



Intermodal Transportation

NEW APPLICATION



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John C. Hammit, Director
Dallas Hammit, State Engineer
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RECEIVED

Arizona Corporation Commission
Office of Railroad Safety
Attn: Chris Watson
1200 W Washington Street
Phoenix, AZ 85007
Grand Ave / Thunderbird Rd Intersection

2015 JUN 17 P 3:02

AZ CORP COMMISSION
DOCKET CONTROL

RR-02635B-15-0198

RE: APPLICATION TO do road widening and RR crossing improvements

Project: development and evaluation of safety and operational improvement alternatives for the intersection.

Location: Grand Ave / Thunderbird Rd Intersection (City of El Mirage & Maricopa County, Arizona)

Federal Project # RARF-060-B (213) A

ADOT Tracs # 060 MP 146 H837401D

DOT # 025 631X

RRMP 0174.83

Arizona Corporation Commission

DOCKETED

JUN 17 2015

ORIGINAL

Mr. Watson,

DOCKETED BY

This application is being submitted to the Arizona Corporation Commission (ACC) as an application to request an upgrade to an existing BNSF crossing by the Arizona Department of Transportation (ADOT).

1. Project Location and Description

The new Thunderbird traffic Interchange will be located in approximately the same location as the existing Thunderbird Road at-grade crossing, AAR/DOT #025 631X. This crossing is part of the US 60, Thunderbird Road Intersection project for the Arizona Department of Transportation (ADOT). The entire project is located in El Mirage, Arizona.

The project will realign Thunderbird Road to curve toward US 60 and connect to the existing US 60/Thompson Ranch Road intersection (US 60 Milepost 146). The realigned Thunderbird Road will connect to the new street configuration planned with the City of El Mirage's Thunderbird Road widening project.

The alignment of Thunderbird Road is designed to widen the existing US60/Thompson Ranch Road intersection to the east to avoid an existing railroad switch for the multiple railroad track sidings within the BNSF Automotive Distribution Center. Four continuous through-lanes will be provided on Thunderbird Road at Thompson Ranch Road through the US 60 intersection. The south intersection approach will include two left-turn lanes, two through-lanes and two right-turn lanes at US 60. The north intersection approach will include two left-turn lanes, one through-lane and one right-turn lane.

US 60 will remain in its current configuration with three through-lanes in each direction of travel. Two left-turn lanes will be provided for the westbound US 60 to westbound Thunderbird Road traffic movement. One left-turn lane will continue to be provided for the eastbound US 60 to northbound Thompson Ranch Road traffic movement, and a new right-turn lane will be provided for the eastbound US 60 to westbound Thunderbird Road traffic movement.

Thunderbird Road

Eastbound Thunderbird Road will provide one left-turn lane, three through-lanes, and a shared

Through/right-turn lane approaching the frontage road signalized intersection.

Approaching the

Frontage road intersection, westbound Thunderbird Road will provide two left-turn lanes, one through-lane, and one shared through/right-turn lane at the frontage road intersection. West of the new frontage road, westbound Thunderbird Road will provide two through-lanes. Curb and gutter will be constructed along both sides of Thunderbird Road with sidewalk being

Constructed along the entire south side. Sidewalk will be constructed on the north side of Thunderbird Road from El Frio Street to the south side of the frontage road intersection.

Thompson Ranch Road

North of the US60/Thompson Ranch Road intersection, curb and gutter and sidewalk will be

Provided along the east side of Thompson Ranch Road. The existing pavement will be widened to the east, matching the existing cross slope of Thompson Ranch Road. The existing pavement to the west of widened pavement will be milled and overlaid with new asphaltic concrete pavement friction course. A 14' raised median will be provided to accommodate the railroad signal and gate equipment at the BNSF crossing.

2. Why the Crossing Needs Modification

US 60 is a major element of the adopted Regional Transportation Plan Freeway Program (RTPFP). The segment of US 60 between SR 303L and SR 101L is one of the primary urban

arterial corridors serving regional commuter and freight traffic supporting the City of Surprise, City of El Mirage, Town of Youngtown, Maricopa County and the unincorporated communities of Sun City and Sun City West. It is also a vital link in the Statewide Highway System serving as the continuation of US 93 linking the Phoenix metropolitan area to Las Vegas, Nevada and I-15.

Thunderbird Road is an east-west arterial street that provides access to and from the City of El Mirage and the City of Surprise through the south leg of the US60/Thompson

Ranch Road intersection. Arterial street connectivity to the north is provided to/from US 60 via Thompson Ranch Road.

The Draft US 60 Improvements Feasibility Report, US 60, Grand Avenue (SR 303L to SR 101L)

(ADOT 2008) identified the need for capacity enhancements at the US60/Thunderbird Road intersection, and recommended that a Project Assessment and environmental document be prepared for potential implementation of the intersection improvements. Additionally, the Maricopa County Department of Transportation (MCDOT) completed *the El Mirage Road, Northern Avenue to Bell Road Final Design Concept Report (DCR) (2009)* which also identified an intersection improvement concept at this location. Subsequently, the Arizona Transportation Board has approved funding in the current ADOT 5-Year Transportation Facilities Construction Program (2015-2019) to begin the design and construction of this project.

Traffic count data was collected for US 60 and Thunderbird Road in December 2011. From this data, US 60 carries approximately 54,800 vehicles per day (vpd) east of Thompson Ranch Road and 40,230 vpd west of Thompson Ranch Road. Thunderbird Road currently carries approximately 16,090 vpd within the study area. The high volume of commuting traffic currently traveling on Thunderbird Road destined to/from the employment centers located further towards downtown Phoenix is causing significant congestion at the US 60 signalized intersection during the A.M. and P.M. peak travel periods.

Future traffic volume projections indicate the congestion will continue to worsen, causing further travel delays and increased travel times for those using the US 60 and Thunderbird Road corridors. Improvements to Thunderbird Road and the US 60 intersection are necessary to increase the intersection capacity and alleviate the existing and future levels of traffic congestion.

The BNSF Railway Phoenix branch line is adjacent and parallel to the north side of US 60. Throughout the US 60 corridor, BNSF provides a high degree of access control for US 60 with roadway connections limited to the major arterial street intersections. The at-grade railroad crossing of BNSF is located immediately northeast of the US 60 signalized intersection. The railroad crossing is signalized and includes pre-emption/coordination with the US60/Thompson Ranch Road traffic signal to clear vehicle traffic as a train approaches the intersection.

The realignment and widening of Thompson Ranch Road across the BNSF railroad tracks will necessitate the reconstruction of the existing at-grade crossing. In order to eliminate a conflict with an existing railroad siding switch, this crossing will be widened to the east to a total width of approximately 90' (excluding the new sidewalk). The existing gate and cantilever structure for the southbound Thompson Ranch Road lanes will be protected in place, with a new gate installed on the new median for that direction. Two new gates and

a new cantilever structure will be installed for the northbound Thompson Ranch Road lanes as the same previously existing items will be impacted and removed by the widening. The existing signal house will also be removed and a new unit will be installed east of the intersection. (See attached BNSF Signal Equipment Layout)

The existing railroad intersection traffic signal pre-emption will also have to be re-designed by BNSF. It has been determined that a pre-signal will not be used on this project.

3. Construction Phasing

Construction of the overall project will begin at an estimated date of May, 2016 and be completed by November of the same year. Specific BNSF tasks will be part of Phases 2C, and 3A and will take place in the estimated months of August through October of 2016 (See attached Preliminary Construction Schedule).

Traffic will be managed by detailed traffic control plans and by procedures and guidelines specified in Part VI of the current version of the Manual on Uniform Traffic Control Devices (MUTCD), and by the Arizona Supplement to Part VI of the MUTCD. The final construction phasing and traffic control plans will be developed during final design.

Coordination is ongoing with the local agencies to develop project phasing that will minimize impacts to traffic and construction duration. Restrictions due to arterial street and frontage road capacity constraints, and emergency vehicle access could limit the construction activities. BNSF has requested a closure of Thompson Ranch Road for a period of 28 days. Construction phasing that would significantly reduce or eliminate the need for a full closure is being considered by BNSF.

4. Maintenance

All of the traffic signals on US 60 are controlled and maintained by ADOT. The signal timings for the traffic signals on US 60 are coordinated and use a 130 second cycle length. The railroad crossing gates adjacent to US 60 and Thunderbird Road are coordinated with the traffic signal controller for pre-emption. The physical elements of the railroad crossing (crossing surface, gates, cantilevers, flashing lights) will be maintained by BNSF.

5. Project Funding

The Maricopa Association of Governments (MAG), Regional Public Transportation Authority (RPTA) and ADOT have worked together for many years to develop a comprehensive plan for the Regional Freeway System that is included in the Regional Transportation Plan (RTP) that was adopted by the MAG Regional Council in November 2003.

The voters of Maricopa County passed Proposition 400 in 2004, authorizing the continuation of an existing half-cent sales tax for the next 20 years to be used for implementing the MAG RTP. A portion of the revenues collected from the half-cent sales tax extension will be deposited into the Regional Area Road Fund (RARF) to fund Regional Transportation Plan Freeway Program (RTPFP) projects. This project is included in the RTPFP Life-Cycle Program that was certified in January 2014.

Current Projects Included in the RTP Arterial Streets Program

Jurisdiction	Street Segment	Type of Work	RTPFP Budget (\$000)	Year
El Mirage	Thunderbird Road (El Mirage Road - Grand Avenue)	Right-of-Way	503	2013
El Mirage	Thunderbird Road (El Mirage Road - Grand Avenue)	Construction	3,521	2014
El Mirage	Thunderbird Road (El Mirage Road - Grand Avenue)	Construction	1,760	2015

The Arizona Transportation Board has approved funding in the current ADOT 5-Year Transportation Facilities Construction Program (2015-2019) to begin final design and construction of this project as follows:

Current Projects in ADOT's 5-Year Construction Program (2015 – 2019)

Milepost	Location	Type of Work	Fund Source	Funding Amount (\$000)	Fiscal Year
146	Thompson Ranch (Thunderbird) TI	Design	NHHP	1,000	2014
146	Thompson Ranch (Thunderbird) TI	Right-of-Way	NHHP	5,000	2014
146	Thompson Ranch (Thunderbird) TI	Construction	RARF	7,000	2015

6. Other information (based on typical Staff Data Requests)

CW1-1 2011 ADT for US 60: 40,230 vpd north of Thompson Ranch Road and 54,800 south of Thompson Ranch Road.

2011 ADT for Thunderbird Road: 16,090 vpd.

2011 ADT for Thompson Ranch Road: 5,800 vpd south of Thunderbird Rd.

2011 ADT for Frontage Road: East and west of "A" St is 1130 vpd and 970 vpd respectively.

Projected 2035 ADT for US 60: 61,900 vpd

Projected 2035 ADT for Thunderbird Road: 29,000 vpd

Projected 2035 ADT for Thompson Ranch Road: 15,600 vpd

CW1-2 L
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Existing Conditions Intersection Analysis Results (VISSIM)

Intersection Location	Intersection Approach	Period (A.M./P.M.)	Delay (Sec/Veh)	Approach LOS	Length (Sec)	Intersection LOS
US60/Thompson Ranch Road (signalized)	Eastbound US 60	A.M.	34	C	130	D
	Westbound US 60		29	C		
	Northbound 'A' Street		59	E		
	Southbound Thompson Ranch Road		36	D		
	Eastbound US 60	P.M.	41	D	130	D
	Westbound US 60		37	D		
	Northbound 'A' Street		27	C		
	Southbound Thompson Ranch Road		43	D		
Thunderbird Road/'A' Street (all-way stop controlled)	Eastbound Thunderbird Road (stop control)	A.M.	93	F	N/A	F
	Westbound Thunderbird Rd (stop control)		10	A		
	Northbound 'A' Street (stop control)		29	D		
	Southbound 'A' Street (stop control)		20	C		
	Eastbound Thunderbird Road (stop control)	P.M.	17	C	N/A	C
	Westbound Thunderbird Road (stop control)		7	A		
	Northbound 'A' Street (stop control)		10	B		
	Southbound 'A' Street (stop control)		14	B		

Note: Colored (red) LOS letters indicate intersections or approaches that would not meet the operational goals.

S Analysis

No-Build Conditions for 2035 Intersection Analysis Results (VISSIM)

Intersection Location	Intersection Approach	2035 Period (A.M./P.M.)	Delay (Sec/Veh)	Approach LOS	Length (Sec)	Intersection LOS
US60/Thompson Ranch Road (signalized)	Eastbound US 60	A.M.	36	D	130	D
	Westbound US 60		34	C		
	Northbound 'A' Street		41	D		
	Southbound Thompson Ranch Road		44	D		
	Eastbound US 60	P.M.	113	F	130	E
	Westbound US 60		55	D		
	Northbound 'A' Street		43	D		
	Southbound Thompson Ranch Road		46	D		
Thunderbird Rd/ 'A' Street (all-way stop controlled)	Eastbound Thunderbird Road (stop control)	A.M.	327	F	N/A	F
	Westbound Thunderbird Rd (stop control)		9	A		
	Northbound 'A' Street (stop control)		23	C		
	Southbound 'A' Street (stop control)		18	B		
	Eastbound Thunderbird Road (stop control)	P.M.	151	F	N/A	F
	Westbound Thunderbird Road (stop control)		9	A		
	Northbound 'A' Street (stop control)		18	C		
	Southbound 'A' Street (stop control)		25	D		

Note: Colored (red) LOS letters indicate intersections or approaches that would not meet the operational goals.

Proposed Alterations for 2035 Operational Analysis Results (VISSIM)

Intersection Location	Intersection Approach	2035 Period (A.M./P.M.)	Delay (Sec/Veh)	Intersection Approach LOS	Cycle Length (Sec)	Overall Intersection LOS
US60/ Thunderbird Road (signalized)	Eastbound US 60	AM	38	D	130	D
	Westbound US 60		30	C		
	Eastbound Thunderbird Road		37	D		
	Southbound Thompson Ranch Road		50	D		
	Eastbound US 60	PM	40	D	130	C
	Westbound US 60		29	C		
	Eastbound Thunderbird Road		34	C		
	Southbound Thompson Ranch Road		51	D		
Thunderbird Road/ Frontage Road (signalized)	Eastbound Thunderbird Road	AM	14	B	90	B
	Westbound Thunderbird Road		11	B		
	Westbound Frontage Road		3	A		
	Eastbound Frontage Road		19	B		
	Eastbound Thunderbird Road	PM	12	B	90	B
	Westbound Thunderbird Road		15	B		
	Westbound Frontage Road		34	C		
	Eastbound Frontage Road		27	C		
'A' Street/ Thunderbird Road (stop-controlled)	Eastbound Frontage Road	AM	0	A	N/A	C
	Westbound Frontage Road		2	A		
	Northbound 'A' Street (stop control)		17	C		
	Eastbound Frontage Road	PM	1	A	N/A	C
	Westbound Frontage Road		2	A		
	Northbound 'A' Street (stop control)		17	C		

- CW1-3 Past Traffic Studies: Historical traffic count data was obtained from the ADOT Multi-Modal Planning Division (MPD) for 2007 through 2008. In addition, traffic counts were conducted on US 60, Thunderbird Road and the adjacent arterial street network at several locations within the project area in December 2011. A traffic report was prepared by the Arizona Department of Transportation in conjunction with the project, Final Traffic Report; US60, Grand Avenue (Thunderbird Road Intersection)(ADOT 2011) which is attached to this application.
- CW1-4 Population: 2013 estimated population of City of El Mirage is 32,998 persons per US Census Bureau.
- CW1-5 Existing Railroad Safety Devices: Thompson Ranch Road at-grade crossing is currently protected by cantilevered flashing lights, crossing gates, crossing surface work, and rail road signage for traffic southbound and northbound on Thompson Ranch Road.
- CW1-6 Adjacent Public Crossings: The nearest public crossings of BNSF are as follows: (1) Santa Fe Lane (DOT #025700D); 0.75 miles to the northwest of

Thunderbird Road and is at-grade; (2) Green Way Road (DOT #025651J), 1.3 miles to the northwest of Thunderbird Road and is grade separated; (3) 111th Ave (DOT # 0253971J), 0.95 miles to the southeast of Thunderbird Road and is at-grade.

CW1-7 Grade Separation Study: NA

CW1-8 This project's street improvement cost at the railroad crossing is estimated at \$150,000. Anticipated railroad costs for track, surface, signal, and gates are approximately \$1M. This amount will be updated based on the estimate and agreement currently being drafted by BNSF.

CW1-9 Surrounding Zoning: Per the City of El Mirage General Plan the project area borders the Arts District, the Neighborhoods, and the Agua Fria Gateway. The project falls into the Thunderbird Road Overlay District from Verbena Street east to US 60 and is subjected there to follow form-based zoning code. The project also falls within the Transit-Oriented Development Overlay and is contained within Mixed Urban and Urban Corridor Zoning. Suburban Neighborhood zoning falls south of the project area and to the northeast. Natural reserve zoning is also found to the northeast of the project area. (Source: City of El Mirage Zoning Map)

CW1-10 Existing Train Movements: Per FRA website based on 2015 information, 13 freight trains per day. BNSF expects 13 trains per day by 2016. All train movements are thru movements.

CW1-11 Nearest Schools: (1) Thompson Ranch Elementary School : 0.5 miles North of crossing (Thunderbird and Grand Ave intersection); (2) EL Mirage elementary School : 0.9 miles south west of the crossing –

CW1-12 Nearest Hospitals:

(1) Banner Boswell Medical Center: 2.2 Miles from Crossing (10401 W. Thunderbird Blvd., Sun City, AZ 85351)

(2) Banner Boswell Wound Center: 2.3 Miles from Crossing (13203 N. 103rd Ave I-1, Sun City, AZ 85351)

(3) Northwest VA Health Care Clinic: 4.0 Miles from Crossing (13985 W Grand Ave #101, Surprise, AZ 85374)

(4) Kindred Hospital Arizona – Northwest Phoenix: 4.3 Miles from Crossing (13216 N Plaza Del Rio Blvd, Peoria, AZ 85381)

(5) Banner Del E. Webb Medical Center: 4.8 Miles from Crossing (14502 W. Meeker Blvd., Del E Webb Memorial Hospital, Sun City West, AZ 85375)

CW1-13 Railroad Costs: \$1,300,000 Per Item 9240050, Table 20- Order-of-Magnitude Cost Estimate for the Preferred Alternative, Final PA Signed 10-8-14

BNSF costs were provided by ADOT's Utility and Railroad Engineering Section based on historical costs of similar at-grade railroad crossings.

CW1-14 Hazardous Materials traffic: It is not known how much hazardous materials traffic uses the existing crossing each day.

CW1-15 Speed Limit:

US 60 Posted Speed Limit: 45mph

Thompson Ranch Road Posted Speed Limit: 35mph

Thunderbird Road Posted Speed Limit: 30mph

Train speed is 40mph based on on-site diagnostic meeting held on May 28, 2015

CW1-16 Other bus use: A commuter bus line 571 (Per Valley Metro Mapping) travels along Thunderbird Road and US 60, but does not pass over the BNSF crossing or utilize Thompson Ranch Road as part of its typical route.

CW1-17 Abandoned Railroad Spurs: it is Unknown if railroad spurs have been removed within a 10 mile radius.

Sincerely,

Sayed M. Hani

Sayed M. Hani

Utility Engineering Coordinator/ Railroad Liaison

205 S. 17TH AVE, MD 613E

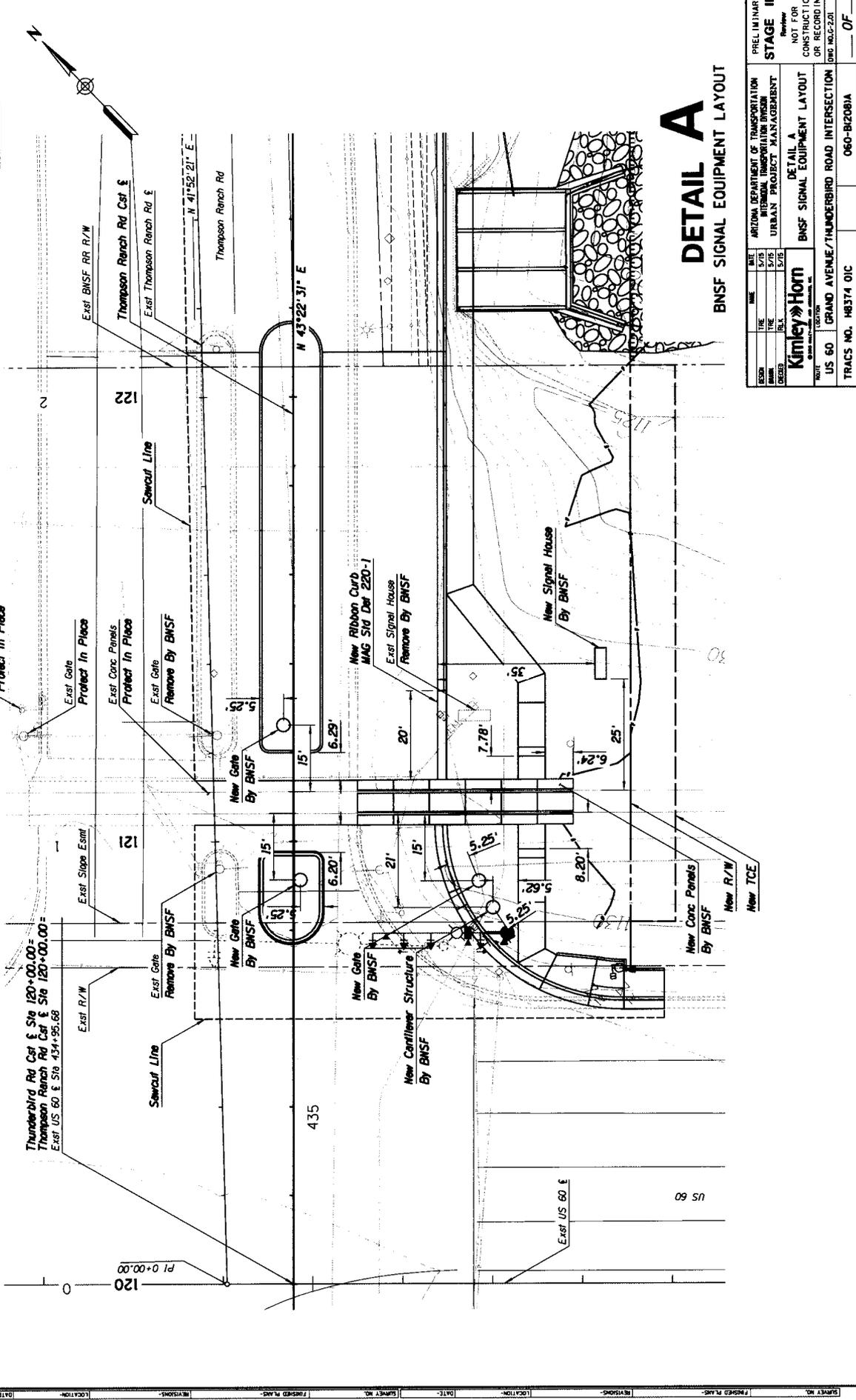
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PAGE	STATE	PROJECT NO.	SHEET	TOTAL	AS BUILT
9	ARIZ.	060-B2081A	3	14	
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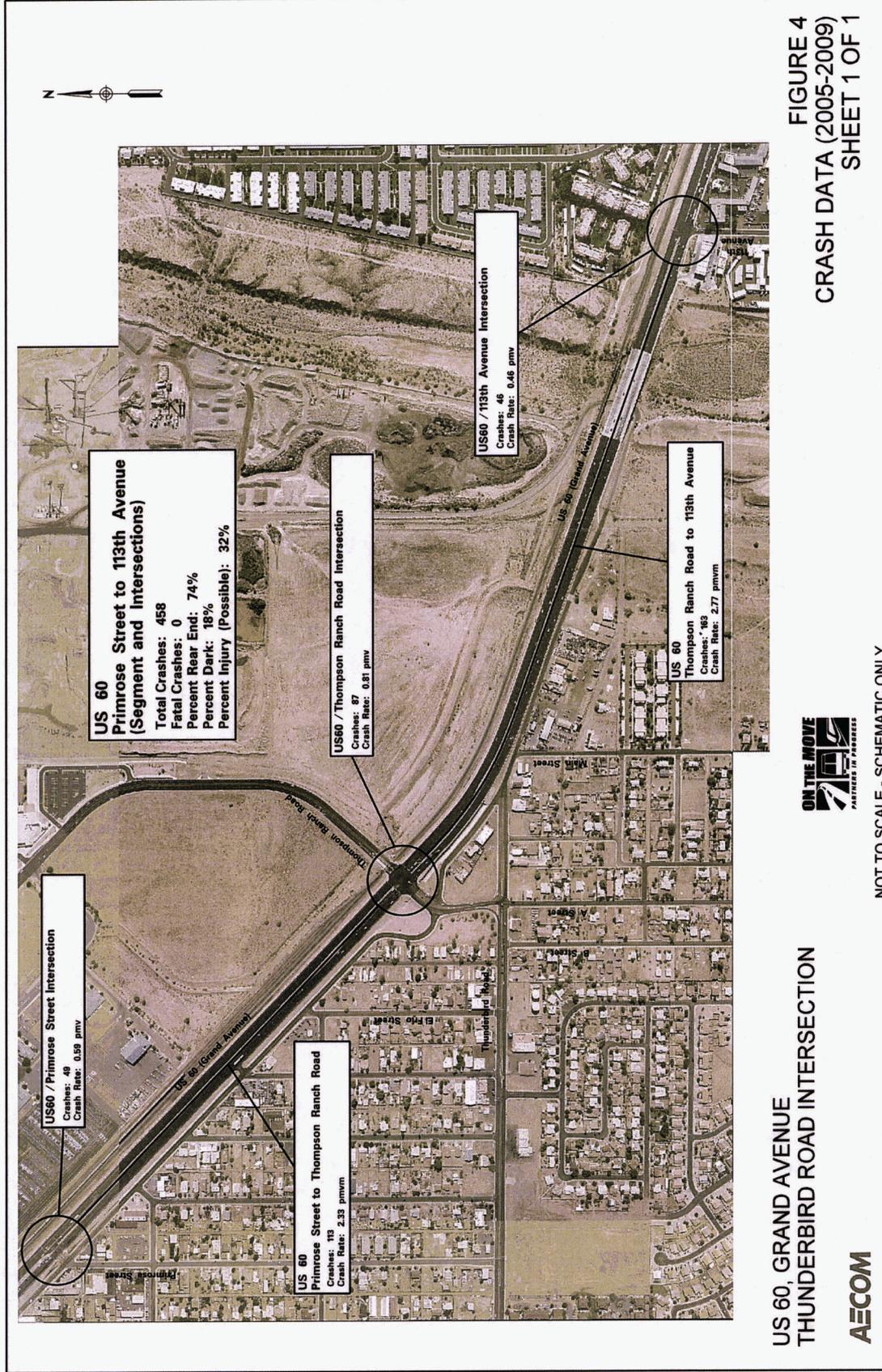


DETAIL A

BNSF SIGNAL EQUIPMENT LAYOUT

DESIGN	DATE	BY	ARIZONA DEPARTMENT OF TRANSPORTATION	PRELIMINARY
DATE	DATE	DATE	INTEGRAL INFRASTRUCTURE DIVISION	STAGE III
DATE	DATE	DATE	URBAN PROJECT MANAGEMENT	REVIEW
DATE	DATE	DATE	BNSF SIGNAL EQUIPMENT LAYOUT	NOT FOR CONSTRUCTION OR RECORDING
DATE	DATE	DATE	US 60 GRAND AVENUE/THUNDERBIRD ROAD INTERSECTION	DRG NO. 2-201
				TRACS NO. H8374 01C
060-B2081A				OF

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US 60, GRAND AVENUE
THUNDERBIRD ROAD INTERSECTION

AECOM

FIGURE 4
CRASH DATA (2005-2009)
SHEET 1 OF 1



NOT TO SCALE - SCHEMATIC ONLY