 inch LED flashing lights, and automatic gates in the median, as well as a new concrete crossing surface. This will replace the existing incandescent flashing lights and gate mechanisms as well as the timber crossing surface. Additionally, there will be cantilevers with 12 inch LED flashing lights installed for both directions of traffic. Constant warning time circuitry will also be installed as part of this crossing improvement project. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the state.

Traffic data for 81st Avenue was provided by the City and was taken in 2006. The ADT counts show 2,360 vpd. The projected ADT for 2030 is 52,000 vpd. The Level of Service (LOS) indicates a LOS B for the existing roadway.

Note: 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 81st Avenue is 35 MPH. Commission Rail Safety Section, as well as Federal Railroad Administration ("FRA") accident/incident records indicate one accident on 81st Avenue, with no injuries, and no fatalities. The accident occurred on 1/7/1979.

Regarding alternative routes from this crossing, to the west is 83rd Avenue approximately .30 miles, and 75th/Olive Avenue to the east approximately 1.06 miles from this crossing. 75th Avenue is an at grade crossing, however Olive Avenue is grade separated.

The estimated cost of the crossing is approximately \$2.1 million (\$1.8 million of railroad improvements and \$300K roadway improvements). This does not include costs for the Grand Avenue improvements leading up to the railroad

crossing or City utility pipeline crossings under the railroad. The City and a private developer are sharing the cost of the crossing improvements.

Train Data

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

Train Count: Average of 13 trains per day

Train Speed: 25 mph

Thru Freight/Switching Moves: There are thru train movements as well as switching movements at this crossing.

Schools and Bus Routes

Information about schools, and school buses, in the area was provided by the City. There are four schools near the 81st Avenue crossing:

- ✓ Santa Fe Elementary, 9880 N. 77th Ave
- ✓ Peoria High School, 11200 83rd Ave
- ✓ Alta Loma Elementary, 9750 N. 87th Ave
- ✓ Academic Private Charter School, 7785 W. Peoria Ave

Currently no school buses cross this intersection. However, it is likely that in the future, once the crossing is fully improved; there could be up to 39 school buses per day utilizing the crossing. Staff are unable to determine exact routes at this time due to driver preferences and destinations.

Hazardous Materials

Staff asked the City if they knew of any hazardous material traffic across these crossings, and this was their answer:

The roadway is not a designated truck route and therefore the number of anticipated vehicles carrying hazardous materials utilizing the crossing per day would be little to none. Grand Ave (U.S. 60) is the designated truck route in the area.

Hospitals

There are no hospitals within the immediate vicinity of this project. The nearest hospital is approximately 5 miles away. The City has a fire station located approximately 1,000 feet north of this crossing. There would likely be the need for emergency fire service vehicles to utilize this crossing on occasion. There are also two other alternative routes (railroad crossings) for emergency vehicles

currently available within a half mile of this intersection depending on destination.

Zoning

The City gave the following response as to how the surrounding areas from this crossing are zoned:

Generally the area is zoned as follows:

CCM - Core Commercial Mixed Use

CRM - Core Residential Mixed Use

PAD - Office, Mixed Use, Single Family, and Multi-Family

PAD - Commercial, Public Facility (Fire Station), Open Park Space

I-1 - Industrial

Spur Lines

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

Grade Separation

With regard to grade separating 81st Avenue, the City gave the following response:

There were several traffic studies completed for this project over the past 8 years; however grade separation were not specifically included in them as they were never a part of our General Plan. A significant reason the City could not grade separate now is the City is legally committed by Development Agreement with two separate private Developers (Wal-Mart & Peoria Place) which include planning, design, and/or construction commitments for an at grade crossing condition and not grade separated. (See attached Exhibits D & J showing planned and constructed developments). Construction of a grade separation would also severely impact the recently constructed Wal-Mart Super center (2007) site access, parking, and building footprint as well as deliveries to their unloading dock.

In addition, substantial land purchases would be required as well the potential purchase of four separate residential properties and one transmission repair business. Impacts would include relocation costs for each of the property owners.

We feel a grade separation for this crossing would be a huge financial burden to the City with all of the land acquisition needed, legal commitments which are subject to breach of contract, and cost of reconstruction of existing improvements. Furthermore, access to Grand Ave for Cotton crossing would be severed by grade separation without additional construction of connection ramps requiring significantly more land to purchase. As a result, the lack of connectivity to Grand Ave caused by a grade separation would negatively impact any regional

traffic benefits that both roadways (Grand Ave & Cotton Crossing) provide currently to this region.

FHWA GUIDELINES

The Federal Highway Administration (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		
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:		
		81st Ave.
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 ¹	NO
	Crossing meets the criteria by 2030	Unknown
Vehicle delay exceeds 40 vehicle hours per day	Crossing Currently meets the criteria	NO
	Crossing meets the criteria by 2030	NO

¹ The Accident Prediction Formula predicts the accident frequency for this crossing to be 0.01332.

Crossing Closures

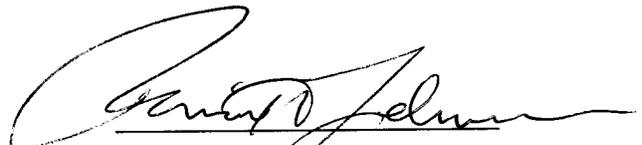
Given the amount of growth in the area, and the projected future ADT, staff would not recommend a closure of 81st Avenue at this time.

Staff Conclusions

Having reviewed all applicable data, Staff supports the City's application. Staff believes that the upgrades are in the public interest and are reasonable. Therefore, Staff recommends approval of this application.



Dave Raber
Director
Safety Division



Brian H. Lehman
Railroad Supervisor
Safety Division

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ARIZONA CORPORATION COMMISSION

BRIAN C. McNEIL
Executive Director

MAR 28 2008

March 27, 2008

AZ CORP COMM
Director Utilities

Richard Costa
Associate Engineer
Capital Engineering Division
8401 West Monroe Street
Peoria, Arizona 85345

Sent via U.S. Mail & Facsimile to:
(623) 773-7211

Re: Staff's **First** Set of Data Requests to The Burlington Northern & Santa Fe Railway Company
Docket No. RR-02635B-08-0169

Dear Mr. Costa:

Please treat this as Staff's **First** Set of Data Requests to The Burlington Northern & Santa Fe Railway Company in the above matter.

For purposes of this data request set, the words "BNSF," "Company," "you," and "your" refer to The Burlington Northern & Santa Fe Railway Company and any representative, including every person and/or entity acting with, under the control of, or on behalf of The Burlington Northern & Santa Fe Railway Company. For each answer, please identify by name, title, and address each person providing information that forms the basis for the response provided.

These data requests are continuing, and your answers or any documents supplied in response to these data requests should be supplemented with any additional information or documents that come to your attention after you have provided your initial responses.

Please respond within **twenty-one (21)** calendar days of your receipt of the copy of this letter. However, if you require additional time, please let us know.

Please provide one hard copy as well as searchable PDF, DOC or EXCEL files (via email or electronic media) of the requested data directly to each of the following addressees via overnight delivery services to:

- (1) Chris Watson, Railroad Safety, Arizona Corporation Commission, 2200 North Central Avenue, Suite 300, Phoenix, Arizona 85004.
- (2) Charles H. Hains, Attorney, Arizona Corporation Commission, 1200 West Washington Street, Phoenix, Arizona 85007.

Sincerely,

Charles H. Hains
Attorney, Legal Division
(602) 542-3402

CHH:sab
Enclosure
cc: Chris Watson

**ARIZONA CORPORATION COMMISSION
STAFF'S FIRST SET OF DATA REQUESTS TO
THE BURLINGTON NORTHERN & SANTA FE RAILWAY COMPANY
DOCKET NO. RR-02635B-08-0169
MARCH 27, 2008**

Subject: All information responses should ONLY be provided in searchable PDF, DOC or EXCEL files via email or electronic media.

- CW 1.1 Provide Average Daily Traffic Counts for each of the three locations.
- CW 1.2 Please describe the current Level of Service (LOS) at each intersection.
- CW 1.3 Provide any traffic studies done by the road authorities for each area.
- CW 1.4 Provide distances in miles to the next public crossing on either side of the proposed project location. Are any of these grade separations?
- 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.
- CW 1.6 If this crossing was grade separated, provide a cost estimate of the project.
- CW 1.7 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.
- CW 1.8 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?
- CW 1.9 Please provide the names and locations of all schools (elementary, junior high and high school) within the area of the crossing.
- CW 1.10 Please provide school bus route information concerning the crossing, including the number of times a day a school bus crosses this crossing.
- CW 1.11 Please provide information about any hospitals in the area and whether the crossing is used extensively by emergency service vehicles.
- CW 1.12 Please provide total cost of improvements to each crossing.
- CW 1.13 Provide any information as to whether vehicles carrying hazardous materials utilize this crossing and the number of times a day they might cross it.
- CW 1.14 Please provide the posted vehicular speed limit for the roadway.
- CW 1.15 Do any buses (other than school buses) utilize the crossing, and how many times a day do they cross the crossing.

**ARIZONA CORPORATION COMMISSION
STAFF'S FIRST SET OF DATA REQUESTS TO
THE BURLINGTON NORTHERN & SANTA FE RAILWAY COMPANY
DOCKET NO. RR-02635B-08-0169
MARCH 27, 2008**

Subject: All information responses should ONLY be provided in searchable PDF, DOC or EXCEL files via email or electronic media.

CW 1.16 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.

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:

	Crossing 1	Crossing 2	Crossing 3	Crossing 4	Crossing 5	Crossing 6
The highway is a part of the designated Interstate Highway System	Crossing Currently meets the criteria					
	Crossing meets the criteria by 2030					
The highway is otherwise designed to have full controlled access	Crossing Currently meets the criteria					
	Crossing meets the criteria by 2030					
The posted highway speed equals or exceeds 70 mph	Crossing Currently meets the criteria					
	Crossing meets the criteria by 2030					
AADT exceeds 100,000 in urban areas or 50,000 in rural areas	Crossing Currently meets the criteria					
	Crossing meets the criteria by 2030					
Maximum authorized train speed exceeds 110 mph	Crossing Currently meets the criteria					
	Crossing meets the criteria by 2030					
An average of 150 or more trains per day or 300 million gross tons/year	Crossing Currently meets the criteria					
	Crossing meets the criteria by 2030					
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					
	Crossing meets the criteria by 2030					
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					
	Crossing meets the criteria by 2030					
Vehicle delay exceeds 40 vehicle hours per day	Crossing Currently meets the criteria					
	Crossing meets the criteria by 2030					

City Provided Responses to the Requested Data Items; Cotton Crossing ACC Application:

Item:

CW 1.1 "Provide Average Daily Traffic Counts for these three locations" *We have only one location under application to the ACC. This location currently has approx. 2,360 vehicles per day (Fig 3 & 4, Kimley Horn and Associates, TIA (2006) for existing AM & PM Peak Hour traffic counts. Average daily traffic as a general rule is 10 times the peak hour counts. $((121+115) \times 10) = 2,360$. (See attached Exhibits A-1 & A-2)*

CW 1.2 "Please describe the current Level of Service (LOS) at each intersection. *We have only one location under application to the ACC. The City did not establish an existing level of service LOS for this intersection by traffic study, however based upon the existing traffic volumes (Fig. 4 - Kimley Horn and Associates, TIA (2006, the volumes of traffic at the existing crossing (2,360 estimated ADT above) relative to Grand Ave (16,700, Fig 4), the existing intersection operates at a LOS B or better based upon the judgment of our Traffic Engineering Division. (See attached Exhibit A-2)*

CW 1.3 "Provide any traffic studies done by the road authorities for each area." *See attached including CDs with PDF.*

CW 1.4 "Provide distance in miles to the next public crossing on either side of the proposed project location" *The next nearest crossing is at 83rd Avenue at approx. 0.30 miles west of this crossing and 75th Ave/Olive Ave is approx. 1.06 miles east of this crossing for which 75th Ave is an at grade crossing, however Olive Ave is grade separated.*

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. There were several traffic studies completed for this project over the past 8 years, however grade separation were not specifically included in them as they were never a part of our General Plan. A significant reason the City could not grade separate now is the City is legally committed by Development Agreement with two separate private Developers (Wal-Mart & Peoria Place) which include planning, design, and/or construction commitments for an at grade crossing condition and not grade separated. (See attached Exhibits D & J showing planned and constructed developments). Construction of a grade separation would also severely impact the recently constructed Wal-Mart Supercenter (2007) site access, parking, and building footprint as well as deliveries to their unloading dock.*

In addition, substantial land purchases would be required as well the potential purchase of four separate residential properties and one transmission repair business. Impacts would include relocation costs for each of the property owners.

We feel a grade separation for this crossing would be a huge financial burden to the City with all of the land acquisition needed, legal commitments which are subject to breach of contract, and cost of reconstruction of existing improvements. Furthermore, access to Grand Ave for Cotton Crossing would be severed by grade separation without additional construction of connection ramps requiring significantly more land to purchase. As a result, the lack of connectivity to Grand Ave caused by a grade separation would negatively impact any regional traffic benefits that both roadways (Grand Ave & Cotton Crossing) provide currently to this region.

CW 1.6 "If this crossing was grade separated, provide a cost estimate of the project." *See attached estimate for grade separation. (Exhibit F).*

CW 1.7 "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.

Generally the area is zoned for as follows:

CCM - Core Commercial Mixed Use

CRM - Core Residential Mixed Use

PAD - Office, Mixed Use, Single Family, and Multi-Family

PAD - Commercial, Public Facility (Fire Station), Open Park Space

I-1 - Industrial

(See attached Exhibit G)

CW 1.8 "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? As provided by Megan McIntyre of BNSF Railroad Co. Manager Public Projects by e-mail on May 9th, 2007....." *The average train traffic on this route is 13 freight trains per 24-hour period at a timetable speed of 25 MPH and 0 passenger trains at a timetable speed of 0 MPH.*

CW 1.9 "Please provide the names and locations of all schools (elementary, junior high and high school) within the area of the crossing."

Names & locations of existing schools are as follows (See attached Exhibit H):

Santa Fe Elementary 9880 N. 77th Ave

Peoria High School, 11200 83rd Ave

Alta Loma Elementary, 9750 N. 87th Ave

Academic Private Charter School, 7785 W. Peoria Ave

CW 1.10 "Please provide school bus route information concerning the crossing, including the number of times a day a school bus crosses this intersection" *Currently no school buses cross this intersection, however it would be likely that in the future, once the crossing is fully improved that there could be up to 39 school buses per day utilizing the crossing. We are unable to determine exact routes at this time due to driver preferences and destinations.*

C-1.11 "Please provide information about any hospitals in the area and whether the crossing is used extensively by emergency services vehicles." *There are no hospitals within the vicinity of this project. The nearest hospital is approx. 5 miles away. The City of Peoria has a fire station located approx. 1000 feet north of this crossing. Randomly there would be the need for emergency fire service vehicles to cross this crossing. There are also two other alternative routes (railroad crossings) for emergency vehicles currently available within a half mile of this intersection depending on destination.*

C-1.12 "Please provide total cost of improvements to each crossing" *We have only one crossing location under application to the ACC. The estimate cost of the crossing is approx. \$2.1m. (\$1.8m of railroad improvements and \$300K roadway improvements). Does not include costs for Grand Ave improvements leading up to the railroad crossing or City utility pipeline crossings under railroad.*

C-1.13 "Provide any information as to whether vehicles carrying hazardous materials utilize this crossing and the number of times a day they might cross it." *The roadway is not a designated truck route and therefore the number of anticipated vehicles carrying hazardous materials utilizing the crossing per day would be little to none. Grand Ave (U.S. 60) is the designated truck route in the area.*

C-1.14 " Please provide the posted vehicular speed limit for the roadway. " *The roadway will be posted at 35 mph before and after the railroad crossing.*

C-1.15 "Do any buses (other than school buses) utilize the crossing, and how many times a day do they cross the crossing." *Currently there are no buses utilizing the existing crossing. All buses (City Transit) utilize the existing Peoria Ave crossing approx. one half mile to the west of this crossing, For the future 83rd Avenue Fixed Route service is not currently part of the Regional Transportation Plan and as such may not be developed further / implemented until regional funding is identified. If funding becomes available it is estimated that approx 36 buses on average could make this crossing per day (18 in each direction).*

C-1.16 "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." (See attached Exhibit I)