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MEMORANDUM

To: THE COMMISSION

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

MAY 6 2011

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Date: May 6, 2010

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AZ CORP COMMISSION
DOCKET CONTROL

RE: IN THE MATTER OF THE APPLICATION OF THE ARIZONA DEPARTMENT OF TRANSPORTATION TO UPGRADE FOUR EXISTING CROSSINGS OF THE BURLINGTON NORTHERN SANTA FE RAILWAY AT 103rd, 107th, 111th AVENUES AND GREENWAY ROAD, IN MARICOPA COUNTY, ARIZONA.

DOCKET NO. RR-02635B-10-0305

Background

On July 22, 2010, the Arizona Department of Transportation (“ADOT”) filed with the Arizona Corporation Commission (“Commission”) an application for approval for the modification of four crossings of the Burlington Northern Santa Fe Railway (“Railroad”) in Maricopa County (“County”), Arizona. The three crossings; 103rd Avenue, USDOT No. 025-399-X; 107th Avenue, USDOT No. 025-398-R and 111th Avenue, USDOT No. 025-397-J are under the jurisdiction of the County. The fourth crossing at Greenway Road, USDOT No. 025-651-J is under the jurisdiction of the City of Surprise (“City”).

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.

Geographical Information

These four crossing projects are part of an ADOT road improvement project that will encompass widening approximately 12 miles of U.S. 60 between 99th Avenue and State Route (“SR”) 303L from 4 lanes to 6 lanes, adding a lane in each direction. The roadway widening project is in construction and is expected to be finished by winter of 2011. The Railroad parallels U.S. 60 for the length of the road improvement project and because of the close proximity of U.S. 60 to the railroad tracks (approximately 100 feet) the warning devices must either be replaced or re-located for the new westbound lane. No work is being done where existing railroad signals are affected until the Railroad has Commission approval. This project is funded by the American Recovery and Reinvestment Act of 2009 (“ARRA”), thru the Federal Highway Administration (“FHWA”). The project was selected for ARRA funding by the Maricopa Association of Governments (“MAG”) in consultation with ADOT. The project was identified by ADOT and MAG to relieve anticipated traffic congestion along U.S.60. For a map of the area (see Exhibit A).

103rd AVENUE

The 103rd Avenue crossing is located in the retirement community of Youngtown (“Town”). According to the Town’s web-site, as of July 2009 the population is 6,196. The work at the U.S.60 / 103rd Avenue crossing will consist of relocating the existing automatic gate / flasher units and installing new cantilevered flashing lights on each side, installing constant warning time circuitry, as well as updating the traffic signal pre-emption timing. All flashing lights will be upgraded to LED light units. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the state. The estimated cost of the proposed railroad crossing improvement is \$286,436.

Traffic data for 103rd Avenue was provided by ADOT. The data shows the Average Daily Traffic (“ADT”) for 2007 to be 8,123 vehicles per day (“vpd”). No projected ADT’s were provided. The Level of Service (“LOS”) for 103rd Avenue is LOS C.¹

The posted speed limit on 103rd Avenue is 30 mph. Staff records, as well as the Federal Railroad Administration (“FRA”) accident/incident records indicate the following incidents:

- February 23, 1977 – car did not stop for the downed gates resulting in 2 injuries
- October 31, 1979 – car stopped on tracks and was struck by a train, no injuries
- June 16, 1980 – car did not stop for the downed gates, no injuries
- January 14, 1999 – car stopped on tracks and was struck by a train, no injuries
- July 4, 2004 – car did not stop for the downed gates, 1 injury
- September 25, 2004 - car stopped on tracks and was struck by a train, no injuries
- November 11, 2004 – car drove around gates, 1 injury
- December 16, 2005 – car stopped and then proceeded and was struck by a train
- March 9, 2006 - car stopped on tracks and was struck by a train, 1 injury
- August 1, 2006 - car stopped on tracks and was struck by a train, no injuries

The warning devices were reported to be working as intended at the time of the incidents.

Alternative routes from this crossing are as follows: 0.57 miles to the southeast is 99th Avenue, and to the northwest 0.53 miles is 107th Avenue. None of these crossings are grade separated.

¹ 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.

Train Data

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

Train Count: 13 freight trains per day on average, no passenger trains

Train Speed: 25 mph

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

Schools and Bus Routes

ADOT gave the following response when asked about schools near this crossing:

Per the Dysart School District, there are no schools or students in the Youngtown/Sun City area. There is no school bus traffic over this crossing.

Hospitals

The nearest hospitals or health facility's to the crossing are as follows;

Hospitals:

- ✓ Boswell Memorial Hospital - 10401 W. Thunderbird Avenue
- ✓ Sun Health Del E Webb Hospital - 14502 W. Meeker Avenue

Hazardous Materials

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

No factual data is available.

Zoning

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

The area to the immediate south is commercial while other areas are residential. The area northwest is zoned medical center.

107th AVENUE

The 107th Avenue crossing is also located in the Town. The work at the 107th Avenue crossing will consist of replacing all automatic gate / flasher units, installing one new cantilever on the north side of the crossing, installation of constant warning time circuitry, and updating the traffic signal pre-emption timing. All flashing lights will be upgraded to LED light units. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the state. The estimated cost of the proposed railroad crossing improvement is \$319,005.

Traffic data for 107th Avenue was provided by ADOT. The data shows the ADT for 2007 to be 18,562 vpd. No projected ADT's were provided. The LOS for 107th Avenue is LOS C.

The posted speed limit on 107th Avenue is 30 mph. Staff records, as well as the FRA accident/incident records indicate the following accidents:

- June 3, 1976 - car stopped on tracks and was struck by a train, 2 injuries
- December 7, 1978 - car stopped on tracks and was struck by a train, no injuries
- July 12, 1983 - car stopped on tracks and was struck by a train, no injuries
- April 7, 2000 - car stopped on tracks and was struck by a train, 1 injury
- April 19, 2004 - car stopped on tracks and was struck by a train, no injuries
- November 12, 2004 - car stopped on tracks and was struck by a train, no injuries

The warning devices were reported to be working as intended at the time of the incidents.

Alternative routes from this crossing are as follows: 0.57 miles to the southeast is 103rd Avenue, and 0.52 miles to the northwest is 111th Avenue. None of these crossings are grade separated.

Train Data

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

Train Count: 13 freight trains per day on average, no passenger trains

Train Speed: 25 mph

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

Schools and Bus Routes

ADOT gave the following response when asked about schools near this crossing:

Per the Dysart School District, there are no schools or students in the Youngtown/Sun City area. There is no school bus traffic over this crossing.

Hospitals

The nearest hospitals or health facility's to the crossing is as follows;

Hospitals:

- ✓ Boswell Memorial Hospital - 10401 W. Thunderbird Avenue
- ✓ Sun Health Del E Webb Hospital - 14502 W. Meeker Avenue

Hazardous Materials

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

No factual data is available.

Zoning

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

The area to the immediate south is commercial while other areas are residential. The area northwest is zoned medical center.

111th AVENUE

The crossing at 111th Avenue is located in the Town as well. The work at the 111th Avenue crossing will consist of replacing all automatic gate / flasher units, installing constant warning time circuitry, and upgrading the traffic signal pre-emption timing. All flashing lights will be upgraded to LED light units. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the state. The estimated cost of the proposed railroad crossing improvement is \$338,523.

Traffic data for 111th Avenue was provided by ADOT. Traffic counts were taken only during AM/PM peak hours with a combined total of 1,007 vehicles. No full ADT information was available. Additionally, no projected ADT's were provided. The LOS for the 111th Avenue is LOS D.

The posted speed limit on 111th Avenue is 35 mph. Staff records, as well as FRA accident/incident records indicate the following accidents:

- August 8, 1975 - car stopped on tracks and was struck by a train, 1 injury
- November 19, 1991 - car stopped on tracks and was struck by a train, no injuries

The warning devices were reported to be working as intended at the time of the incidents.

Alternative routes from this crossing are as follows: 0.52 miles to the southeast is 107th Avenue, and 0.98 miles to the northwest is Thompson Ranch Road. None of these crossings are grade separated.

Train Data

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

Train Count: 13 freight trains per day on average, no passenger trains

Train Speed: 25mph

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

Schools and Bus Routes

ADOT gave the following response when asked about schools near this crossing:

Per the Dysart School District, there are no schools or students in the Youngtown/Sun City area. There is no school bus traffic over this crossing.

Hospitals

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

Hospitals:

- ✓ Boswell Memorial Hospital - 10401 W. Thunderbird Avenue
- ✓ Sun Health Del E Webb Hospital - 14502 W. Meeker Avenue

Hazardous Materials

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

No factual data is available.

Zoning

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

The area to the immediate south is commercial while other areas are residential. The area northwest is zoned medical center.

GREENWAY ROAD

Greenway Road is located in the City. According to the City's web-site the current population is around 100,000. The work at the Greenway Road crossing will consist of shifting the crossing approximately 5 feet to the west to provide better roadway alignment, relocating the existing gate/flasher unit, installing medians with gates and flashers and upgrading the traffic signal pre-emption timing. All flashing lights will be upgraded to LED light units. The Railroad will also install additional concrete crossing panels to accommodate the road widening. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the state. The estimated cost of the proposed railroad crossing improvement is \$413,782.

Traffic data for Greenway Road was provided by ADOT. Traffic counts were taken only during AM/PM peak hours with a combined total of 696 vehicles. No full ADT information was available. Projected ADT's were not provided. The LOS for the Greenway Road is LOS D.

The posted speed limit on Greenway Road is 25 mph. Staff records, as well as the FRA accident/incident records indicate the following accidents:

- April 7, 2001 - car stopped on tracks and was struck by a train, 1 fatality and 4 injuries
- November 1, 2004 - car stopped and then proceeded and was struck by a train, 1 injury

- March 20, 2005 - car stopped on tracks and was struck by a train, no injuries

The warning devices were reported to be working as intended at the time of the incidents.

Alternative routes from this crossing are as follows: 1.32 miles to the southeast is Thompson Ranch Road, and 0.85 miles to the northeast is Dysart Road. None of these crossings are grade separated.

Train Data

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

Train Count: 15 freight trains per day on average, no passenger trains

Train Speed: 40 mph

Thru Freight/Switching Moves: Movements through this crossing are both thru freight and switching.

Schools and Bus Routes

There are several schools located within the area of the crossing. They are:

Schools:

- ✓ Surprise Elementary – 12907 W. Greenway Road
- ✓ West Point Elementary - 13700 W. Greenway Road
- ✓ Thompson Ranch Elementary – 11800 W. Thompson Ranch Road

All schools are in the Dysart School District. Per Tracy Keily, bus router for the Dysart School District, there are a total of 38 school bus crossings per day at the Greenway Road crossing. There is no bus traffic over 103rd, 107th or 111th Avenue crossings.

Hospitals

The nearest hospitals or health facility's to the crossing is as follows;

Hospitals:

- ✓ Boswell Memorial Hospital - 10401 W. Thunderbird Avenue
- ✓ Sun Health Del E Webb Hospital - 14502 W. Meeker Avenue

Hazardous Materials

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

No factual data is available.

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 Residential on both sides and appears well developed. BNSF vehicle offload facility is southeast of the crossing.

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:

		103rd Avenue	107 th Avenue	111 th Avenue	Greenway Road
The highway is a part of the designated Interstate Highway System	Crossing Currently meets the criteria	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No
The highway is otherwise designed to have full controlled access	Crossing Currently meets the criteria	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No
The posted highway speed equals or exceeds 70 mph	Crossing Currently meets the criteria	No	No	No	No
	Crossing meets the criteria by 2030	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
	Crossing meets the criteria by 2030	No	No	No	No
Maximum authorized train speed exceeds 110 mph	Crossing Currently meets the criteria	No	No	No	No
	Crossing meets the criteria by 2030	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
	Crossing meets the criteria by 2030	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
	Crossing meets the criteria by 2030	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
	Crossing meets the criteria by 2030	No	No	No	No
Vehicle delay exceeds 40 vehicle hours per day	Crossing Currently meets the criteria	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No

Vehicular Delays at Crossings

ADOT gave the following response about delays at these four crossings:

Based on correspondence from Maricopa County Department of Transportation ("MCDOT") and the City of Surprise, no noticeable delay occurs at these four crossings. The delay time at these crossings is minimal and falls well below the FHWA recommended threshold of 40 vehicle delay hours.

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. 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:

MAG completed the Grand Avenue Northwest Corridor Study in 2003. It listed 3 priorities for Grand Avenue/Highway US60. The first priority was to widen Grand Avenue to 6 lanes, and for MCDOT to prepare a study for extending El Mirage Road at Grand Avenue. The 2nd priority involved increased transit systems and the 3rd priority was to implement grade separation at key intersections to enhance the capacity of the corridor.

Project Tracs H6866 01C was designed to widen Highway US60 and perform minimal cross road improvements as part of the 1st priority. Due to funding and project schedule issues, no grade separation projects were considered in the first phase of the US60 corridor improvements.

Project Tracs H7327 was created to evaluate further improvements to the Highway US60 corridor from SR 303 to SR 101. The US60 improvements Feasibility Report was developed from this project and includes potential grade separation of Bell Road from the BNSF, and 103rd Avenue from the BNSF.

Any grade separation would also include separation from Highway US60/Grand Avenue and require a traffic interchange or other method to allow traffic access between Grand Avenue and the cross roads. The report identified alternatives and which grade separation projects to pursue and has been completed by ADOT and is awaiting approval by MAG. The report has identified the following priorities for grade separation and/or intersection improvements:

High priority projects as recommended in the study pending MAG approval are as follows:

- 1. Bell Road Interchange*
- 2. 103rd Avenue Overpass*
- 3. Thunderbird Road Intersection (No Railroad)*
- 4. Greenway Road Intersection*

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. Therefore, Staff does not recommend grade separations at these four crossings.

Crossing Closure

The area surrounding these crossings is highly developed with commercial, residential, and industrial businesses. To close these crossings would have a negative affect on many of the local businesses. Therefore, Staff would 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.



Brian H. Lehman
Railroad Safety Supervisor
Safety Division

Originator: BHL

COPIES of the foregoing mailed
This 6th day of May, 2011 to:

Docket No. RR-02635B-10-0305

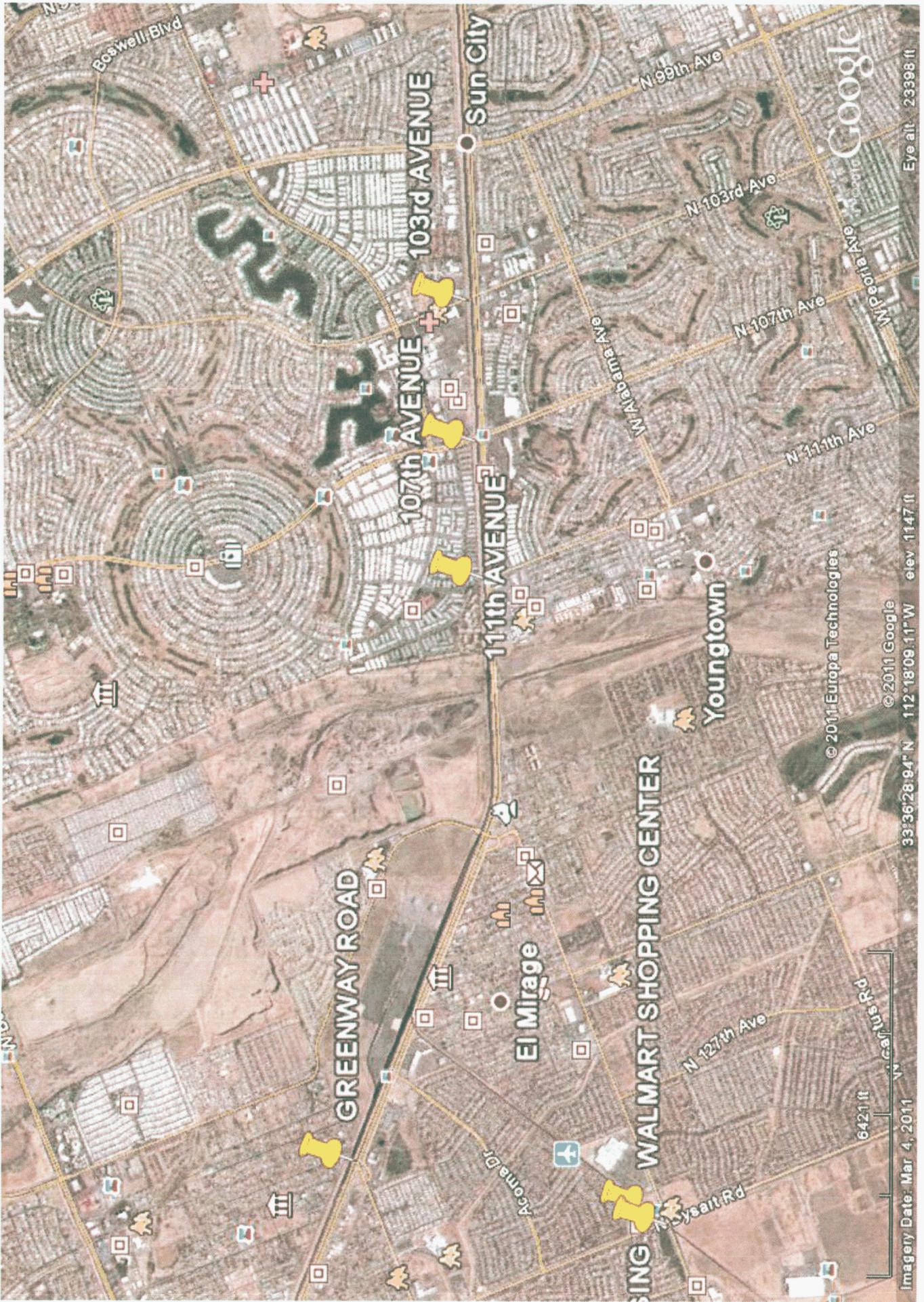
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Eye alt: 23398 ft

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33°36'28.94" N 112°18'09.11" W elev 1147 ft

642.1 ft

Imagery Date: Mar 4, 2011



Lakeview Medical Arts Center

Sun City

103rd AVENUE

US 60

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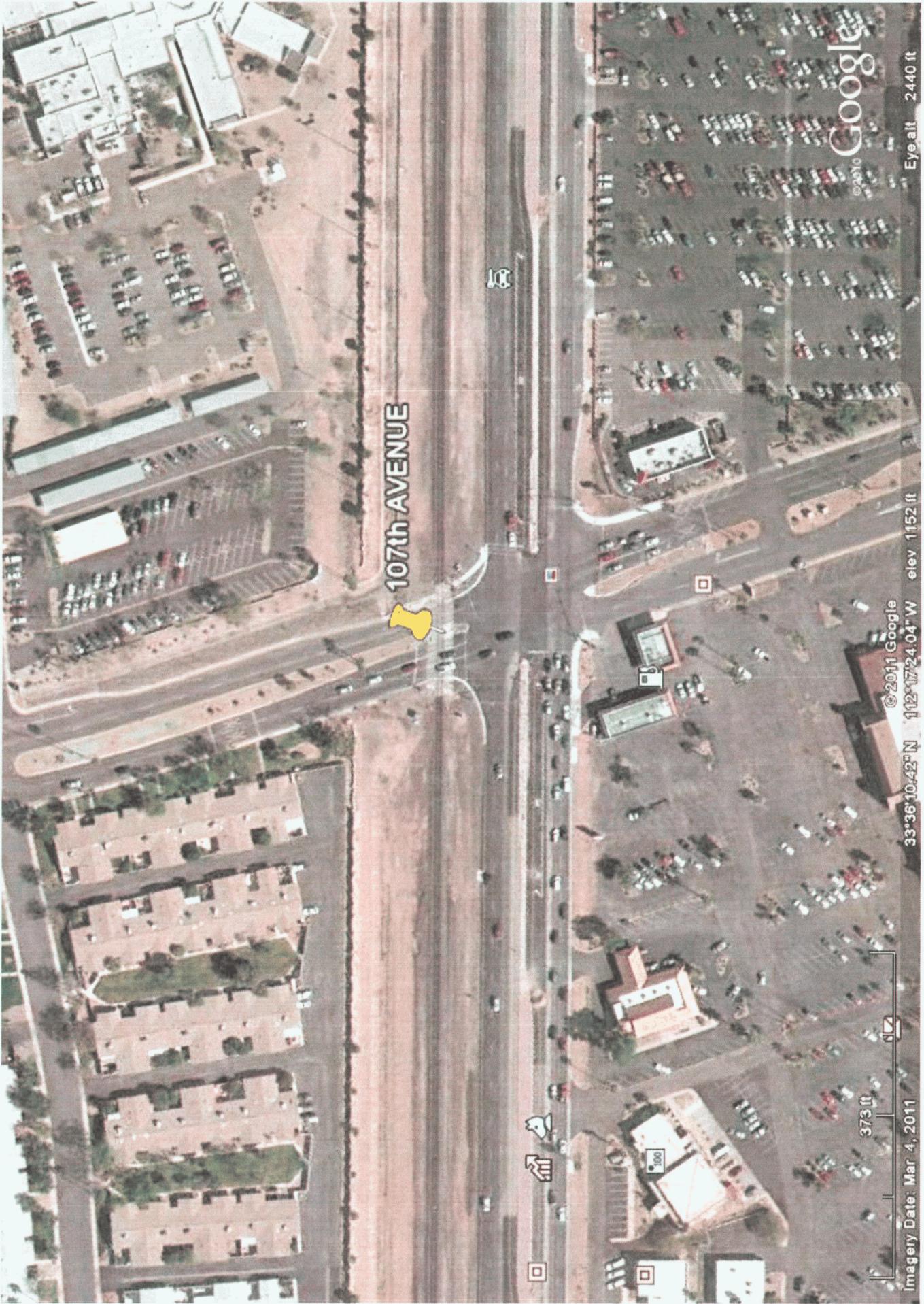
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33°36'01.49" N 112°16'52.22" W elev 1148 ft

Imagery Date: Mar 4, 2011

357 ft



107th AVENUE

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33°36'10.42" N 112°17'24.04" W

Imagery Date: Mar 4, 2011

Eye alt: 2440 ft

elev 1152 ft

373 ft



300





111th AVENUE

Google

Eyealt 2440ft

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33°36'20.23" N 112°17'56.32" W elev 1153 ft

Imagery Date: Mar. 4, 2011

374 ft



GREENWAY ROAD



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Imagery Date: Mar 4, 2011

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367 ft