

ORIGINAL

STAFF MEMORANDUM



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To: THE COMMISSION  
Arizona Corporation Commission  
From: Steven M. Olea  
Interim Director  
Safety Division

RECEIVED

DOCKETED

SEP 17 2010

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Date: September 17, 2010

DOCKETED BY [Signature]

AZ CORP COMMISSION  
DOCKET CONTROL

RE: IN THE MATTER OF THE APPLICATION OF THE ARIZONA DEPARTMENT OF TRANSPORTATION TO UPGRADE FIVE EXISTING CROSSINGS OF THE ARIZONA EASTERN RAILWAY COMPANY AT CENTRAL ROAD, EAST OF US70 IN GRAHAM COUNTY, ARIZONA, USDOT NO 742-253-G, COLLEGE AVENUE, SOUTH OF RAILROAD AVENUE IN THE TOWN OF THATCHER, GRAHAM COUNTY, ARIZONA, USDOT NO 742-243-B AND BIXBY ROAD NORTH OF SR 188 IN GILA COUNTY, ARIZONA, USDOT NO 742-364-Y, BIA 2 ROAD EAST OF BIA SR 170 HIGHWAY, GILA COUNTY, ARIZONA, USDOT NO 742-332-T, AND BIA 101 ROAD NORTH OF THE BIA SR 170 HIGHWAY, GILA COUNTY, ARIZONA, USDOT NO 742-336-V.

DOCKET NOS. RR-02634A-10-0235, RR-02634A-10-0236, RR-02634A-10-0237, RR-02634A-10-0238, RR-02634A-10-0239.

**Background**

On June 10, 2010, the Arizona Department of Transportation ("ADOT") filed with the Arizona Corporation Commission ("Commission") an application for approval for the Arizona Eastern Railroad ("Railroad") to upgrade five existing public crossings located at the Railroad's tracks: at Central Road east of US 70 in Graham County, Arizona, USDOT No. 742-253-G; at College Avenue south of Railroad Avenue in the Town of Thatcher, Graham County, Arizona, USDOT No. 742-243-B; at Bixby Road north of SR 188 in Gila County, Arizona, USDOT No. 742-364-Y; at BIA 2 Road east of the BIA SR 170 Highway, Gila County, Arizona, USDOT No. 742-332-T; and BIA 101 Road north of the BIA SR 170 Highway, Gila County, Arizona, USDOT No. 742-336-V.

The following is a break down of the crossings in this application, including information about the crossings that was provided to the Safety Division, Railroad Safety Section ("Staff") by ADOT.

**Federal Highway Administration ("FHWA") Section 130**

These projects are federally funded pursuant to 23 U.S.C. § 130 ("Section 130"). The purpose of Section 130 is to comply with legislation seeking to eliminate hazards to pedestrians and highway vehicles at public railway-highway crossings. Only crossings which are located on public roads, and which are not primarily for the benefit of the railroad, are eligible for Section 130 funding. In order to be eligible for Section 130 funding, a crossing must be designated on the Commission's annual Crossing Array as being a priority to receive safety upgrades. Arizona Revised Statute § 40-337.03 states that:

[T]he commission shall submit to the railroad involved and the city, county and department of transportation in which jurisdiction a public railroad grade crossing is located, an array of such crossings where the installation of automatic warning signals or devices should be considered during the year, or within a reasonable time thereafter depending upon the availability of monies, materials, labor and other factors involved in such installation.

After designation on the Annual Array, FHWA issues authorizations for design and construction of each project, reimburses ADOT for the cost and conducts a final inspection of each project. The Railroad will invoice ADOT for 100% of the cost of the project.

### **CENTRAL ROAD**

This project was approved for Section 130 funding as part of the 2001 Commission Annual Array approved by Decision No. 63633. Central Road is under the jurisdiction of Graham County. The proposed upgrades to the existing passive crossing will consist of installing a new timber crossing surface, and installing LED flashing lights, automatic gates, bells and motion sensor detection circuitry on this two lane roadway. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the State. The estimated cost for the surface and signal improvements are \$243,324. This project will be funded entirely by the FHWA.

Traffic data for Central Road was provided by ADOT. The data shows the Average Daily Traffic ("ADT") for 2009 to be 469 vehicles per day ("vpd"). No projected ADT's were given. The current Level of Service ("LOS") for Central Avenue is LOS A.

The American Association of State Highway and Transportation Officials Geometric Design of Highways and Streets, 2004, states that the LOS 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 Central Road is 35 mph. Staff records, as well as Federal Railroad Administration ("FRA") accident/incident records indicate no accidents at this crossing.

Alternative routes from this crossing are as follows; Shiflet Road approximately ¼ mile to the northwest, and Webster Road approximately ¾ of a mile to the southeast. None of these crossings are grade separated.

### **Train Data**

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

Train Count: 3 freight trains per day on average, no passenger trains.

Train Speed: 10 mph

Thru Freight/Switching Moves: All movements through this crossing are thru freight. (No switching operations)

### Schools and Bus Routes

There are several schools located within the area of this crossing, they are:

#### Schools:

- ✓ Jack Daley Primary School – 3500 W. 2<sup>nd</sup> Street
- ✓ Thatcher Elementary School – 1386 N. 4<sup>th</sup> Avenue
- ✓ Thatcher Middle School – 1300 N. 4<sup>th</sup> Avenue
- ✓ Thatcher High School – 601 N. 3<sup>rd</sup> Avenue

*According to Graham County, approximately 4 school bus trips per day occur over this crossing, one bus with four trips.*

Staff verified this information with the Thatcher Unified School District on September 13, 2010.

### Hospitals

The nearest hospital or health facility to the crossing is as follows:

#### Hospitals:

- ✓ Mt. Graham Regional Medical Center  
2115 West 16<sup>th</sup> Street  
Safford, Arizona

*The crossing is not extensively used by emergency services.*

### Hazardous Materials

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

*It is not known how much hazardous materials traffic uses the existing crossing each day. Per Graham County, Central Road is not a designated truck route.*

### Zoning

Staff requested ADOT provide information regarding the type of zoning in areas adjacent to the crossing. The following was ADOT's response:

*Per Graham County, the area is zoned for A (Agricultural) but can be rezoned for development.*

### COLLEGE AVENUE

This project was approved for Section 130 funding as part of the 1998 Commission Annual Array approved by Decision No. 60723. College Avenue is under the jurisdiction of the Town of Thatcher. Currently, College Avenue is a passive crossing protected by cross buck

signage only. The project consists of installing a concrete crossing surface along with installing LED flashing lights, automatic gates, bells and motion sensor detection circuitry on this two lane roadway. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the State. The estimated cost of the proposed surface and signal improvements are \$289,970.46. This project will be funded by the FHWA, with the Town of Thatcher paying 5.7% of the cost of the concrete surface (\$5,295.84).

Traffic data for College Avenue was provided by ADOT. The data shows the ADT to be 1,250 vpd. No projected ADT's were given. The LOS for College Avenue is LOS A.

The posted speed limit on College Avenue is 25 mph. Staff records, as well as FRA accident/incident records indicate one accident at this crossing on May 9, 1973.

Alternative routes from this crossing are as follows; to the east  $\frac{3}{4}$  of a mile is 1<sup>st</sup> Avenue, and 700 feet to the west is Stadium Avenue. Neither of these crossings is grade separated.

#### Train Data

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

Train Count: 2 – 3 freight trains per day on average, no passenger trains.

Train Speed: 10 mph

Thru Freight/Switching Moves: All movements through this crossing are thru freight. (No switching operations)

#### Schools and Bus Routes

There are several schools located within the area of this crossing, they are:

##### Schools:

- ✓ Jack Daley Primary School – 3500 W. 2<sup>nd</sup> Street
- ✓ Thatcher Elementary School – 1386 N. 4<sup>th</sup> Avenue
- ✓ Thatcher Middle School – 1300 N. 4<sup>th</sup> Avenue
- ✓ Thatcher High School – 601 N. 3<sup>rd</sup> Avenue

According to the Town of Thatcher:

*No scheduled school bus use. However, infrequent use by many different school districts during events. Thatcher, Pima, Safford, Ft. Thomas and Solomon school Districts.*

Staff verified the school bus use with the Thatcher Unified School District on September 13, 2010.

#### Hospitals

The nearest hospital or health facility to the crossing is as follows:

Hospitals:

- ✓ Mt. Graham Regional Medical Center  
2115 West 16<sup>th</sup> Street  
Thatcher, Arizona

*The crossing is not extensively used by emergency services.*

Hazardous Materials

ADOT gave the following response when asked about hazardous materials vehicles crossing this crossing:

*It is not known how much hazardous materials traffic uses the existing crossing each day, but expected to be very minimal.*

Zoning

Staff requested ADOT provide information regarding the type of zoning in areas adjacent to the crossing. The following was ADOT's response:

*Surrounding area is zoned for educational, farming and rural. Areas to the east of the crossing are zoned for low density housing. Per Town of Thatcher, there is planned expansion of Eastern Arizona College.*

**BIXBY ROAD**

This project was approved for Section 130 funding as part of the 2000 Commission Annual Array approved by Decision No.62301. Bixby Road is a two lane roadway under the jurisdiction of Gila County. Currently, Bixby Road is a passive crossing protected by cross buck signage only. The project consists of installing a new timber crossing surface, and the installation of LED flashing lights, automatic gates, bells and motion sensor detection circuitry on this two lane roadway. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the State. The estimated cost of the proposed surface and signal improvements is \$263,892.32. This project will be funded by the FHWA with Gila County paying 5.7% of the cost of the timber surface (\$5,800.33).

Traffic data for Bixby Road was provided by ADOT. The data show the ADT is estimated to be 640 vpd. No projected ADT's were given. The LOS for Bixby Road is LOS A.

The posted speed limit on Bixby Road is 25 mph. Staff records, as well as FRA accident/incident records indicate one accident at this crossing on November 10, 1972.

Alternative routes from this crossing are as follows; approximately a ½ mile to the south is SR 188, and to the north-east approximately a ½ mile is Hoops Road. Neither of these crossings is grade separated.

Train Data

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

Train Count: 2 – 3 freight trains per day on average, no passenger trains

Train Speed: 10 mph

Thru Freight/Switching Moves: All movements through this crossing are thru freight.  
(No switching operations)

### Schools and Bus Routes

There are several schools located within the area of the crossing, they are:

#### Schools:

- ✓ Dr. Charles A. Bejarano Elementary School- P.O.Box 2070, Miami
- ✓ Las Lomas Elementary School- 5791 S. Maple Leaf Street, Miami
- ✓ Miami Junior High School- 4739 Ragus Road, Claypool
- ✓ Miami High School- 4739 Ragus Road, Claypool

*Per Gila County, there are 4 school bus crossings here per day on Bixby Road.*

Staff verified the bus crossings with Miami and Globe School Districts on September 13, 2010.

### Hospitals

The nearest hospital or health facility to the crossing is as follows:

#### Hospitals:

- ✓ Cobre Valley Community Hospital  
5880 South Hospital Drive  
Globe, Arizona

*The crossing is not extensively used by emergency services.*

### Hazardous Materials

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

*It is not known how much hazardous materials traffic uses the existing crossing each day. Per Gila County, hazardous materials are hauled to / from the Cemex plant NE of the crossing.*

### Zoning

Staff requested ADOT provide information regarding the type of zoning in areas adjacent to the crossing. The following was ADOT's response:

*Per Gila County, area is zoned low density residential (1Residence per 8000 sf) and Commercial 3 district. No new development anticipated.*

## **BIA 2 ROAD**

This project was approved for Section 130 funding as part of the 1998 Commission Annual Array approved by Decision No. 60723. BIA 2 Road is under the jurisdiction of the San Carlos Apache Tribal Transportation. Currently, BIA 2 Road is a passive crossing with cross buck protection. This project will consist of replacing the existing timber surface with a new concrete surface, and the installation of LED flashing lights, automatic gates, bells and motion sensor detection circuitry. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the State. The estimated cost of the proposed surface and signal improvements is \$246,629.60. This project will be funded by the FHWA with the San Carlos Apache Nation paying 5.7% (\$4,725.97) of the cost of the new concrete surface.

Traffic data for BIA 2 was provided by ADOT. The data shows the ADT for 2009 to be 3,845 vpd. No projected ADT's were given. The LOS for BIA 2 is LOS A.

The posted speed limit on BIA 2 is 35 mph. Staff records, as well as FRA accident/incident records indicate no accidents at this crossing.

Alternative routes from this crossing are as follows; approximately 1 mile south is US 70, a grade-separated crossing, and approximately 2 miles to the north is BIA 101 an at-grade crossing.

### Train Data

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

Train Count: 2 – 3 freight trains per day on average, no passenger trains.

Train Speed: 10 mph

Thru Freight/Switching Moves: All movements through this crossing are thru freight. (No switching operations)

### Schools and Bus Routes

There are several schools located within the area of the crossing, they are:

#### Schools:

- ✓ San Carlos High School - San Carlos Avenue
- ✓ San Carlos Junior High School - Milepost 4, Indian Route 6
- ✓ San Carlos Elementary School - San Carlos Avenue
- ✓ San Carlos Intermediate School - Milepost 270, Highway 70
- ✓ San Carlos Head Start - 45 San Carlos Avenue

*There is a minimum of 10 school bus trips per day over this crossing.*

Staff verified the school bus crossings with the San Carlos Unified School District on September 14, 2010.

### Hospitals

The nearest hospital or health facility to the crossing is as follows:

#### Hospitals:

- ✓ San Carlos Indian Health Service  
223 Seneca Lane  
San Carlos

*The crossing is used extensively by Emergency Medical Services ("EMS").*

### Hazardous Materials

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

*No normal / common hazardous material crossing truck use unless US 70 is closed and that traffic detours onto this crossing.*

### Zoning

Staff requested ADOT provide information regarding the type of zoning in areas adjacent to the crossing. The following was ADOT's response:

*Local zoning is residential with future development anticipated that will lead to increased traffic.*

### **BIA 101 ROAD**

This project was approved for Section 130 funding as part of the 1998 Commission Annual Array approved by Decision No. 60723. BIA 101 Road is under the jurisdiction of the San Carlos Apache Tribal Transportation. Currently, the crossing is protected by cross buck signage. This project will replace the existing timber surface with a new concrete surface, as well as the installation of LED flashing lights, automatic gates, bells and motion sensor detection circuitry. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the State. The estimated cost of the proposed surface and signal improvements is \$264,459.26. This project will be funded by the FHWA with the San Carlos Apache Nation paying 5.7% (\$5,545.56) of the cost of the new concrete surface.

Traffic data for BIA 101 Road was provided by ADOT. The data shows the ADT for 2009 to be 2,992 vpd. No projected ADT's were given. The LOS for BIA 101 Road is LOS A.

The posted speed limit on BIA 101 Road is 20 mph. Staff records, as well as FRA accident/incident records indicate no accidents at this crossing.

Alternative routes from this crossing are as follows; to the south approximately 2 miles is BIA 2 Road, and approximately one ½ mile to the east is SR 170. None of these crossings are grade separated.

### Train Data

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

Train Count: 2 - 3 freight trains per day on average, no passenger trains.

Train Speed: 10 mph

Thru Freight/Switching Moves: All movements through this crossing are thru freight.  
(No switching operations)

### Schools and Bus Routes

There are several schools located within the area of the crossing, they are:

#### Schools:

- ✓ San Carlos High School - San Carlos Avenue
- ✓ San Carlos Junior High School - Milepost 4, Indian Route 6
- ✓ San Carlos Elementary School – San Carlos Avenue
- ✓ San Carlos Intermediate School – Milepost 270, Highway 70
- ✓ San Carlos Head Start – 45 San Carlos Avenue

*There is a minimum of 10 school bus trips per day.*

Staff verified the bus trips with the San Carlos Unified School District on September, 14, 2010.

### Hospitals

The nearest hospital or health facility to the crossing is as follows:

#### Hospitals:

- ✓ San Carlos Indian Health Service  
223 Seneca Lane  
San Carlos

*This crossing is not used routinely by EMS.*

### Hazardous Materials

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

*No normal / common hazardous material crossing truck use unless US 70 is closed and that traffic is detours onto this crossing.*

### Zoning

Staff requested ADOT provide information regarding the type of zoning in areas adjacent to the crossing. The following was ADOT's response:

*Local zoning is residential with future development anticipated that will lead to increased traffic.*

### **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:

		Central Avenue	College Avenue	Bixby Road	BIA 2 Road	BIA 101 Road
The highway is a part of the designated Interstate Highway System	Crossing Currently meets the criteria	No	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No	No
The highway is otherwise designed to have full controlled access	Crossing Currently meets the criteria	No	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No	No
The posted highway speed equals or exceeds 70 mph	Crossing Currently meets the criteria	No	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No	No
AADT exceeds 100,000 in urban areas or 50,000 in rural areas	Crossing Currently meets the criteria	No	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No	No
Maximum authorized train speed exceeds 110 mph	Crossing Currently meets the criteria	No	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No	No
An average of 150 or more trains per day or 300 million gross tons/year	Crossing Currently meets the criteria	No	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No	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	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No	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	No	No	No	No
	Crossing meets the criteria by 2030	N/A <sup>1</sup>				
Vehicle delay exceeds 40 vehicle hours per day	Crossing Currently meets the criteria	No	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No	No

<sup>1</sup> N/A = Not Applicable

### **Vehicular Delays at Crossings**

Due to the low traffic volume on these five crossings and the low number of train movements per day (2 to 3), the delay time at these crossings is minimal and falls well below the FHWA recommended threshold of 40 vehicle delay hours. According to the Railroad, each train occupies the crossing for approximately 3 minutes per trip. Based on an average of 30 vehicles an hour, or one vehicle every two minutes, expected vehicle delay is less than 5 minutes 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 not currently met at these crossings. The current Crossing Exposure Index for the five crossings is as follows:

- Central Road – 1,407
- College Avenue – 3,750
- Bixby Road – 1,920
- BIA 2 – 11,535
- BIA 101 – 8,976

The current Crossing Exposure Index for the five crossings falls far below the threshold of 1 million for urban areas and 250,000 in rural areas.

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 these crossings, ADOT gave the following response:

*Section 130 program did not consider grade-separation for any of these crossings due to low train volume as well as vehicle traffic, all will remain at grade.*

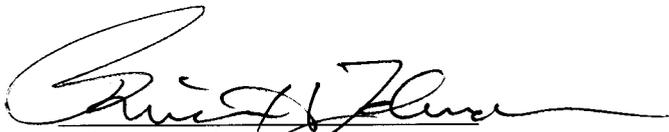
Staff has utilized the FHWA Guidelines to determine the potential need for grade separation at these crossings. Based on existing conditions, the crossings in this application meet none of the nine criteria for consideration of grade separation.

### **Crossing Closure**

The areas surrounding these crossings are mostly commercial, residential, and agricultural businesses or a combination of all. To close any of these crossings would have a negative effect on the local businesses, EMS routes, school bus routes, access to residences and agricultural fields. Therefore, Staff does not recommend closure of any of these crossings at this time.

**Staff Conclusions**

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

A handwritten signature in black ink, appearing to read "Brian H. Lehman", with a long horizontal flourish extending to the right.

Brian H. Lehman  
Railroad Safety Supervisor  
Safety Division

Originator: BHL

COPIES of the foregoing mailed  
This 17th day of September, 2010 to:

Docket No. RR-02634A-10-0235  
RR-02634A-10-0236  
RR-02634A-10-0237  
RR-02634A-10-0238  
RR-02634A-10-0239

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