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AZ CORP COMMISSION  
DOCKET CONTROL

Transcript Exhibit(s)

Docket #(s): RR-03639A-13-0193

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Arizona Corporation Commission

DOCKETED

OCT 22 2013

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Exhibit #: SI, A1-A6

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ORIGINAL  
STAFF MEMORANDUM

To: THE COMMISSION

RECEIVED

From: Robert Marvin  
Director  
Safety Division

2013 AUG 21 P 3:11

AZ CORP COMMISSION  
DOCKET CONTROL

Date: August 21, 2013



AUG 21 2013

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RE: IN THE MATTER OF THE APPLICATION OF THE TOWN OF SAHUARITA TO UPGRADE A CROSSING OF THE UNION PACIFIC RAILROAD AT SAHUARITA ROAD IN THE TOWN OF SAHUARITA, PIMA COUNTY, ARIZONA, USDOT NO. 742-129-B.

DOCKET NO. RR-03639A-13-0193

**Background**

On June 11, 2013, the Town of Sahuarita ("Town") filed with the Arizona Corporation Commission ("Commission") an application for approval for the Union Pacific Railroad ("Railroad") to upgrade an existing crossing at Sahuarita Road in the Town, Pima County, Arizona at USDOT No. 742-129-B.

**Geographical Information**

The Town was officially incorporated in 1994. According to the U.S. Census Bureau the population of the Town in April of 2000 was 3,242. By July, 2011 the population of the Town had grown to 25,659 residents. The Town is located 20 miles south of Tucson and approximately 2 miles east of I-19 in the historic Santa Cruz Valley, surrounded by early Spanish missions, frontier outposts and old mines.

**SAHUARITA ROAD**

There are three tracks at the crossing of Sahuarita Road. The Nogales Branch mainline runs in a north south direction from Tucson to Nogales, Arizona. Additionally, a siding track along with the Anamax Mine Spur traverses the roadway. (See Appendix "A")

The Town, Railroad, and the Commission's Railroad Safety Section ("Staff") have met several times since 2007 regarding this project. Most recently, a field diagnostic meeting was held at the project site on May 21, 2013.

Sahuarita Road is an east/west two lane roadway, with a left hand turning lane beginning at the railroad crossing for vehicles traveling west. Current warning devices at the crossing consist of flashing lights, automatic gate mechanisms, bells and a cantilever with flashing lights for west bound traffic. Also present are advanced warning signs and pavement markings. The new four lane roadway will consist of a raised median with flashing LED lights, automatic gates, bells, curb side automatic gates with flashing LED lights, new concrete surface and advanced warning signage. The at-grade crossing improvements at Sahuarita Road are estimated at

\$1,600,000. The total estimated cost also includes a temporary crossing equipped with flashing light signals and new crossing surfaces to allow vehicles to travel on Sahuarita Road while construction is ongoing. This project is being funded by the Town as part of a five year Capital Improvement Plan ("CIP"). The project funding includes both the roadway and railroad crossing improvements.

According to the Town, the Average Daily Traffic ("ADT") in 2013 is 8,000 vehicles per day ("vpd"). Projected ADT's for the year 2030 are 28,500 vpd. The current Level of Service ("LOS") for this two lane road is LOS A.

**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 Sahuarita Road is 40 mph. The speed will increase to 45 mph after the project is completed. Staff accident/incident records as well as the Federal Railroad Administration ("FRA") records indicate no incidents at the crossing.

Alternative routes from this crossing are as follows: Lumber Street is located 5.52 miles north of the crossing, and Quail Crossing is located 4.35 miles south of the crossing. Both crossings are at-grade.

### **Train Data**

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

**Train Count:** 8 trains per day

**Train Speed:** 40 mph for freight

**Thru Freight/Switching Moves:** Both thru freight and switching movements occur at this crossing. This is not a passenger train route.

### **Schools and Bus Routes**

The Sahuarita Unified School District ("SUSD") campus includes four different schools: primary, intermediate, middle and a high school that are located approximately 1.2 miles northwest of the crossing, at 350 W. Sahuarita Road. Another high school, Walden Grove High opened in the fall of 2011 and is located 2.2 miles northeast of the crossing at 15510 S. Sahuarita Park Road. The SUSD indicates their buses cross Sahuarita Road crossing 100 times a day each school day.

### **Hospitals**

There are no hospitals in the vicinity of the crossing. Use by emergency vehicles is typical of other areas/roads around the Town.

### Hazardous Materials

The Town gave the following response when asked about vehicles carrying hazardous materials that utilize this crossing:

*There are no regular occurrences of hazardous material vehicles utilizing the Sahuarita Road crossing, to the Town's knowledge.*

### Zoning

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

*The areas north-west, south-west, and southeast of the crossing are zoned RH (Rural Homestead) and are currently an exclusive agriculture use within the Santa Cruz River floodplain. The properties include existing pecan tree orchards operated by Farmers Investment Co. (FICO).*

*The areas north-east and east of the crossing are zoned GR-1 (Rural Residential) and CI-1 (Light Industrial/Warehousing) and currently include FICO offices, processing facilities, maintenance facilities, and employee housing units.*

*There is a small parcel 1.86 acres north of the crossing that is zoned CB-2 (General Business). The building on the parcel is vacant and no business is occurring at the location. The UPRR Nogales Subdivision ROW adjacent to and east of the crossing is zoned CI-2 (General Industrial).*

### Federal Highway Administration ("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:

		<b>Sahuarita Road</b>
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	No
	Crossing meets the criteria by 2030	No
Vehicle delay exceeds 40 vehicle hours per day	Crossing Currently meets the criteria	No
	Crossing meets the criteria by 2030	No

### Spur Lines

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

*There have not been any spur lines removed within the area over the last three years, to the Town's knowledge.*

### Grade Separation

The following is the Town's response to grade-separating Sahuarita Road crossing:

*Sahuarita Road grade separated crossing at the UPRR Nogales Subdivision is not being considered for the Segment 2C project for the following reasons:*

- *Based on existing and anticipated future traffic volumes, the FHWA warrants for a grade separated crossing are not met within the 20-year design horizon of the project (2030).*
- *Per the Pima County Regional Transportation Authority (RTA), the Town's primary funding partner, a grade-separated crossing was not included in the 2006 voter-approved project scope definition that includes a 4-lane widening project.*
- *Ongoing construction of separate portions of the Sahuarita Road Phase II project (Segments 2A and 2B), will permanently relocate the intersection of Sahuarita Road/Nogales Highway approximately 1600' west of its original location. The relocation of this existing roadway intersection provides a physical separation between the Sahuarita Road/Nogales Highway traffic intersection and two existing public at-grade crossings of UPRR's tracks. This physical separation reduces the potential conflict between trains and vehicles at both the Nogales Subdivision and UPRR's Anamax Mine spur (DOT #742-123K).*

- *It was much more efficient for the Town to realign Nogales Highway and remove the Nogales Highway/Sahuarita Road intersection from the immediate vicinity of the public at-grade crossings of the UPRR Nogales Subdivision and Anamax Spur line. The Nogales Highway relocation alone is a substantial safety improvement and provides efficient vehicular crossing of the existing UPRR tracks. In addition, the Nogales Highway realignment also facilitates a potential/future opportunity for a Sahuarita Road grade-separated crossing of the UPRR Nogales subdivision tracks, should the grade-separation warrants be met beyond the 20-year design horizon of the project.*
- *Due to existing soil conditions (collapsible clay), a Sahuarita Road bridge structure will need to be approximately 795' long and include 7-spans in order to bridge approximately 100' of existing railroad tracks. The 795' length does not include the approach embankments required to raise Sahuarita Road approximately 30' above adjacent properties.*
- *Details on future adjacent development are needed to properly coordinate a grade-separated crossing and address adjacent land uses, ultimate roadway width, and ROW needs along Sahuarita Road. Farmers Investment Co. (FICO) is preparing a comprehensive, long-term plan for the future development of its 7,000 acres over the next 40 to 50 years. The long term development will significantly change the Sahuarita Road corridor needs, but the implementation of such development is beyond the 20-year design horizon of the project (2030), due to significant Santa Cruz River floodplain considerations and lack of infrastructure to support development. The current 4-lane roadway concept meets the 2030 design-horizon criteria and significantly improves the existing at-grade crossing configuration while facilitating a potential/future opportunity for a Sahuarita Road grade-separated crossing of the UPRR Nogales Sahuarita Road DOT Crossing No. 742-129B, UPRR M.P. 18.55 Nogales Subdivision Appendix A - Page 3 of 6 subdivision tracks, should the grade-separation warrants be met beyond the 20-year design horizon of this project.*
- *An underpass structure was ruled out due to existing Santa Cruz River floodplain considerations and limits.*

Staff believes a grade separation for this project is not warranted based on the Town's aforementioned responses in addition to the failure to meet any of the current or future criteria from the FHWA handbook.

### **Crossing Closure**

The area surrounding this crossing is highly developed with both commercial businesses and residential dwellings. To close this crossing would have a negative effect on many of the local businesses and limit access to residences. Therefore, Staff would not recommend closure of this crossing.

### **Staff Conclusions**

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

- *It was much more efficient for the Town to realign Nogales Highway and remove the Nogales Highway/Sahuarita Road intersection from the immediate vicinity of the public at-grade crossings of the UPRR Nogales Subdivision and Anamax Spur line. The Nogales Highway relocation alone is a substantial safety improvement and provides efficient vehicular crossing of the existing UPRR tracks. In addition, the Nogales Highway realignment also facilitates a potential/future opportunity for a Sahuarita Road grade-separated crossing of the UPRR Nogales subdivision tracks, should the grade-separation warrants be met beyond the 20-year design horizon of the project.*
- *Due to existing soil conditions (collapsible clay), a Sahuarita Road bridge structure will need to be approximately 795' long and include 7-spans in order to bridge approximately 100' of existing railroad tracks. The 795' length does not include the approach embankments required to raise Sahuarita Road approximately 30' above adjacent properties.*
- *Details on future adjacent development are needed to properly coordinate a grade-separated crossing and address adjacent land uses, ultimate roadway width, and ROW needs along Sahuarita Road. Farmers Investment Co. (FICO) is preparing a comprehensive, long-term plan for the future development of its 7,000 acres over the next 40 to 50 years. The long term development will significantly change the Sahuarita Road corridor needs, but the implementation of such development is beyond the 20-year design horizon of the project (2030), due to significant Santa Cruz River floodplain considerations and lack of infrastructure to support development. The current 4-lane roadway concept meets the 2030 design-horizon criteria and significantly improves the existing at-grade crossing configuration while facilitating a potential/future opportunity for a Sahuarita Road grade-separated crossing of the UPRR Nogales Sahuarita Road DOT Crossing No. 742-129B, UPRR M.P. 18.55 Nogales Subdivision Appendix A - Page 3 of 6 subdivision tracks, should the grade-separation warrants be met beyond the 20-year design horizon of this project.*
- *An underpass structure was ruled out due to existing Santa Cruz River floodplain considerations and limits.*

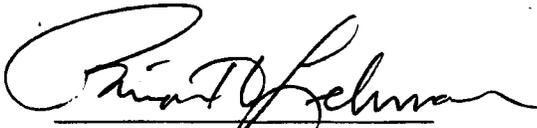
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### **Crossing Closure**

The area surrounding this crossing is highly developed with both commercial businesses and residential dwellings. To close this crossing would have a negative effect on many of the local businesses and limit access to residences. Therefore, Staff would not recommend closure of this crossing.

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Brian H. Lehman  
Railroad Safety Supervisor  
Safety Division

Originator: BHL

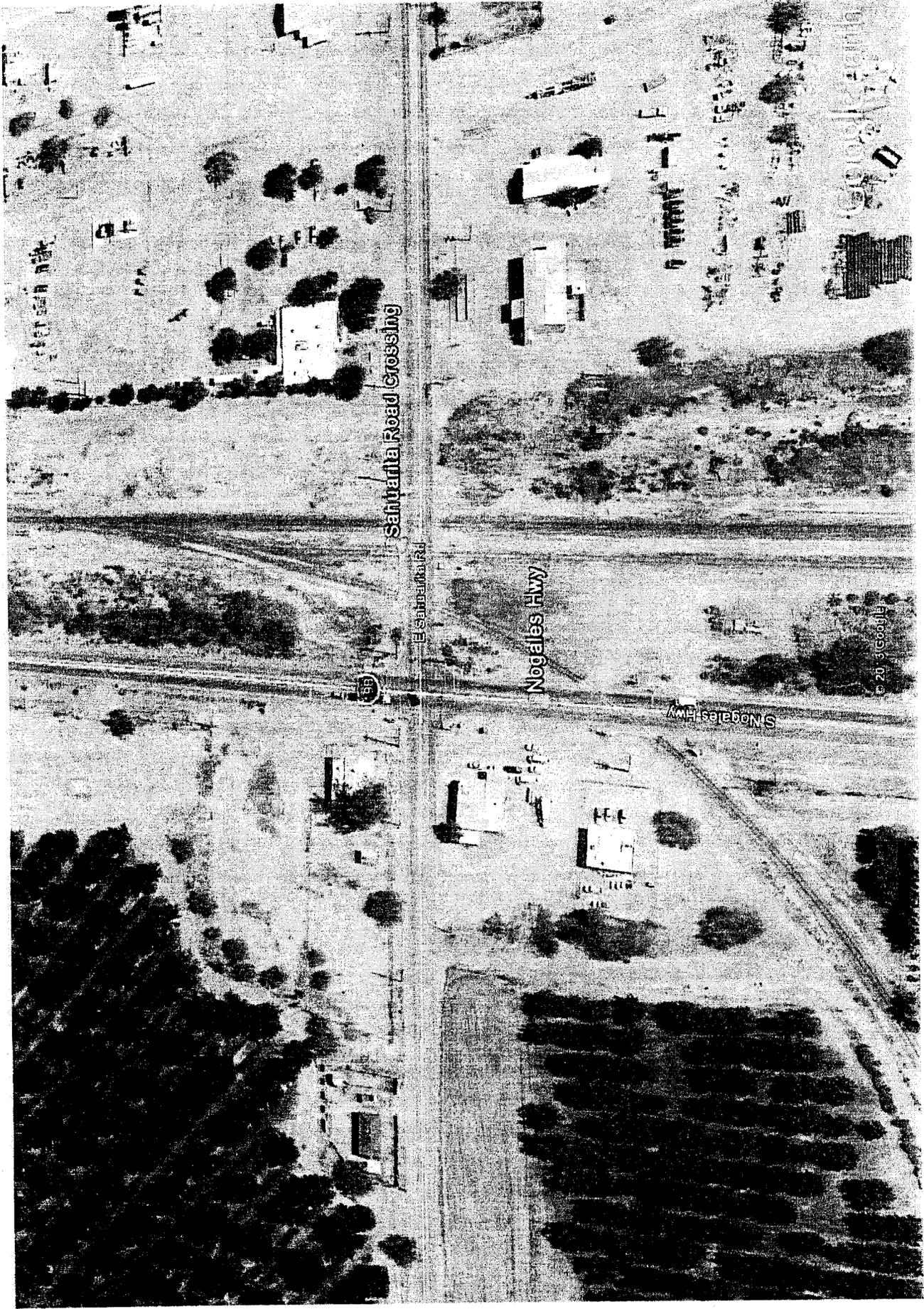
**SERVICE LIST FOR:  
DOCKET NO. RR-03639A-13-0193**

**Vicki Bever  
Manager, Utility & Railroad Engineering  
ADOT  
205 South 17<sup>th</sup> Avenue, Mail Drop 618E  
Phoenix, AZ 85007-3212**

**Alexander Popovici  
Manager Industry & Public Projects - UPRR  
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**Reed Campbell  
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302 E. Coronado  
Phoenix, Az. 85004**

**Joel T. Harris  
Sahuarita Public Works Department  
375 W. Sahuarita Center Way  
Sahuarita, Az. 85269**

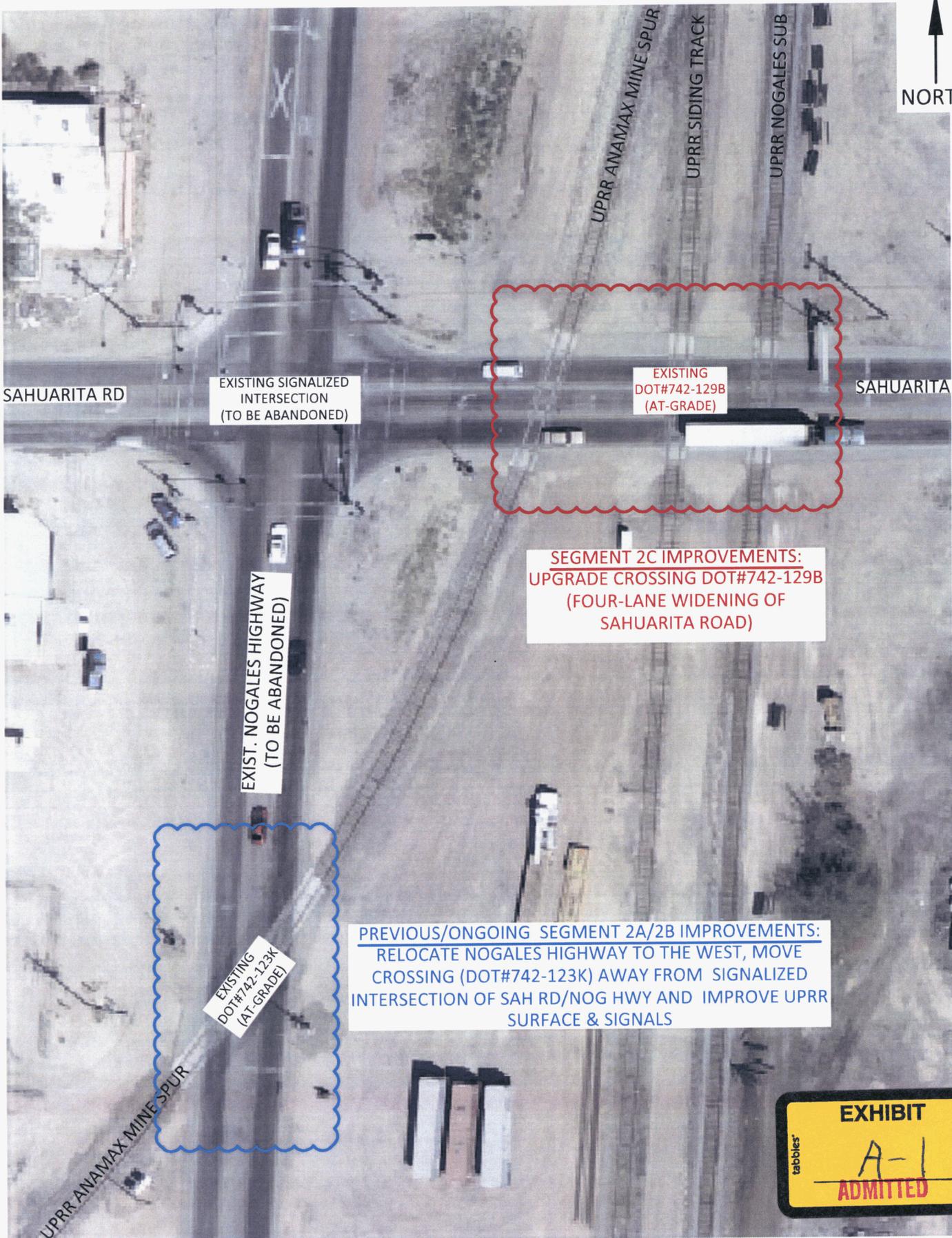


700

200

feet  
meters

Google earth



SAHUARITA RD

EXISTING SIGNALIZED INTERSECTION (TO BE ABANDONED)

EXISTING DOT#742-129B (AT-GRADE)

SAHUARITA RD

EXIST. NOGALES HIGHWAY (TO BE ABANDONED)

SEGMENT 2C IMPROVEMENTS: UPGRADE CROSSING DOT#742-129B (FOUR-LANE WIDENING OF SAHUARITA ROAD)

EXISTING DOT#742-123K (AT-GRADE)

PREVIOUS/ONGOING SEGMENT 2A/2B IMPROVEMENTS: RELOCATE NOGALES HIGHWAY TO THE WEST, MOVE CROSSING (DOT#742-123K) AWAY FROM SIGNALIZED INTERSECTION OF SAH RD/NOG HWY AND IMPROVE UPRR SURFACE & SIGNALS

UPRR ANAMAX MINE SPUR

UPRR ANAMAX MINE SPUR

UPRR SIDING TRACK

UPRR NOGALES SUB



# EXHIBIT A - EXISTING CONDITION MAP

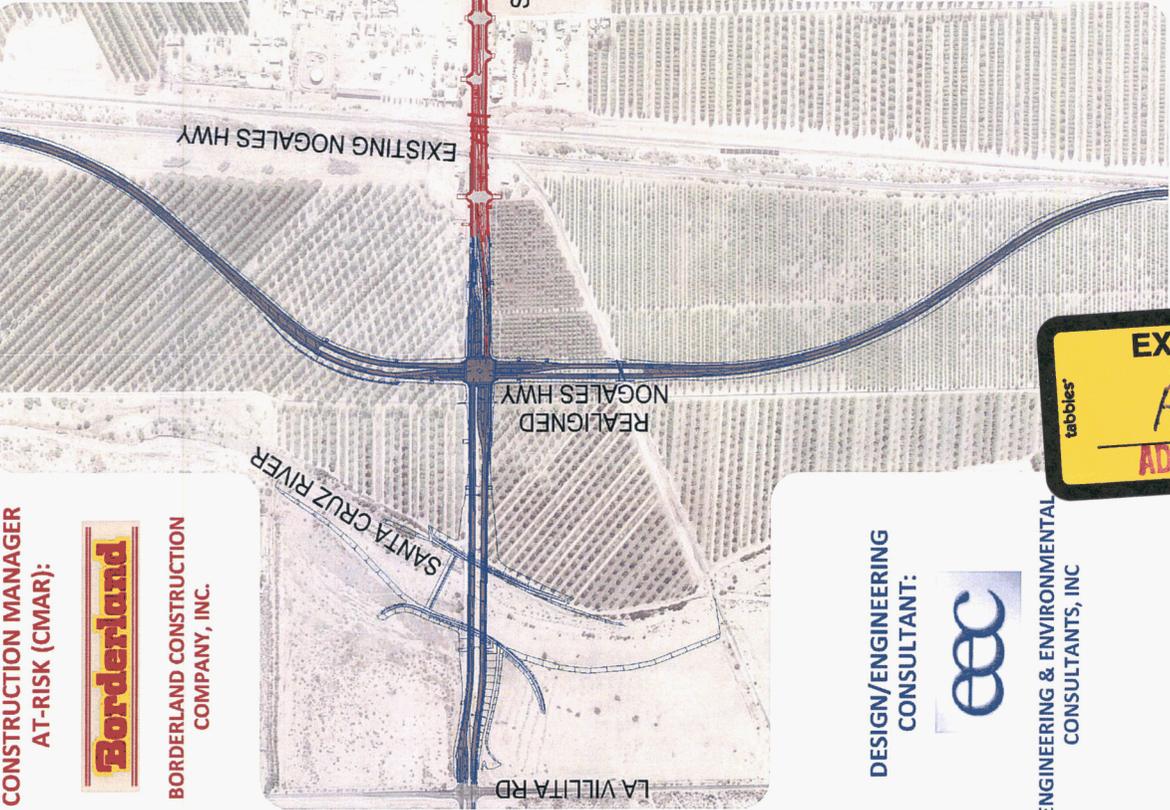
ACC Hearing - October 8, 2013

**EXHIBIT B - ACC HEARING (OCTOBER 8, 2013)**

CONSTRUCTION MANAGER  
AT-RISK (CMAR):



BORDERLAND CONSTRUCTION  
COMPANY, INC.



**SAHUARITA ROAD PHASE II:**

- ONGOING CONSTRUCTION (MAY 2012 - SEPT 2014):
- SEGMENT 2A: LA VILLITA RD TO NOGALES HWY
- SEGMENT 2B: NOGALES HIGHWAY REALIGNMENT
- ONGOING DESIGN (95% PRELIMINARY - MAY 2013):
- SEGMENT 2C: NOGALES HIGHWAY TO COUNTRY CLUB ROAD



**MAJOR PROJECT FEATURES:**

- WIDEN 2.5± MILES OF SAHUARITA ROAD TO A 4-LANE DIVIDED ROADWAY
- NEW SAHUARITA ROAD BRIDGE CROSSINGS AT THE SANTA CRUZ RIVER
- NEW BIKE LANES AND SIDEWALKS
- WIDEN AND REALIGN 2± MILES OF NOGALES HIGHWAY
- NEW SIGNALIZED INTERSECTION AT REALIGNED NOGALES HIGHWAY - TO INCLUDE EXCLUSIVE LEFT AND RIGHT TURN LANES

DESIGN/ENGINEERING  
CONSULTANT:



ENGINEERING & ENVIRONMENTAL  
CONSULTANTS, INC



# EXHIBIT C1 - ACC HEARING (OCTOBER 8, 2013)

## MAJOR PROJECT FEATURES:

1. WIDEN SAHUARITA ROAD TO A 4-LANE DIVIDED ROADWAY
2. NEW SAHUARITA ROAD BRIDGE CROSSINGS AT THE SANTA CRUZ RIVER
3. NEW SAHUARITA ROAD BIKE LANES AND SIDEWALKS
4. NEW SIGNALIZED INTERSECTION AT REALIGNED NOGALES HIGHWAY - TO INCLUDE EXCLUSIVE LEFT AND RIGHT TURN LANES
5. NEW REALIGNMENT AND WIDENING OF NOGALES HIGHWAY
6. NEW SIGNALIZED AT-GRADE CROSSING OF NOGALES HIGHWAY AT THE UPRR SPUR TRACKS

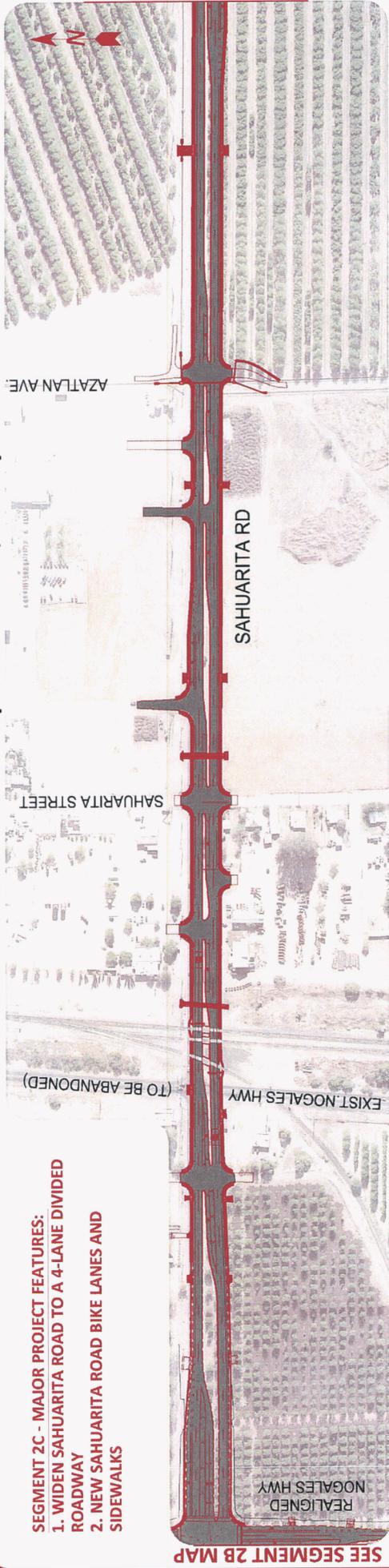


**SAHUARITA ROAD PHASE II:**  
**SEGMENT 2A: LA VILLITA RD TO NOGALES HWY**  
**SEGMENT 2B: NOGALES HWY REALIGNMENT**  
CONSTRUCTION STARTED: MAY 2012  
COMPLETION ANTICIPATED: FALL 2014



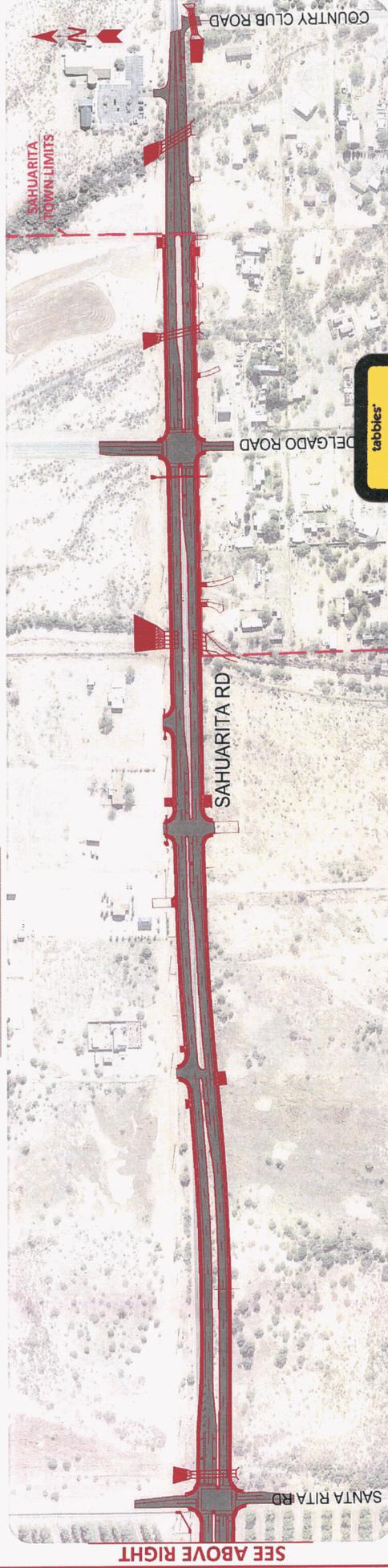
**EXHIBIT C2 - ACC HEARING (OCTOBER 8, 2013)**

- SEGMENT 2C - MAJOR PROJECT FEATURES:
1. WIDEN SAHUARITA ROAD TO A 4-LANE DIVIDED ROADWAY
  2. NEW SAHUARITA ROAD BIKE LANES AND SIDEWALKS



SEE BELOW LEFT

**95% PRELIMINARY CONCEPTS (MAY 2013)**



SEE ABOVE RIGHT

tabbies

**EXHIBIT**

A-4

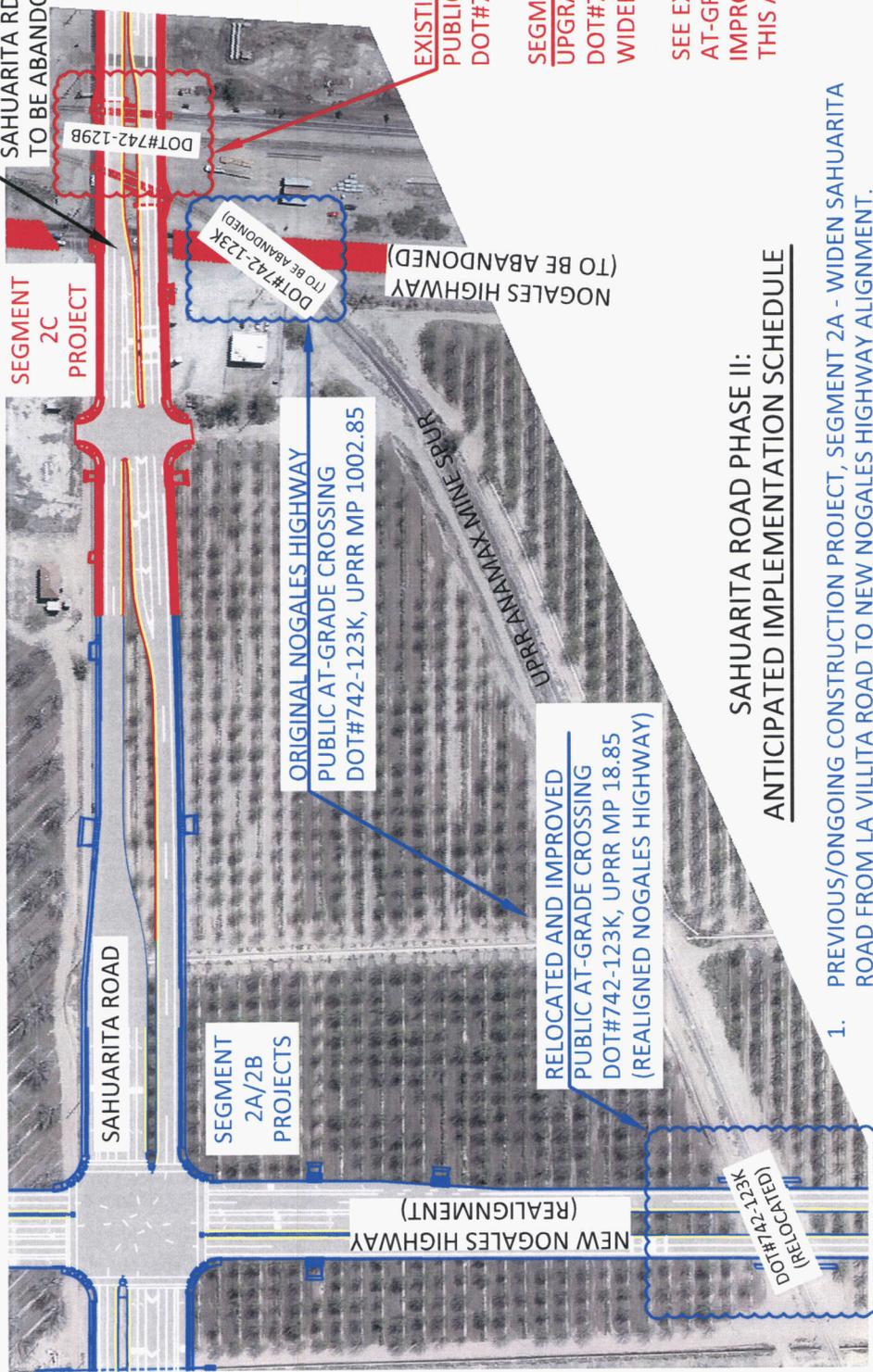
**ADMITTED**



**SAHUARITA ROAD PHASE II:**  
**SEGMENT 2C: NOGALES HWY TO COUNTY CLUB RD**  
 DESIGN STATUS: 95% PRELIMINARY (MAY 2013)  
 CONSTRUCTION ANTICIPATED: LATE 2013/EARLY 2014



EXIST. SIGNALIZED TRAFFIC INTERSECTION  
SAHUARITA RD/NOGALES HWY  
TO BE ABANDONED



**EXISTING SAHUARITA ROAD  
PUBLIC AT-GRADE CROSSING  
DOT#742-129B, UPRR MP 18.55**

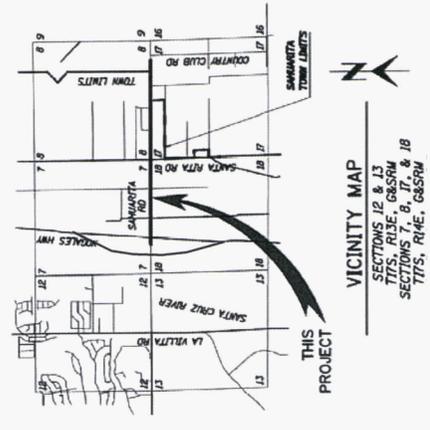
**SEGMENT 2C IMPROVEMENTS:  
UPGRADE CROSSING  
DOT#742-129B (FOUR-LANE  
WIDENING OF SAHUARITA ROAD)**

**SEE EXHIBIT E FOR CONCEPTUAL  
AT-GRADE CROSSING  
IMPROVEMENTS PERTAINING TO  
THIS ACC APPLICATION**

**SAHUARITA ROAD PHASE II:  
ANTICIPATED IMPLEMENTATION SCHEDULE**

1. PREVIOUS/ONGOING CONSTRUCTION PROJECT, SEGMENT 2A - WIDEN SAHUARITA ROAD FROM LA VILLITA ROAD TO NEW NOGALES HIGHWAY ALIGNMENT.
2. PREVIOUS/ONGOING CONSTRUCTION PROJECT, SEGMENT 2B - CONSTRUCT REALIGNMENT OF NOGALES HIGHWAY AND ESTABLISH NEW SAHUARITA ROAD INTERSECTION AND TRAFFIC SIGNAL. CONSTRUCTION INCLUDES RELOCATED AT-GRADE CROSSING IMPROVEMENTS AT ANAMAX SPUR LINE.
3. FUTURE CONSTRUCTION PROJECT, SEGMENT 2C - WIDEN SAHUARITA ROAD TO FOUR LANE DIVIDED CROSS-SECTION FROM NEW NOGALES HIGHWAY INTERSECTION TO EASTERN TOWN LIMITS. AT-GRADE CROSSING OF SAHUARITA ROAD AT EXISTING UPRR NOGALES SUBDIVISION TRACKS (DOT CROSSING #742-129B)

**EXHIBIT D  
ACC HEARING  
(OCTOBER 8, 2013)**



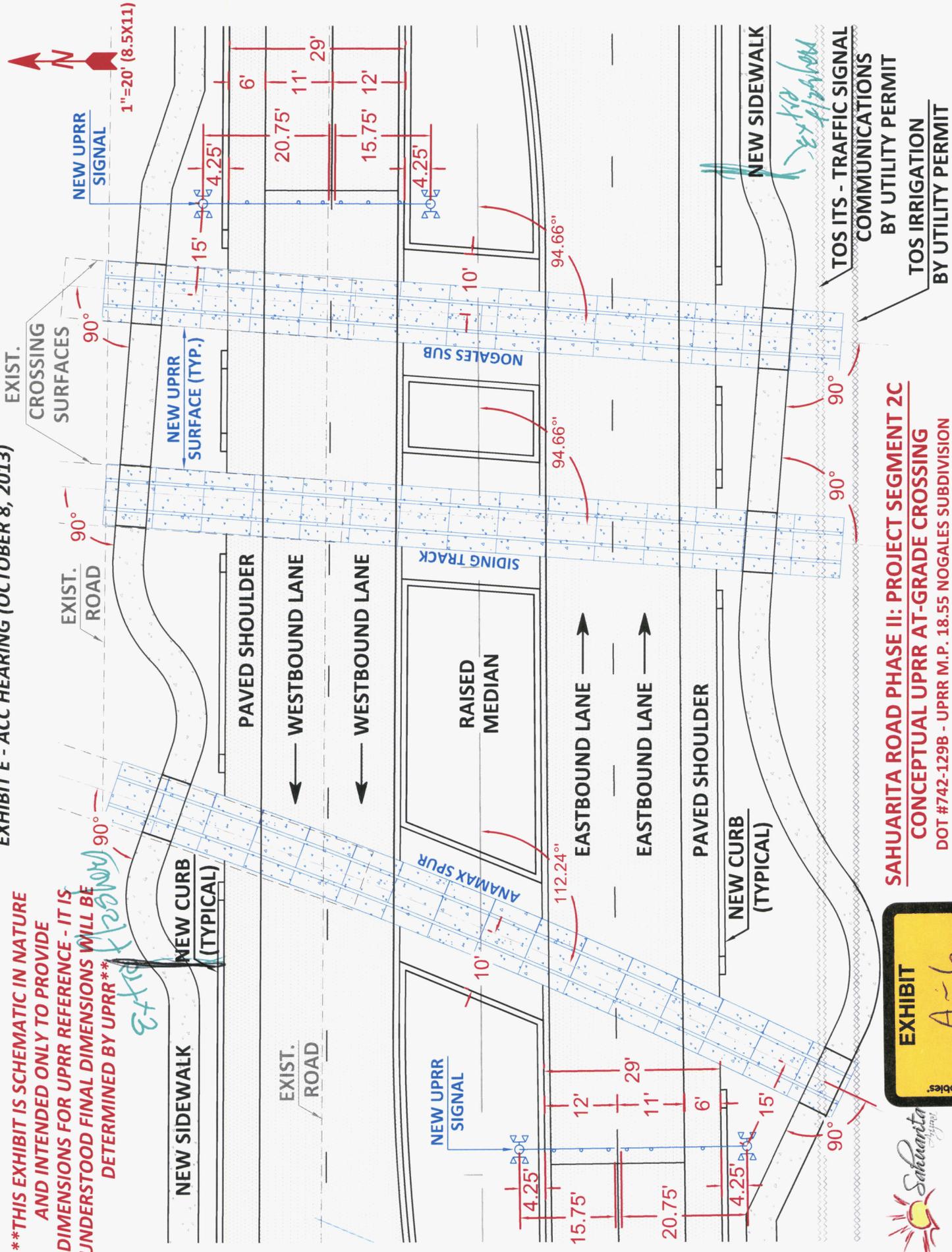
**VICINITY MAP**  
SECTIONS 12 & 13  
T1TS, R14E, C6S5M  
SECTIONS 7, 8, 17, & 18  
T1TS, R14E, C6S5M

**SAHUARITA ROAD PHASE II: PROJECT SEGMENT 2C  
PROJECT LOCATION MAP**  
DOT #742-129B - UPRR M.P. 18.55 NOGALES SUBDIVISION

EXHIBIT E - ACC HEARING (OCTOBER 8, 2013)

\*\*THIS EXHIBIT IS SCHEMATIC IN NATURE AND INTENDED ONLY TO PROVIDE DIMENSIONS FOR UPRR REFERENCE - IT IS UNDERSTOOD FINAL DIMENSIONS WILL BE DETERMINED BY UPRR\*\*

*extra (2200)*



**SAHUARITA ROAD PHASE II: PROJECT SEGMENT 2C**  
**CONCEPTUAL UPRR AT-GRADE CROSSING**  
 DOT #742-129B - UPRR M.P. 18.55 NOGALES SUBDIVISION

EXHIBIT  
**A-6**  
 ADMITTED

