LEGISLATIVE SUMMARY SHEET
Tracking No. 0104-15

DATE: March 16, 2015

TITLE OF RESOLUTION: PROPOSED STANDING COMMITTEE RESOLUTION; AN ACTION RELATING TO RESOURCES AND DEVELOPMENT; AMENDING THE FISCAL YEAR 2015 NAVAJO NATION TRIBAL TRANSPORTATION IMPROVEMENT PLAN

PURPOSE: This resolution, if approved, will amend the FY2015 Navajo Nation Tribal Transportation Improvement Plan ("TTIP") to allow for the immediate design and reconstruction of the N12/N100 intersection in Window Rock, Arizona.

This written summary does not address recommended amendments as may be provided by the standing committee. The Office of Legislative Counsel requests each committee member to review the proposed resolution in detail.

5-DAY BILL HOLD PERIOD: Leann D
Website Posting Time/Date: 4:55pm 3/26/15
Posting End Date: 3/31/2015
Eligible for Action: 4/1/2015

PROPOSED STANDING COMMITTEE RESOLUTION

23RD NAVAJO NATION COUNCIL -- First Year, 2015

INTRODUCED BY

(Prime Sponsor)

TRACKING NO. 0104-15

AN ACTION

RELATING TO RESOURCES AND DEVELOPMENT; AMENDING THE FISCAL YEAR 2015 NAVAJO NATION TRIBAL TRANSPORTATION IMPROVEMENT PLAN

BE IT ENACTED:

Section One. The Navajo Nation finds the following:

A. The Resources and Development Committee of the Navajo Council has oversight authority over the Navajo Division of Transportation (NDOT). 2 N.N.C. §501(C)(1).

B. The Resources and Development Committee of the Navajo Nation Council has the authority to grant final approval for the Road and Transportation Plan prioritizing list for road and transportation projects. 2 N.N.C. § 501(B)(2)(b).

C. Pursuant to 25 C.F.R Part 170, Subpart D of the Tribal Transportation Program, the Navajo Division of Transportation is charged with performing the critical functions in collaboration with the Bureau of Indian Affairs, local, state and federal agencies to develop a tribal transportation priority listing.

D. The Navajo Division of Transportation prepared the FY2015 Navajo Nation Tribal Transportation Improvement Program ("TTIP"), and the Resources and

Development Committee passed Resolution RDCS-60-14 on September 23, 2014 approving the TTIP. See Resolution RDCS-60-14 attached as Exhibit A.

E. Amongst the projects listed in the FY2015 TTIP was a project to redesign and reconfigure the N12/N100 intersection, which is the intersection in Window Rock that currently allows access in and out of the government offices. The project was slated to start preliminary engineering plans in 2015 and construction in 2020. *See* FY2015 TTIP – Navajo Nation Five Year Plan attached as Exhibit B.

F. Part of the reasoning behind including the N12/N100 Intersection in the FY2015 TTIP was based on a Road Safety Audit performed by the Federal Highway Administration which identified seven safety issues on N12 generally, and rated the intersection at N12/N100 at a risk level of C (moderate-low risk). See Road Safety Audit specifically at pages 27 through 31 attached as Exhibit C.

G. One of the suggestions in the Road Safety Audit to improve the N12/N100 intersection was to reconfigure the intersection, which included options of a double-lane roundabout with right-turn bypass lanes. See Exhibit C at page 30.

H. Subsequent to the study in 2013, the Judicial Branch presented to the Resources and Development Committee and requested funding for the N12/N100 road project to accommodate a proposed Justice Center to be built alongside N100 near the intersection.

I. It was requested that the preliminary engineering and design phase begin in 2014, as opposed to its original preliminary engineering phase scheduled for 2015-16, and that construction begin as soon as possible. See FY2015 TTIP Project Information Sheet for N12/N100 Project attached as Exhibit D.

J. The Resources and Development Committee held a meeting with NDOT, and it was determined that a feasibility study and traffic analysis were to be completed and presented to the Committee before proceeding with the design for the N12/N100 intersection.

K. The findings of that study were presented to the Resources and Development Committee in November 2014. *See* Draft Feasibility and Traffic Study attached

as Exhibit E; *see also* Letter to the Resources and Development Committee from Honorable Leonard Pete attached as Exhibit F.

L. Given the findings given in the presentation to the Resources and Development Committee, the Road Safety Audit performed in 2007, and the pressing need to begin planning for the reconfiguration of the N12/N100 intersection, the TTIP needs to be revised to allow for the immediate engineering and construction of a round-about at the intersection. The construction should begin as soon as possible, and not in 2020 as originally laid out in the TTIP. *See* Exhibit E.

M. Also, pursuant to the findings in the Traffic and Feasibility Study, the TTIP needs to be revised to allow for the design of an alternative routes to allow for secondary access to the government complex. *See* Alternative Number Three and Alternative Number Seven on Map of Preliminary Alternatives on page 9 and page 22 and 27 of Exhibit E.

N. The no-build alternative for the future 10 and 20-Year horizon will cause Window Rock to have a level of service ranging from C to F at critical intersections. *See* Exhibit E at page 34.

O. Approving the amendments to the FY2015 Navajo Nation Tribal Transportation Improvement Program is in the Navajo Nation's best interest.

Section Two. Approval

A. The Resources and Development Committee of the Navajo Nation Council hereby approves the amendments to the FY2015 Navajo Nation Tribal Transportation Improvement Program for the reconstruction project at the N12/N100 intersection originally listed in the five (5) year plan and the two alternative routes to be constructed to allow access to the government complex as described in the Feasibility and Traffic Study attached as Exhibit E.

LEGISLATIVE BRANCH
NAVAJO NATION

HONORABLE LoRenzo Bates
Speaker, 23rd Navajo Nation Council

March 25, 2015

MEMORANDUM

TO : *Honorable* Members
Resources and Development Committee

FROM : 3/26
Hon. LoRenzo C. Bates, *Speaker*
23rd Navajo Nation Council

SUBJECT : **ASSIGNMENT OF LEGISLATION**

Pursuant to 2 N.N.C § 164 (A)(4), this memorandum serves to inform and advise you that I assign the following legislation to the Resources and Development Committee;

Legislation No. 0104-15

RELATING TO RESOURCES AND DEVELOPMENT; AMENDING THE FISCAL YEAR 2015 NAVAJO NATION TRIBAL TRANSPORTATION IMPROVEMENT PLAN.

As the Committee assigned to consider the legislation, Legislation No. 0104-15 must be placed on the Resources and Development Committee's agenda at the next regular meeting for final consideration.

ATTACHMENT:Legislation No. 0104-15

xc: Hon. Ben Shelly, *President*
The Navajo Nation
Harrison Tsosie, *Attorney General*
Mark Grant, *Controller*
Dominic Beyal, *Executive Director, OMB*
Honorable Leonard H. Pete, Council Delegate (*Prime Sponsor*)

EXHIBIT
A

RDCS-60-14

RESOLUTION OF THE
RESOURCES AND DEVELOPMENT COMMITTEE
OF THE NAVAJO NATION COUNCIL

22ND NAVAJO NATION COUNCIL - FOURTH YEAR, 2014

AN ACTION

RELATING TO RESOURCES AND DEVELOPMENT; APPROVING THE FISCAL YEAR 2015 NAVAJO NATION TRIBAL TRANSPORTATION IMPROVEMENT PLAN

BE IT ENACTED:

Section One. The Navajo Nation finds the following:

A. 2 N.N.C. §501(C)(1) provides the Resources and Development Committee of the Navajo Council with oversight authority of the Division of Transportation.

B. 2 N.N.C. § 501(B)(2)(b) provides the Resources and Development Committee of the Navajo Nation Council the power to grant final approval for Road and Transportation Plan prioritizing list for road and transportation projects.

C. Pursuant to 25 C.F.R Part 170, Subpart D of the Tribal Transportation Program, the Navajo Division of Transportation is charged with performing the critical functions in collaboration with the Bureau of Indian Affairs, local, state and federal agencies to develop a tribal transportation priority listing.

D. The Navajo Division of Transportation prepared the FY2015 Navajo Nation Tribal Transportation Improvement Program (TTIP) which includes projects for preliminary study which are cultural, environmental impact studies, rights-of-way, centerline surveys and design, construction engineering funds for construction administration and construction funds to construct roadway improvements, see Exhibit A.

E. The Navajo Division of Transportation's TTIP also includes funds programmed under the Tribal Transportation Program for safety projects, planning, and operation and maintenance.

F. Approving the FY2015 Navajo Nation Tribal Transportation Improvement Program is in the Navajo Nation's best interest.

Section Two. Approval

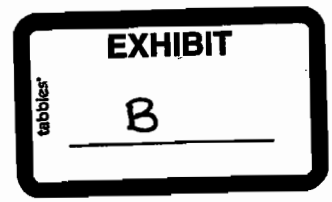
A. The Resources and Development Committee of the Navajo Nation Council hereby approves the FY2015 Navajo Nation Tribal Transportation Improvement Program for the projects listed in the five (5) year plan.

C E R T I F I C A T I O N

I hereby certify that the foregoing resolution was duly considered by the Resources and Development Committee of the 22nd Navajo Nation Council at a duly called meeting held at, Navajo Nation Council Chambers Window Rock, Arizona at which a quorum was present and the same was passed by a vote of 04 in favor, 00 opposed this 23rd day of September, 2014.

Katherine Benally, Chairperson
Resources and Development Committee

Motion: Leonard Tsosie
Second: Leonard H. Pete



LEGISLATIVE SUMMARY SHEET
Tracking No. 0251-14

DATE: September 11, 2014

TITLE OF RESOLUTION: AN ACTION RELATING TO RESOURCES AND DEVELOPMENT; APPROVING THE FISCAL YEAR 2015 NAVAJO NATION TRIBAL TRANSPORTATION IMPROVEMENT PLAN

PURPOSE: This resolution, if approved, will approve the Navajo Department of Transportation's Tribal Transportation Improvement Plan for the Navajo Nation.

This written summary does not address recommended amendments as may be provided by the standing committee. The Office of Legislative Counsel requests each committee member to review the proposed resolution in detail.

5-DAY BILL HOLD PERIOD: MMAllyf
Website Posting Time/Date: 3:31pm 9/15/14
Posting End Date: 9/20/14
Eligible for Action: 9/21/14

PROPOSED STANDING COMMITTEE RESOLUTION

22ND NAVAJO NATION COUNCIL -- Fourth Year, 2014

INTRODUCED BY

Katherine Bully

(Prime Sponsor)

TRACKING NO. 0251-14

AN ACTION

RELATING TO RESOURCES AND DEVELOPMENT; APPROVING THE FISCAL YEAR 2015 NAVAJO NATION TRIBAL TRANSPORTATION IMPROVEMENT PLAN

BE IT ENACTED:

Section One. The Navajo Nation finds the following:

A. 2 N.N.C. §501(C)(1) provides the Resources and Development Committee of the Navajo Council with oversight authority of the Division of Transportation.

B. 2 N.N.C. § 501(B)(2)(b) provides the Resources and Development Committee of the Navajo Nation Council the power to grant final approval for Road and Transportation Plan prioritizing list for road and transportation projects.

C. Pursuant to 25 C.F.R Part 170, Subpart D of the Tribal Transportation Program, the Navajo Division of Transportation is charged with performing the critical functions in collaboration with the Bureau of Indian Affairs, local, state and federal agencies to develop a tribal transportation priority listing.

D. The Navajo Division of Transportation prepared the FY2015 Navajo Nation Tribal Transportation Improvement Program (TTIP) which includes projects for preliminary study which are cultural, environmental impact studies, rights-of-way, centerline surveys and design, construction engineering funds for

construction administration and construction funds to construct roadway improvements, see Exhibit A.

E. The Navajo Division of Transportation's TTIP also includes funds programmed under the Tribal Transportation Program for safety projects, planning, and operation and maintenance.

F. Approving the FY2015 Navajo Nation Tribal Transportation Improvement Program is in the Navajo Nation's best interest.

Section Two. Approval

A. The Resources and Development Committee of the Navajo Nation Council hereby approves the FY2015 Navajo Nation Tribal Transportation Improvement Program for the projects listed in the five (5) year plan.

NAVAJO DIVISION TRANSPORTATION
POST OFFICE BOX 4620
WINDOW ROCK, ARIZONA 86515
TEL: 505-371-8300
FAX: 505-371-8399

EXHIBIT
A

NAVAJO D.O.T.

Tribal Transportation Improvement Program

Executive Summary

Guided by the 25 Coded Federal Regulations (CFR) Part 170 Subpart D under the Tribal Transportation Program (TTP) for the *Transportation Planning, Tribal Transportation Improvement Program (TTIP), Long Range Transportation Plan (LRTP) development, annual update of the Tribal Transportation Facility Inventory and Public Hearings*, the Navajo Division of Transportation is charged to performed the critical functions in collaboration with the Bureau of Indian Affairs (BIA), local, state and federal agencies to develop a tribal transportation priority listing. Projects listed on the 5 year TTIP have funds programmed for preliminary studies which are cultural, environmental impact studies, rights of way, centerlines surveys and design; construction engineering funds are for construction administration; and the construction funds to construct the roadway improvements. In addition, there are other funds programmed under the TTP for safety projects, planning, operation and maintenance. Safety projects may include enhancements on some of the paved roads throughout the Navajo Nation. The TTIP must be financially constrained, in the road inventory, and adhere to all relevant provisions found in the current transportation bill, Moving Ahead for Progress (MAP-21).

The 2% Planning funds are used to provide technical services and guidance to the chapters, regions and communities in the area of transportation planning, mapping, roadway data collection for road maintenance activities, possible improvements, prioritization, road inventory of public roads, public involvements and participation in addressing their transportation needs, and long range transportation plans.

Annually, the Navajo Nation TTIP priority is updated with projects that are most critical to the communities and the Navajo Nation based on the prioritization criteria and submitted to the Resources and Development Committee (RDC) for review and approval. The RDC-approved TTIP is submitted to Federal Highway Administration (FHWA) for final approval and will be included in the national transportation improvement program by FHWA.

FY2015 NAVAJO NATION TRIBAL TRANSPORTATION IMPROVEMENT PROGRAM

Submitted To:

RESOURCES AND DEVELOPMENT COMMITTEE

Of the 22nd Navajo Nation Council

By:

Navajo Division of Transportation

NAVAJO D.O.T.

Submitted:

September 2014

1 Northern Agency

2 Western Agency

3 Eastern Agency

4 Chinle Agency

5 Fort Defiance Agency

AVERY READY INDEX

Navajo Nation

Proposed Program (Five Year Plan)

Total Available Funds	$55,500,000.00	$55,500,000.00	$55,500,000.00	$55,500,000.00	$55,500,000.00	
Proposed Expenditures as per TTIP	$55,500,000.00	$55,500,000.00	$55,500,000.00	$55,500,000.00	$55,500,000.00	
Balance	$0.00	$0.00	$0.00	$0.00	$0.00	

Project Name	Construction Year	Programmed Amount FY13	Programmed Amount FY14	Programmed Amount FY15	Programmed Amount FY16	Programmed Amount FY17	TOTAL Prog. Amount
NDOT Maintenance		$4,400,000.00	$4,400,000.00	$4,400,000.00	$4,400,000.00	$4,400,000.00	$22,000,000.00
NNDOT Safety Projects		$500,000.00	$500,000.00	$500,000.00	$500,000.00	$500,000.00	$2,500,000.00
NDOT		$5,800,000.00	$5,800,000.00	$5,800,000.00	$5,800,000.00	$5,800,000.00	$29,000,000.00
NDOT 2% Planning funds		$1,300,000.00	$1,300,000.00	$1,300,000.00	$1,300,000.00	$1,300,000.00	$6,500,000.00
Request for Equipment Purchase		$1,350,000.00	$2,000,000.00	$0.00	$0.00	$0.00	$3,350,000.00
N6310(1)2 Sage Brush Valley Road		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
N21(3)2,4	2012	$5,000.00	$0.00	$0.00	$0.00	$0.00	$5,000.00

Project Name	Construction Year	Programmed Amount FY15	Programmed Amount FY16	Programmed Amount FY17	Programmed Amount FY18	Programmed Amount FY19	TOTAL Prog. Amount
N7150(1) 1,2,3 San Juan County Bridge Replacement N. 8105 (Huerfano Bridge)	2013	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
N39(1-1)(2)1,2,4 Kinlichee Wash Bridge N628	2013	$5,000.00	$0.00	$0.00	$0.00	$0.00	$5,000.00
N16(6)/N162(1)/N164(1)2,4 Navajo Mountain	2013	$225,000.00	$0.00	$0.00	$0.00	$0.00	$225,000.00
N7057(1)1,2,3 White Rock Wash Brdg N487	2013	$5,000.00	$0.00	$0.00	$0.00	$0.00	$5,000.00
N35(9-1)4 US160 to Sweetwater	2013	$10,000.00	$0.00	$0.00	$0.00	$0.00	$10,000.00
N31(4)1,2,4 Navajo toward Mex Springs N31/N321 Jct w/75m Brdg	2014	$385,000.00	$20,000.00	$0.00	$0.00	$0.00	$405,000.00
N8008(1)1,2,3 & Lukachukai Wash Bridge	2014	$240,000.00	$0.00	$0.00	$0.00	$0.00	$240,000.00
N55(3)1,2&4 Alamo to I-40	2014	$285,000.00	$100,000.00	$25,000.00	$0.00	$0.00	$410,000.00
N9345(2)2&4 Wide Ruins Access	2014	$175,000.00	$0.00	$0.00	$0.00	$0.00	$175,000.00
N55(2)1,2,4 Alamo to I-40	2014	$125,000.00	$10,000.00	$0.00	$0.00	$0.00	$135,000.00
N2007(1-1)1,2,4 N666 New Lands Rio Puerco Bridge Replace	2014	$255,000.00	$0.00	$0.00	$0.00	$0.00	$255,000.00
N15(2-2)(3-1)(4-1) ROW Fencing Project from Burnside to Greasewood Springs	2015	$3,200,000.00	$0.00	$0.00	$0.00	$0.00	$3,200,000.00

Project Name	Construction Year	Programmed Amount FY15	Programmed Amount FY16	Programmed Amount FY17	Programmed Amount FY18	Programmed Amount FY19	TOTAL Proj. Amount
BIA DOT NR Safety Projects	2015	$4,000,000.00	$0.00	$0.00	$0.00	$0.00	$4,000,000.00
N6461(1-1)/N6461(2)/N6460(1) 1,2 &4 Dennehotso Access and Bridge - N313 & 302N	2015	$6,000,000.00	$0.00	$0.00	$0.00	$0.00	$6,000,000.00
N6331(2)2&4/N6330(1)/N21(1A)1,2,4 Trading Post Brdg Rehab-N310	2015	$8,200,000.00	$100,000.00	$0.00	$0.00	$0.00	$8,300,000.00
N12(19-4)(13-2)(12-2)1,2&4 Wheatfields Lake to N13 Junction	2015 & 2016	$5,496,763.35	$14,600,000.00	$0.00	$0.00	$0.00	$20,096,763.35
N27(2-2)(2-3)(1-2)1,2&4/N7(2-3)2&4 Nazlini North to Chinle	2015 & 2016	$7,533,236.65	$11,250,000.00	$5,550,000.00	$175,000.00	$0.00	$24,508,236.65
N251(5-1)2,3 North loop Tselani off N4	2015 & 2016	$3,305,000.00	$6,000,000.00	$0.00	$0.00	$0.00	$9,305,000.00
N71(2)2&4 Birdsprings/N15 & Little Singer School Access	2016	$350,000.00	$3,950,000.00	$6,410,000.00	$0.00	$0.00	$10,710,000.00
N7119(1)/N481(1)2,3 Little Water Chapter Access	2016	$225,000.00	$2,200,000.00	$0.00	$0.00	$0.00	$2,425,000.00
N5012(1)1,2,3 Sanostee Wash Bridge N204	2016	$125,000.00	$1,970,000.00	$0.00	$0.00	$0.00	$2,095,000.00
N101(1)2&4 Ojo Amarillo School Access	2016	$50,000.00	$810,000.00	$0.00	$0.00	$0.00	$860,000.00
N15(2-2)(3-1)(4-1)2&4 SR264 to Cornfields-Sunrise	2017	$75,000.00	$25,000.00	$12,100,000.00	$0.00	$0.00	$12,200,000.00
N55(1-1)2,4 Alamo to I-40	2017	$60,000.00	$5,000.00	$1,670,000.00	$0.00	$0.00	$1,735,000.00

Project Name	Construction Year	Programmed Amount FY15	Programmed Amount FY16	Programmed Amount FY17	Programmed Amount FY18	Programmed Amount FY19	TOTAL Prog. Amount
N4000 & N3000 Series Chip Sealing	2017	$25,000.00	$25,000.00	$830,000.00	$0.00	$0.00	$880,000.00
N5001(1)1,2,4 w/N241 Newcomb to Toadlena	2017	$100,000.00	$25,000.00	$5,175,000.00	$5,155,000.00	$0.00	$10,455,000.00
N4(5)/N8031(2)/N8031(3)/N8031(4)1 ,2,3 Pinon to Hard Rocks	2017	$50,000.00	$25,000.00	$11,600,000.00	$2,820,000.00	$8,530,000.00	$23,025,000.00
N35(8)/N5045(1)1,2,4 US191 to Sweetwater	2018	$75,000.00	$75,000.00	$25,000.00	$10,050,000.00	$225,000.00	$10,450,000.00
N9073(1)(2)1,2,4 Blue Canyon Road w/ Bridge N606	2018	$125,000.00	$50,000.00	$0.00	$11,550,000.00	$6,983,000.00	$18,708,000.00
N7054(1)2,3 Pinedale east entrance off N11 (Safety) Pinedale east loop entrance off N11	2018	$250,000.00	$50,000.00	$25,000.00	$2,750,000.00	$50,000.00	$3,125,000.00
N11(14)1,2,4 N9 to Mariano Lake south end	2018	$5,000.00	$5,000.00	$15,000.00	$11,000,000.00	$275,000.00	$11,300,000.00
N46(4) / N474(4)1,2,4 to Counselor SR550	2019	$250,000.00	$50,000.00	$50,000.00	$0.00	$15,000,000.00	$15,350,000.00
N8084(1)(2)(3)(4)1,2,3 US 191 to N64	2019	$5,000.00	$25,000.00	$25,000.00	$0.00	$12,437,000.00	$12,492,000.00
N6485(1)2,4 Kayenta Access US 163 to US160 Wetherill Road	2020	$100,000.00	$100,000.00	$0.00	$0.00	$0.00	$200,000.00
N9402(1)1,2 Rio Puerco Brdg N656	2020	$10,000.00	$0.00	$0.00	$0.00	$0.00	$10,000.00
N108(1)1,2,4 Brdg N651	2020	$10,000.00	$0.00	$0.00	$0.00	$0.00	$10,000.00

Project Name	Construction Year	Programmed Amount FY15	Programmed Amount FY16	Programmed Amount FY17	Programmed Amount FY18	Programmed Amount FY19	TOTAL Prog. Amount
N541(1)1,2,3 Brdg N619	2020	$5,000.00	$0.00	$0.00	$0.00	$0.00	$5,000.00
N8081(1)/N8095(1)1,2,3	2020	$100,000.00	$0.00	$0.00	$0.00	$0.00	$100,000.00
N6486(1)1,2,3 N308 & N314 Lower Laguna Creek Bridge Rehab	2020	$25,000.00	$5,000.00	$0.00	$0.00	$0.00	$30,000.00
N100(1-1)/N12(1A)2,4 NN Capitol Streets & Access to Judicial Complex	2020	$60,000.00	$25,000.00	$0.00	$0.00	$0.00	$85,000.00
N8066(3)/N8065(1)1,2,4 N41 to Kitsilli	2020	$285,000.00	$0.00	$0.00	$0.00	$0.00	$285,000.00
N203(2)1,2 Kinlichee Wash Bridge N629	2020	$25,000.00	$0.00	$0.00	$0.00	$0.00	$25,000.00
N609(1)2,4 Kerly Street Tuba City	2020	$50,000.00	$0.00	$0.00	$0.00	$0.00	$50,000.00
N106(1)2,4 Kayenta PHS Street-Wetherill Road	2020	$50,000.00	$0.00	$0.00	$0.00	$0.00	$50,000.00
N6720(1)1,2,3 Brdg N309	2020	$10,000.00	$0.00	$0.00	$0.00	$0.00	$10,000.00
N6221(1)2,3 Chee Willie Drive Tuba City Sec 20	2020	$200,000.00	$0.00	$0.00	$0.00	$0.00	$200,000.00

Project Name	Construction Year	Programmed Amount FY15	Programmed Amount FY16	Programmed Amount FY17	Programmed Amount FY18	Programmed Amount FY19	TOTAL Prog Amount
PROGRAM	**TOTALS:**	$55,500,000.00	$55,500,000.00	$55,500,000.00	$55,500,000.00	$55,500,000.00	$277,500,000.00

1

FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

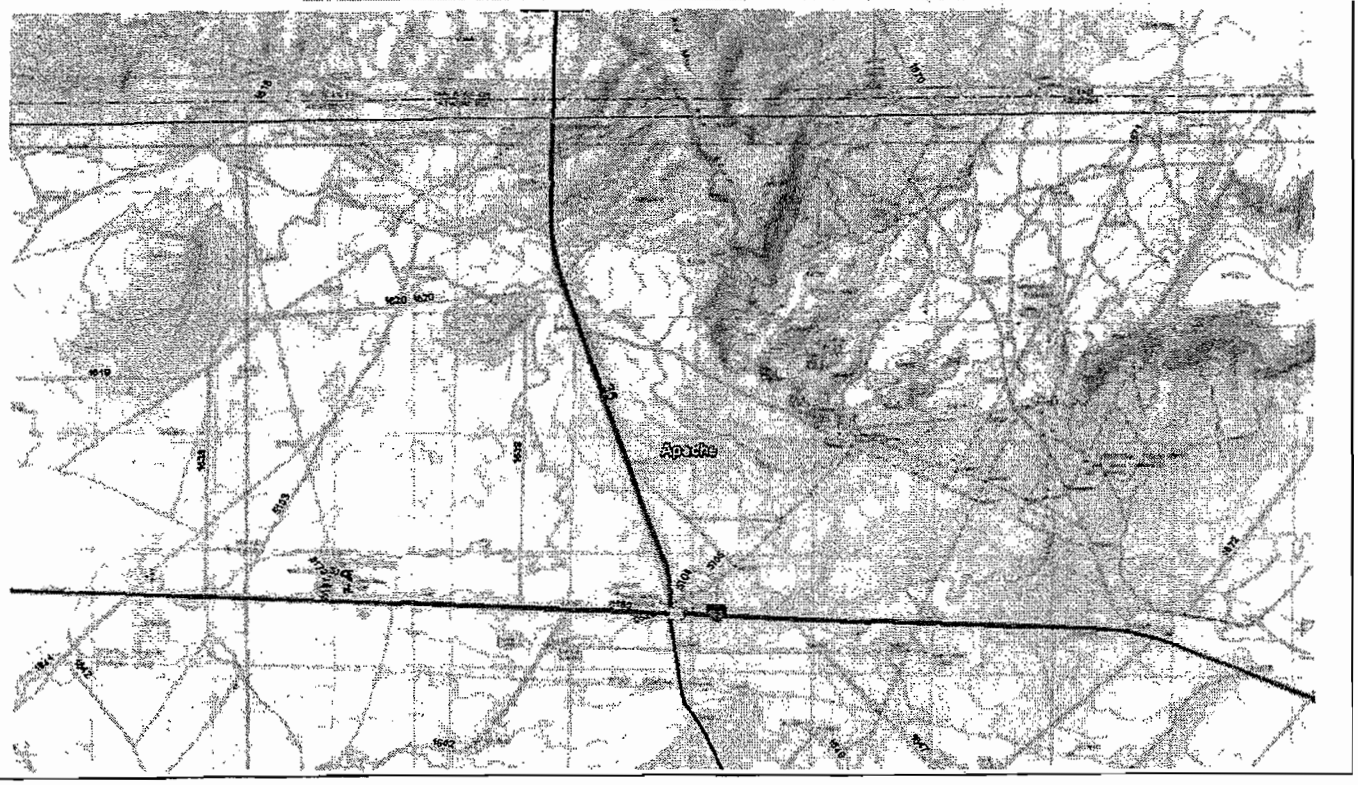
Tribal Transportation Program
Transportation Improvement Program

Agency: Northern | Priority No.: | To Be Delivered by: BIA | Date: 9/10/2013
Tribe: Navajo Nation | Current FY: 2015
Funding Source: TTP (Bridge, 2% Planning, Safety, etc)

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount: $0

Project Name: N35(9-1)4 US160 to Sweetwater
Location: Sweetwater
Type of Work: Pavement
Route Num and Section: N35 | Project Number: N35(9-1)4
Length: 6.8 Miles | County: Apache
State: AZ | Construction Year: 2013
Comments: NECA is working on the paving and should be completed by the end of August 2014

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$10,000	$0	$0	$0	$0	$10,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$10,000	$0	$0	$0	$0	$10,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

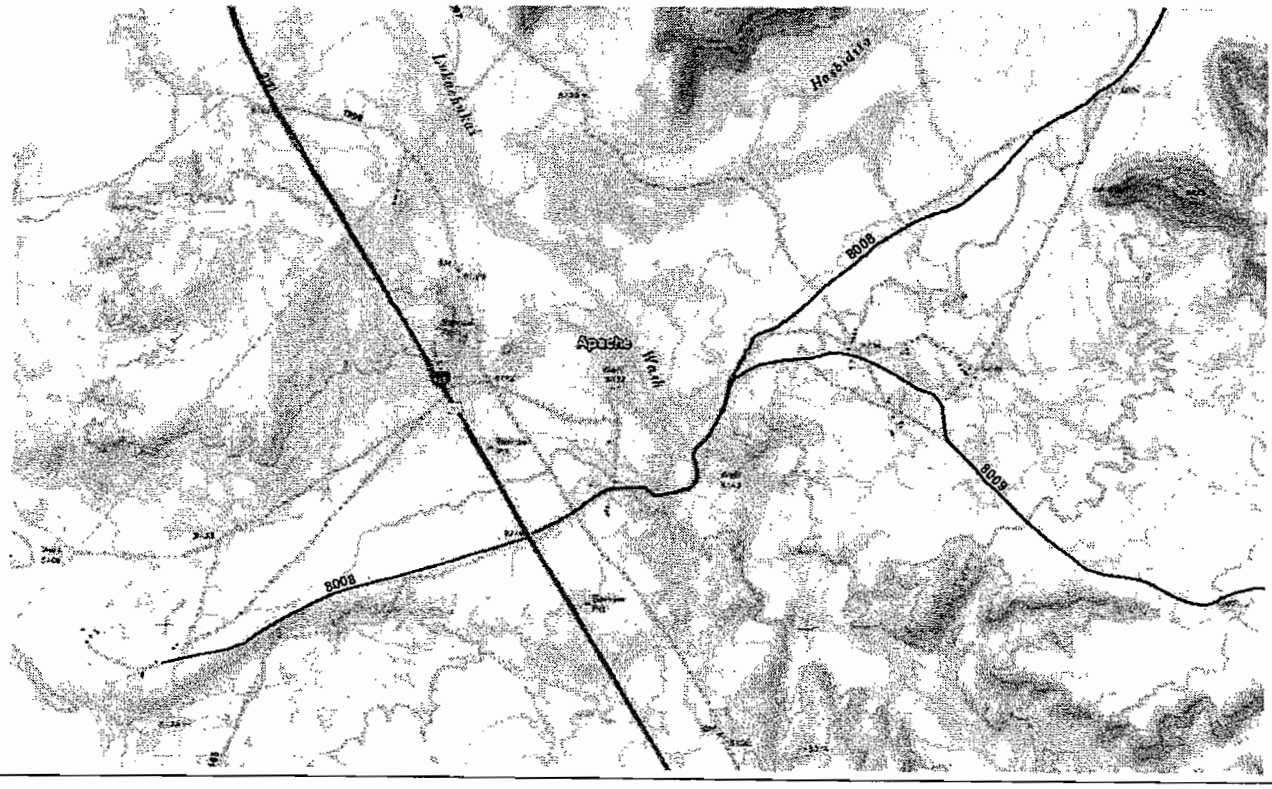
Tribal Transportation Program
Transportation Improvement Program

Agency: Northern | Priority No.: | To Be Delivered by: BIA | Date: 7/2/2013
Tribe: Navajo Nation | Current FY: 2015
Funding Source: TTP (Bridge, 2% Planning, Safety, etc)

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount: $6,000,000

Project Name: N8008(1)1,2,3 & Lukachukai Wash Bridge
Location: Round Rock Chapter
Type of Work: Grade, Drain, Gravel Surface, Bridge
Route Num and Section: N8008 | Project Number: N8008(1)1,2,3 *
Length: 1.18 Miles | County: Apache
State: AZ | Construction Year: 2014
Comments: Design Completed. Need to update specs. 6 span bridge. Completed PS & E. Working on permits. Bid opening by Oct. 2014. Construction Notice To Proceed Dec. 2014. Engineer's estimate is $7.5 million ($8.4 Million 073014).
FY 2014 Construction funds programmed for $4.5 million. However BIA plans to POO $7,500,000.00 ($8.4 Million 073014) in FY 2014 Construction funds.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$15,000	$0	$0	$0	$0	$15,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$225,000	$0	$0	$0	$0	$225,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$240,000	$0	$0	$0	$0	$240,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

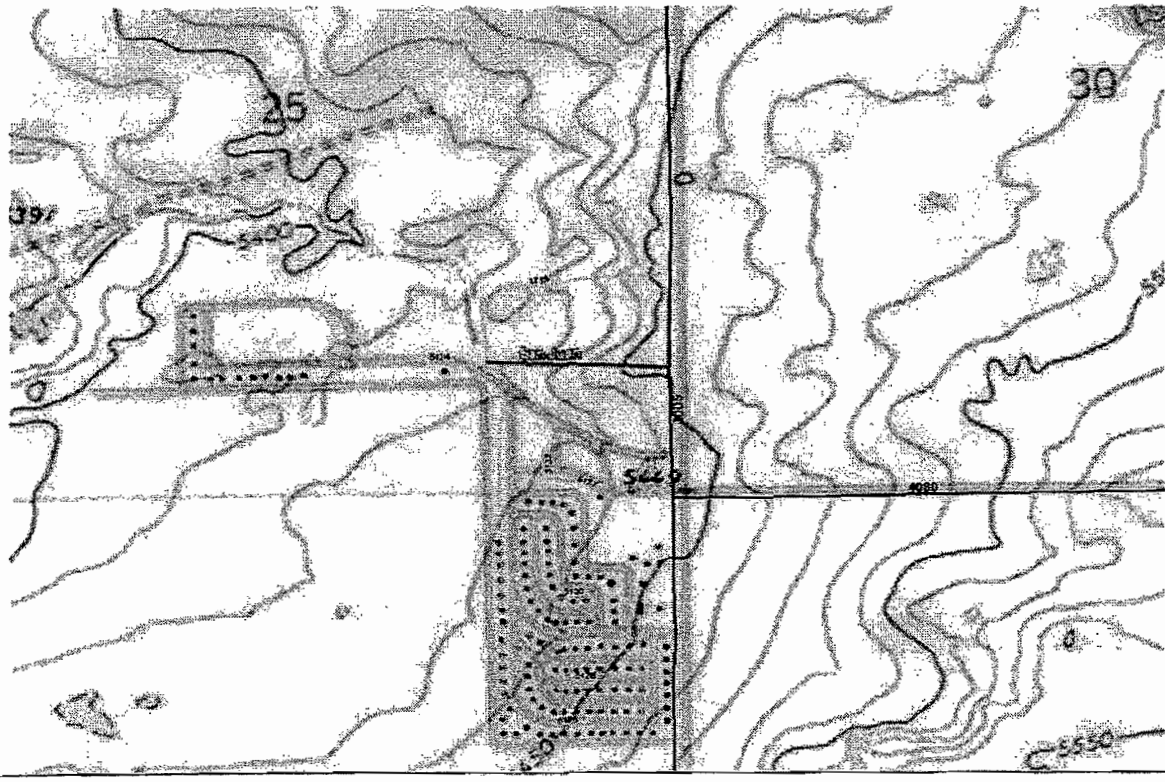
Tribal Transportation Program
Transportation Improvement Program

Agency: NHP | Priority No.: | To Be Delivered by: BIA | Date: 7/2/2013
Tribe: Navajo Nation | Current FY: 2015
Funding Source: TTP (Bridge, 2% Planning, Safety, etc)

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount: $0

Project Name: N101(1)2&4 Ojo Amarillo School Access
Location: Region 2 area; off of N36/N3005
Type of Work: Grade, Drain, and Surfacing (Pavement) Construction
Route Num and Section: N101 | Project Number: N101(1)2&4
Length: .60 Miles | County: San Juan
State: NM | Construction Year: 2016
Comments: Need Survey, field review, PS & E and ROW. Archaeology and EA covered under the NAPI EIS.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$50,000	$10,000	$0	$0	$0	$60,000
Construction	$0	$750,000	$0	$0	$0	$750,000
Construction Engineering	$0	$50,000	$0	$0	$0	$50,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$50,000	$810,000	$0	$0	$0	$860,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

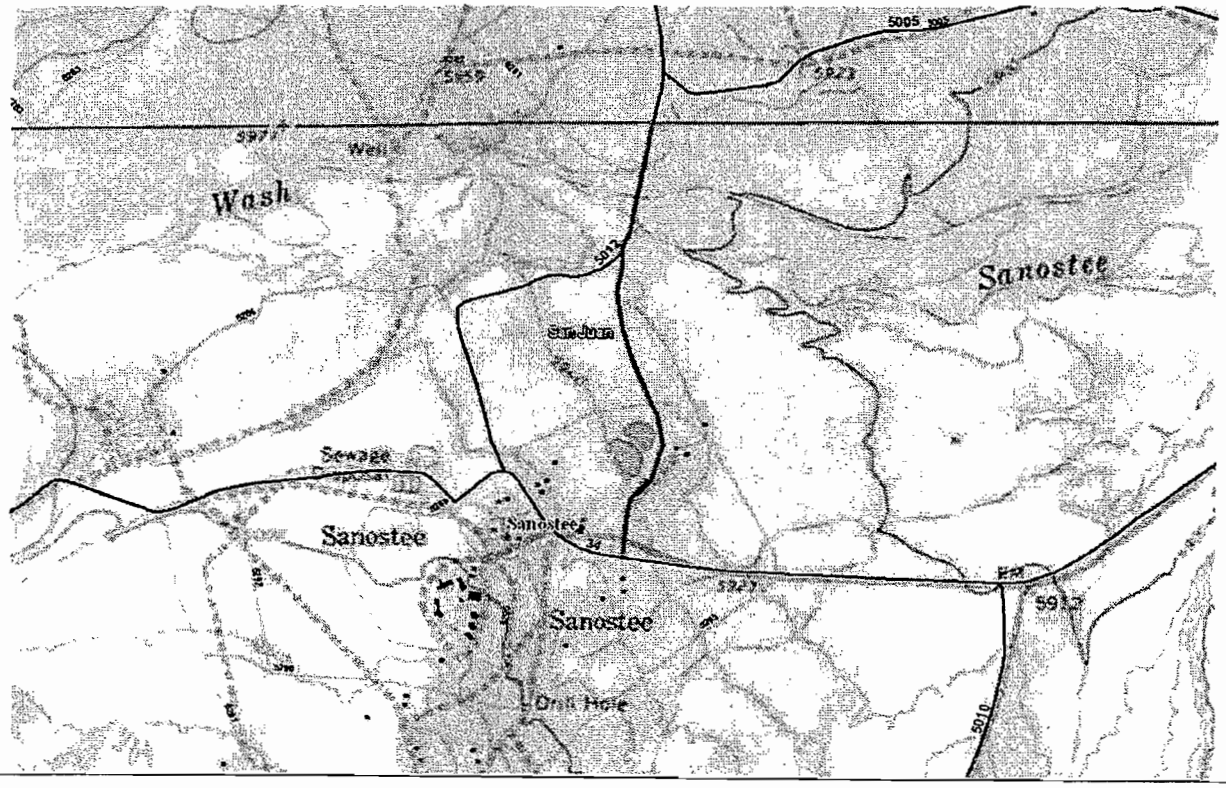
Tribal Transportation Program
Transportation Improvement Program

Agency: Northern | Priority No.: | To Be Delivered by: BIA | Date: 9/10/2013
Tribe: Navajo Nation | Current FY: 2015
Funding Source: TTP (Bridge, 2% Planning, Safety, etc)

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount: $0

Project Name	N5012(1)1,2,3 Sanostee Wash Bridge N204
Location	Sanostee
Type of Work	Bridge & Grade & Drain, Gravel
Route Num and Section	N5012 — Project Number: N5012(1)1,2,3
Length	0.1 Miles — County: San Juan
State	NM — Construction Year: 2016
Comments	Survey and Design for 1 mile of roadway and major drainage structure. PS & E will be completed by Spring 2015. EA and Archaeology and ROW are needed.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$125,000	$10,000	$0	$0	$0	$135,000
Construction	$0	$1,900,000	$0	$0	$0	$1,900,000
Construction Engineering	$0	$60,000	$0	$0	$0	$60,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$125,000	$1,970,000	$0	$0	$0	$2,095,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

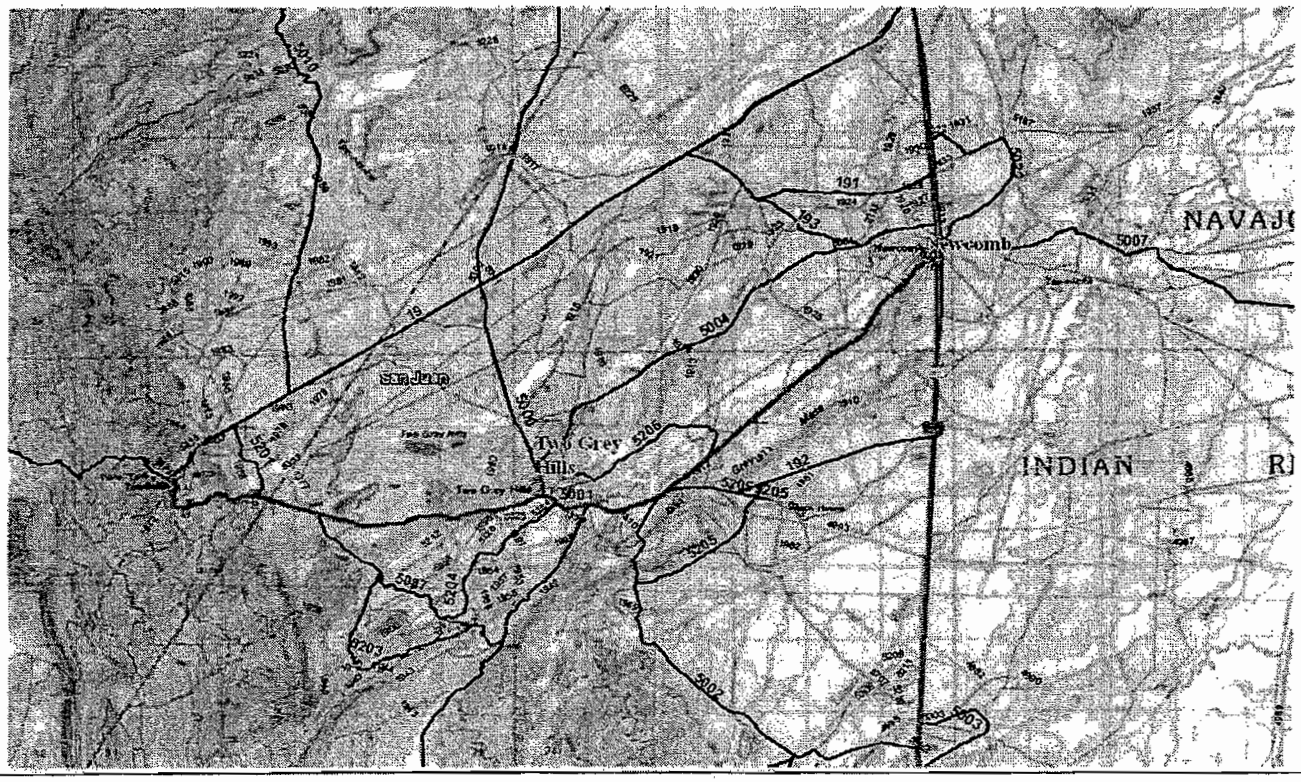
Tribal Transportation Program
Transportation Improvement Program

Agency: Northern
Tribe: Navajo Nation
Priority No.:
To Be Delivered by: BIA
Date: 7/2/2013
Funding Source: TTP (Bridge, 2% Planning, Safety, etc)
Current FY: 2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount: $0

Project Name: N5001(1)1,2,4 w/N241 Newcomb to Toadlena
Location: Newcomb to Toadlena
Type of Work: Grade, Drain, Surfacing (Pavement), & Bridge Construction
Route Num and Section: N5001 Project Number: N5001(1)1,2,4 w/N241
Length: 6.1 Miles County: San Juan
State: NM Construction Year: 2017
Comments: ROW Needed. Alignment issues. Archaeological sites. Build half the project with Bridge. Revisit SOW with BIA to define project limits. Total cost of project is about $12 million for the 13 mile. Project needs additional funds of $7 million. BE & EA need updated.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$50,000	$25,000	$25,000	$5,000	$0	$105,000
Construction	$0	$0	$5,000,000	$5,000,000	$0	$10,000,000
Construction Engineering	$0	$0	$150,000	$150,000	$0	$300,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$50,000	$25,000	$5,175,000	$5,155,000	$0	$10,405,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

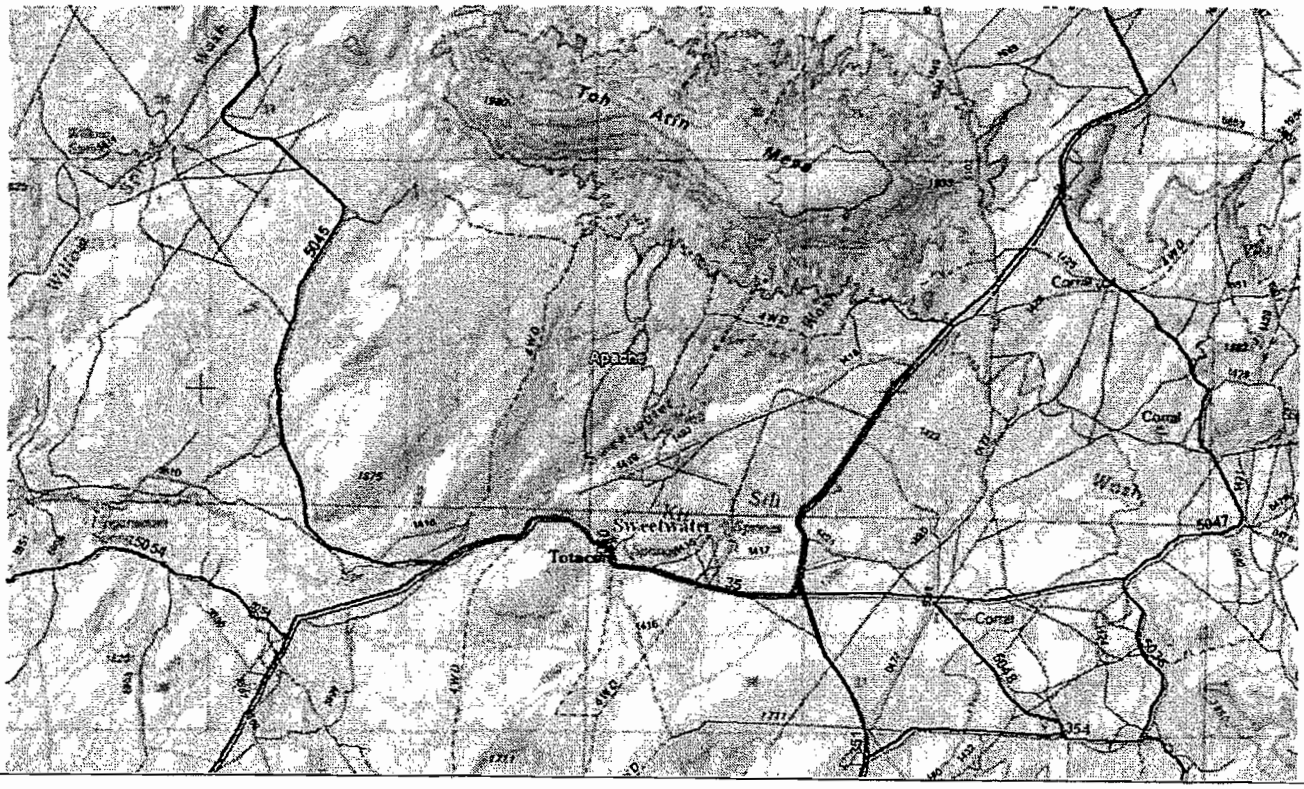
Tribal Transportation Program
Transportation Improvement Program

Agency:	Northern	**Priority No.:**		**To Be Delivered by:**	BIA
Tribe	Navajo Nation			**Date**	9/10/2013
Funding Source	TTP (Bridge, 2% Planning, Safety, etc)			**Current FY**	2015

PROJECT INFORMATION: **Is Project on Current LRTP?** ☐ **Include In STIP** ☐ **STIP Amount** $0

Project Name	N35(8)/N5045(1)1,2,4 US191 to Sweetwater		
Location	Sweetwater		
Type of Work	Bridge and Grade & Drain, Pavement Construction		
Route Num and Section	N35/N5045	**Project Number**	N35(8)/N5045(1)1,2,4
Length	7.1 Miles	**County**	Apache
State	AZ	**Construction Year**	2018
Comments	Survey and Archaeology is complete. NEPA completed. BE needs to be updated. Full design to begin in FY 2015		

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$75,000	$75,000	$25,000	$0	$0	$175,000
Construction	$0	$0	$0	$9,900,000	$100,000	$10,000,000
Construction Engineering	$0	$0	$0	$150,000	$125,000	$275,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$75,000	$75,000	$25,000	$10,050,000	$225,000	$10,450,000



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FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

Tribal Transportation Program
Transportation Improvement Program

Agency: Western | Priority No.: | To Be Delivered by: BIA | Date: 9/10/2013

Tribe: Navajo Nation | Current FY: 2015

Funding Source: TTP (Bridge, 2% Planning, Safety, etc)

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount: $0

Project Name: N6310(1)2 Sage Brush Valley Road

Location: Inscription House

Type of Work: Grade and Drain

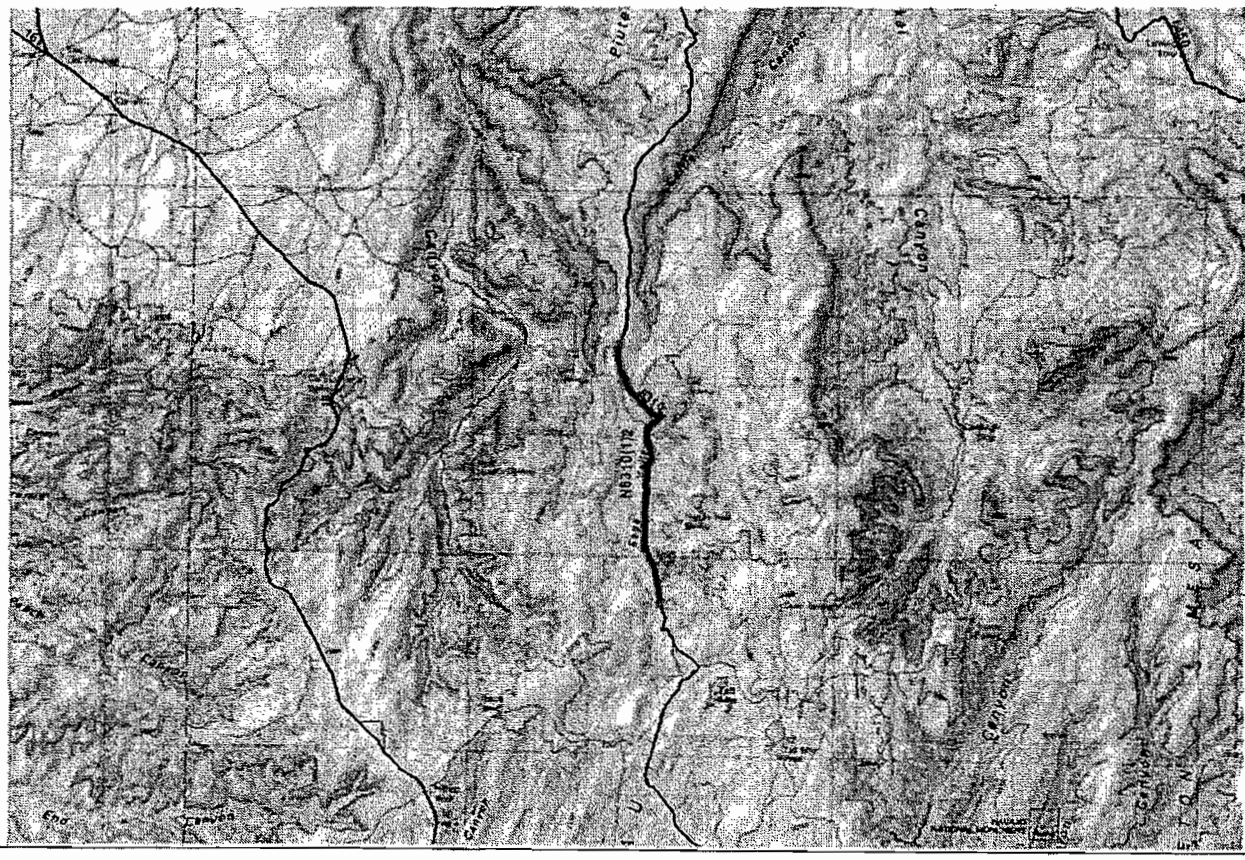
Route Num and Section: N6310 | Project Number: N6310(1)2

Length: 5.0 Miles | County: Navajo

State: AZ | Construction Year:

Comments: Funds needed to complete PE and shelve until further notice. To complete PS & E and chapter to seek for construction fund for the future. HOLD

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$0	$0	$0	$0	$0	$0



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

Tribal Transportation Program
Transportation Improvement Program

Agency: Western | **Priority No.:** | **To Be Delivered by:** BIA | **Date** 9/10/2013

Tribe Navajo Nation

Funding Source TTP (Bridge, 2% Planning, Safety, etc) | **Current FY** 2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ **STIP Amount** $0

Project Name N16(6)/N162(1)/N164(1)2,4 Navajo Mountain

Location Navajo Mountain

Type of Work Grade, drain, structures and pavement

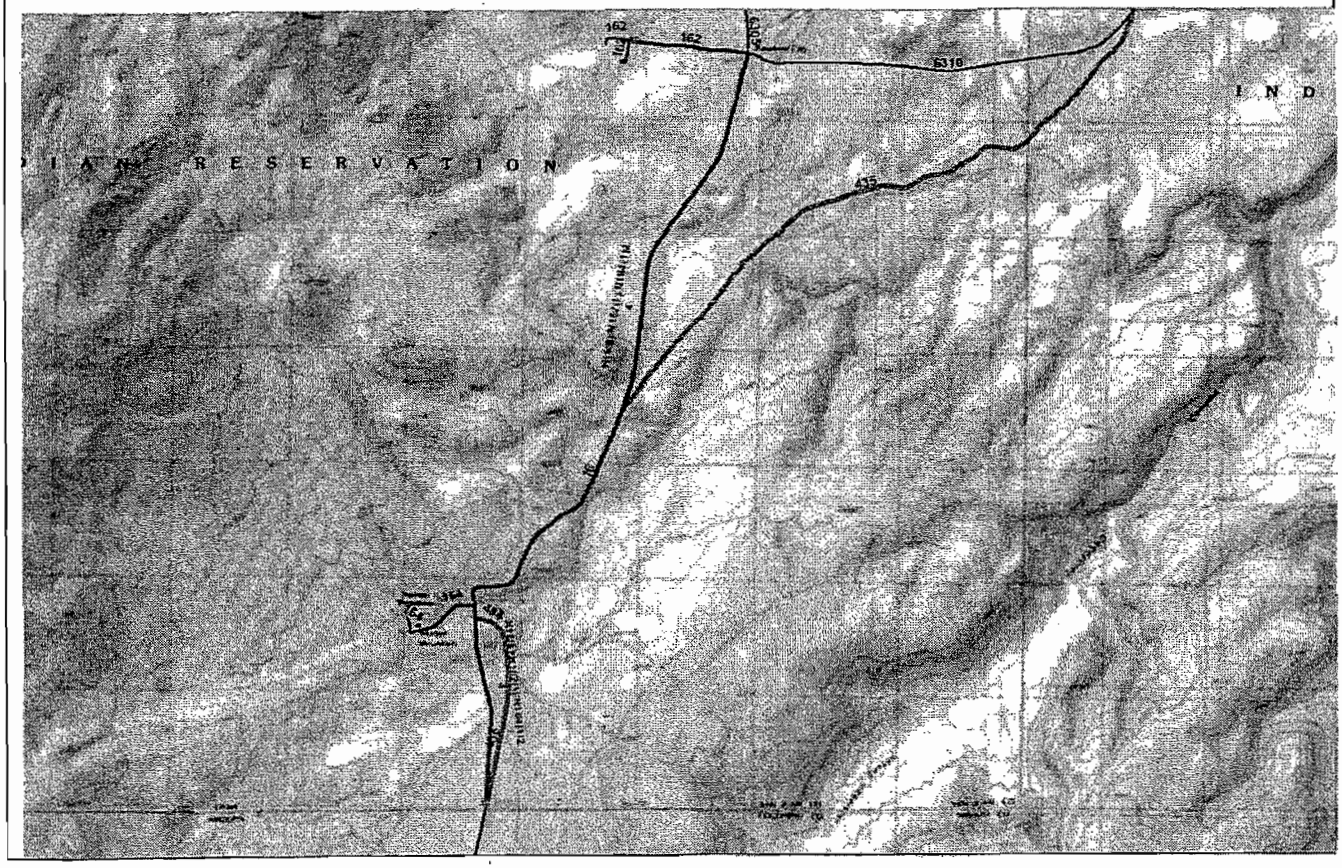
Route Num and Section N16 | **Project Number** N16(6)/N162(1)/N164(1)2,

Length 5.74 Miles | **County** San Juan

State Utah | **Construction Year** 2013

Comments 125K for contingencies, project fully funded. Construction complete by Spring 2015

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$0	$0	$0	$0	$0	$0
Construction	$100,000	$0	$0	$0	$0	$100,000
Construction Engineering	$125,000	$0	$0	$0	$0	$125,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$225,000	$0	$0	$0	$0	$225,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

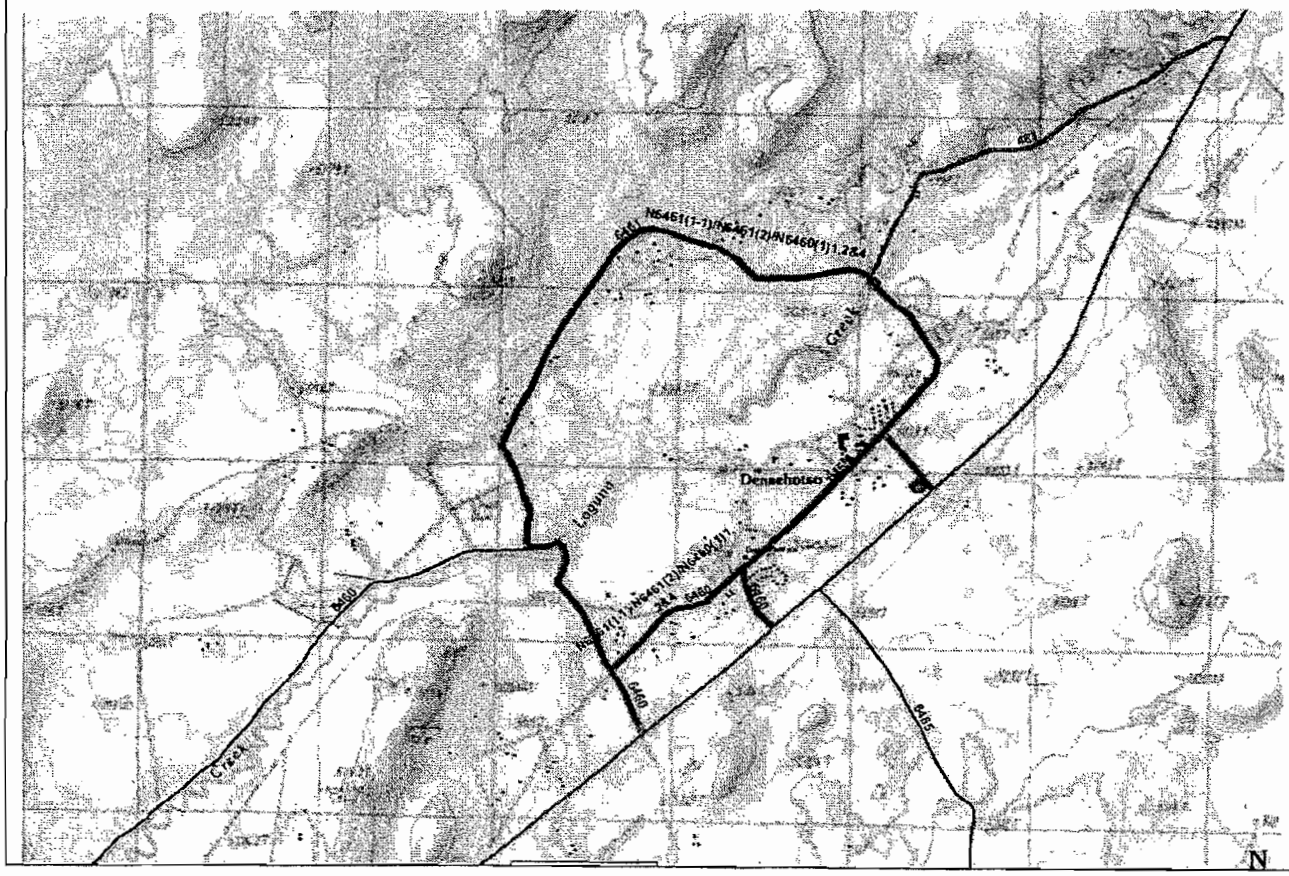
Tribal Transportation Program
Transportation Improvement Program

Agency: Western | Priority No.: | To Be Delivered by: NDOT | Date: 6/6/2013
Tribe: Navajo Nation | Current FY: 2015
Funding Source: TTP, TTP-Bridge (design) (Bridge, 2% Planning, Safety, etc)

PROJECT INFORMATION: Is Project on Current LRTP? ☑ Include In STIP ☑ STIP Amount: $10,000,000

Project Name	N6461(1-1)/N6461(2)/N6460(1) 1,2 &4 Dennehotso Access and Bridge - N313 & 302N
Location	Dennehotso
Type of Work	Bridge replacement and Grade, Drain, Pavement construction
Route Num and Section	N6460 (B#302N) & N6461(B#N313) (see comments for Project Number N6461(1-1)/N6461(2)/N646
Length	5.0 Miles
County	Apache
State	AZ
Construction Year	2015
Comments	Rt: N6460, Sec: 20 from intersection of N6460/N6461 to Proposed Bridge 302N, and 30-70 & Rt: N6461, Sec: 10-30 Bridge replacement N313 and Access road. PS & E completed by FHWA. Currently, working on EA and Permits. Once EA is completed NDOT apply for ROW. Construction scheduled for Fall of 2014. Dennehotso loop road N6460/6461 will be designed by NDOT consultant. PS & E completed by Fall 2015

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$0	$0	$0	$0	$0	$0
Construction	$6,000,000	$0	$0	$0	$0	$6,000,000
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$6,000,000	$0	$0	$0	$0	$6,000,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

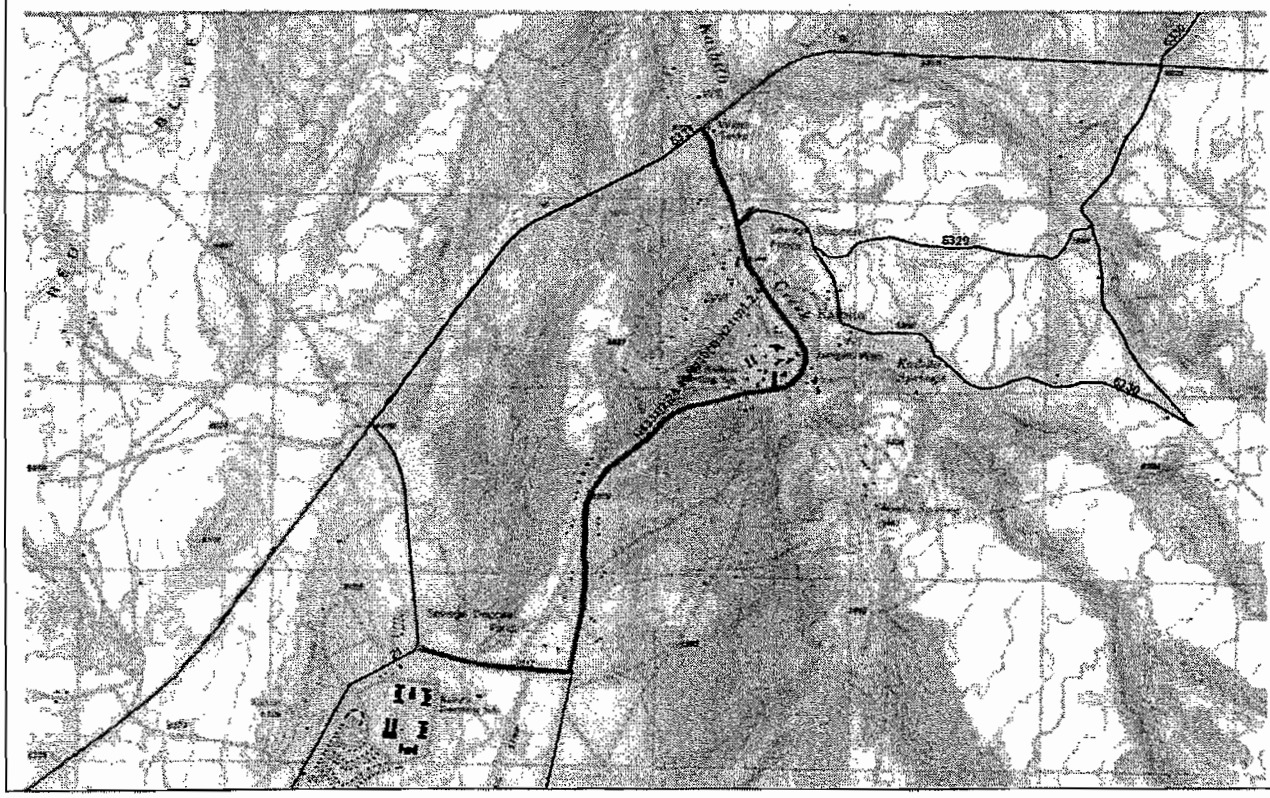
Tribal Transportation Program
Transportation Improvement Program

Agency: Western | Priority No.: | To Be Delivered by: BIA
Tribe: Navajo Nation | Date: 7/2/2013
Funding Source: TTP (Bridge, 2% Planning, Safety, etc) | Current FY: 2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount: $8,800,000

Project Name: N6331(2)2&4/N6330(1)/N21(1A)1,2,4 Trading Post Brdg Rehab-N310
Location: Kaibeto Chapter
Type of Work: Grade, Drain, Gravel Construction, and Bridge Construction
Route Num and Section: N6331/N6330/N21 | Project Number: N6331(2)2&4/N6330(1)/N2
Length: 2.29 Miles | County: Coconino
State: AZ | Construction Year: 2015
Comments: BIA reviewing final PS & E need updated BE form, need to response NN EPA comments. Spur road needs NEPA compliance and ROW package has not been submmed. Pending final EA.
FY 2014 Construction funds programmed for $3.3 million. However BIA will transfer funds to cover shortfall on N8008 Bridge project

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$50,000	$0	$0	$0	$0	$50,000
Construction	$8,000,000	$0	$0	$0	$0	$8,000,000
Construction Engineering	$150,000	$100,000	$0	$0	$0	$250,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$8,200,000	$100,000	$0	$0	$0	$8,300,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

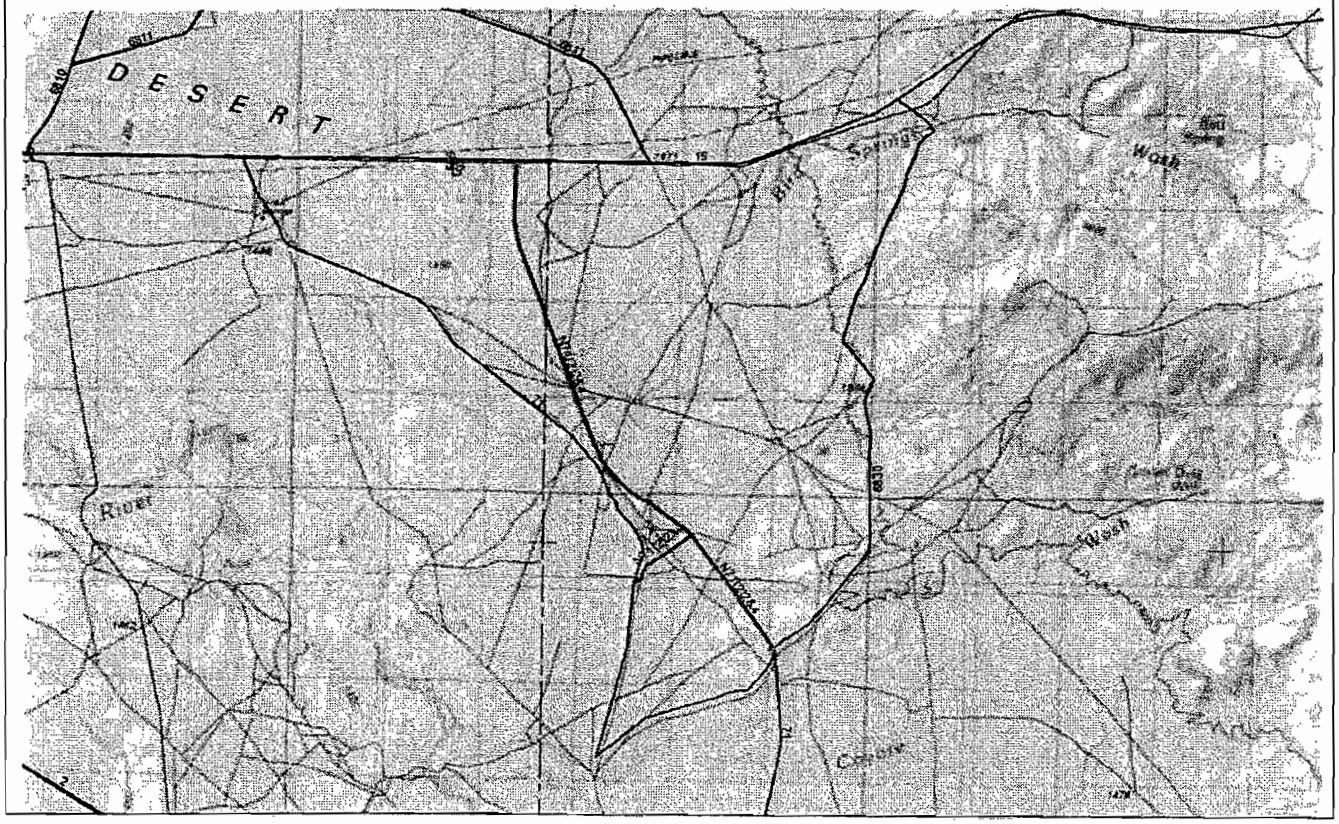
Tribal Transportation Program
Transportation Improvement Program

Agency: Western | Priority No.: | To Be Delivered by: BIA | Date: 9/12/2013
Tribe: Navajo Nation | Current FY: 2015
Funding Source: TTP (Bridge, 2% Planning, Safety, etc)

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount: $0

Project Name: N71(2)2&4 Birdsprings/N15 & Little Singer School Access
Location: Birdsprings
Type of Work: Grade, Drain, Pavement Surfacing, New Alignment
Route Num and Section: N71 | Project Number: N71(2)2&4
Length: 7.5 Miles | County: Navajo
State: AZ | Construction Year: 2016
Comments: Survey is needed for the design. Archaeology is completed, EA is needed. Field review and scoping meeting scheduled for Jan. 2015

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$350,000	$50,000	$10,000	$0	$0	$410,000
Construction	$0	$3,900,000	$6,200,000	$0	$0	$10,100,000
Construction Engineering	$0	$0	$200,000	$0	$0	$200,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$350,000	$3,950,000	$6,410,000	$0	$0	$10,710,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

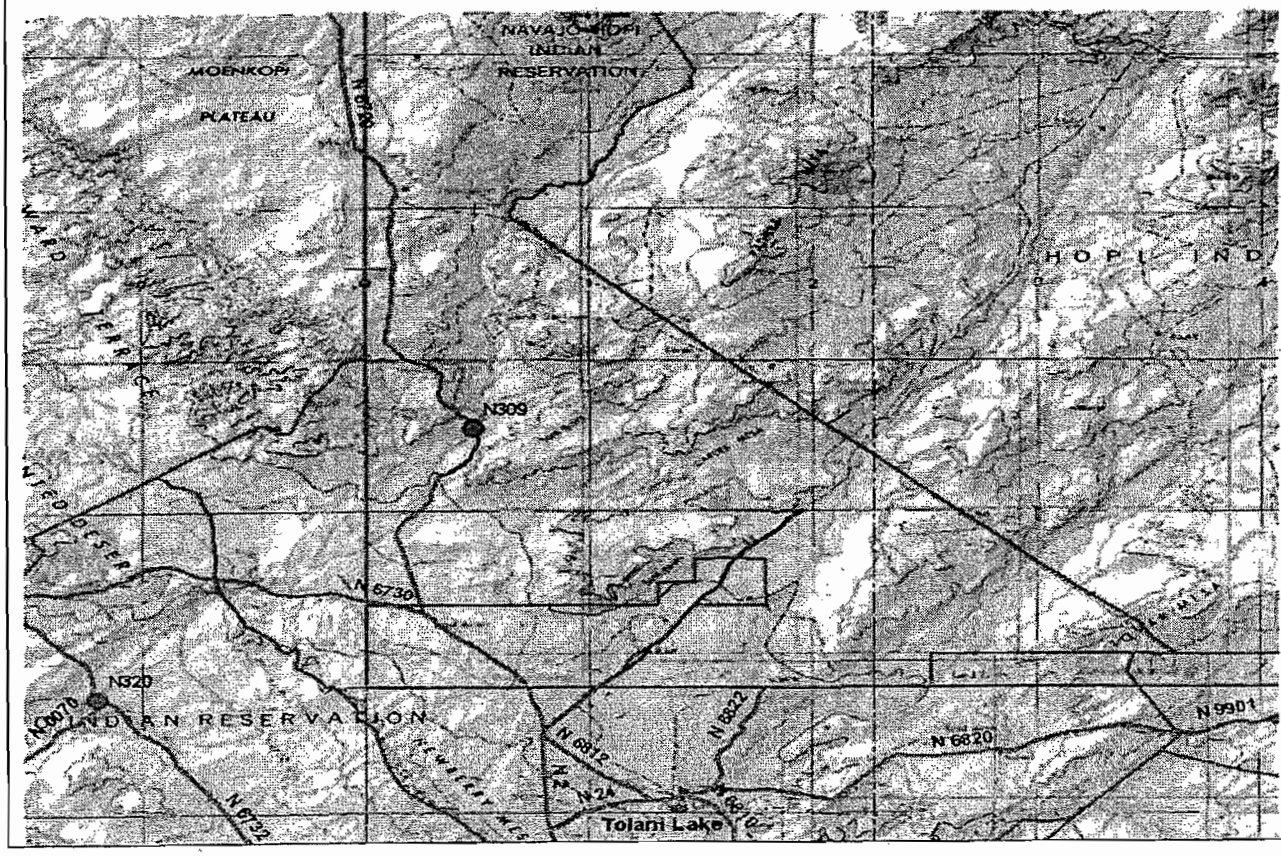
Tribal Transportation Program
Transportation Improvement Program

Agency:	Western	Priority No.:	11	To Be Delivered by:	BIA
Tribe	Navajo			Date	8/29/2014
Funding Source	TTP (Bridge, 2% Planning, Safety, etc)			Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount $0

Project Name	N6720(1)1,2,3 Brdg N309
Location	Sand Springs
Type of Work	Bridge Replacement
Route Num and Section	N6720 — Project Number N6720(1)1,2,3 Brdg N309
Length	.01 Miles — County Coconino
State	Arizona — Construction Year 2020
Comments	Bridge Replacement

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$10,000	$0	$0	$0	$0	$10,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$10,000	$0	$0	$0	$0	$10,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

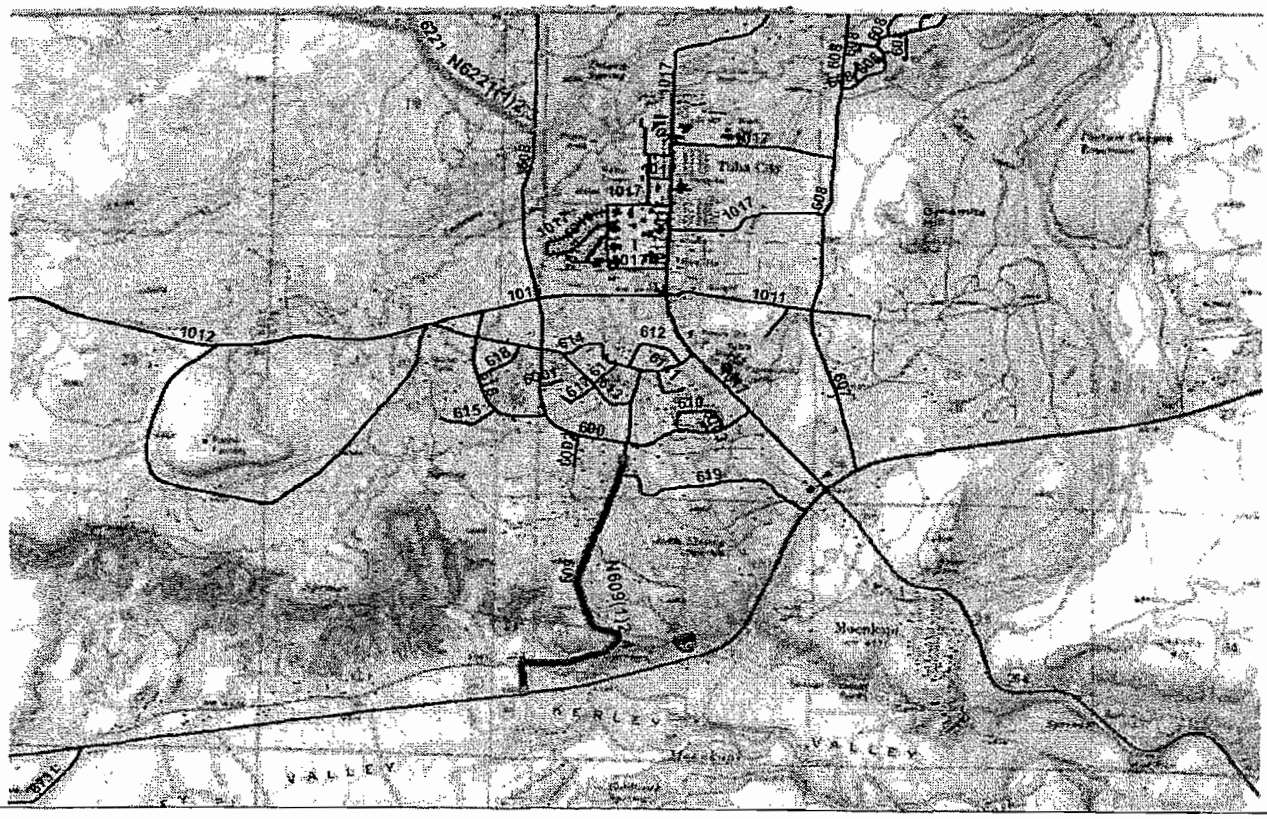
Tribal Transportation Program
Transportation Improvement Program

Agency:	Western	Priority No.:		To Be Delivered by:	BIA
Tribe	Navajo Nation			Date	9/10/2013
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount $0

Project Name	N609(1)2,4 Kerly Street Tuba City		
Location	Tuba City		
Type of Work	Grade, Drain & Pavement		
Route Num and Section	N609	Project Number	N609(1)2,4
Length	1.2 Miles	County	Coconino
State	AZ	Construction Year	2020
Comments	BIA has completed EA & Archaeology. Alignment is set need to collect survey data for design. Estimated construction cost is $2.5 million.		

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$50,000	$0	$0	$0	$0	$50,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$50,000	$0	$0	$0	$0	$50,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

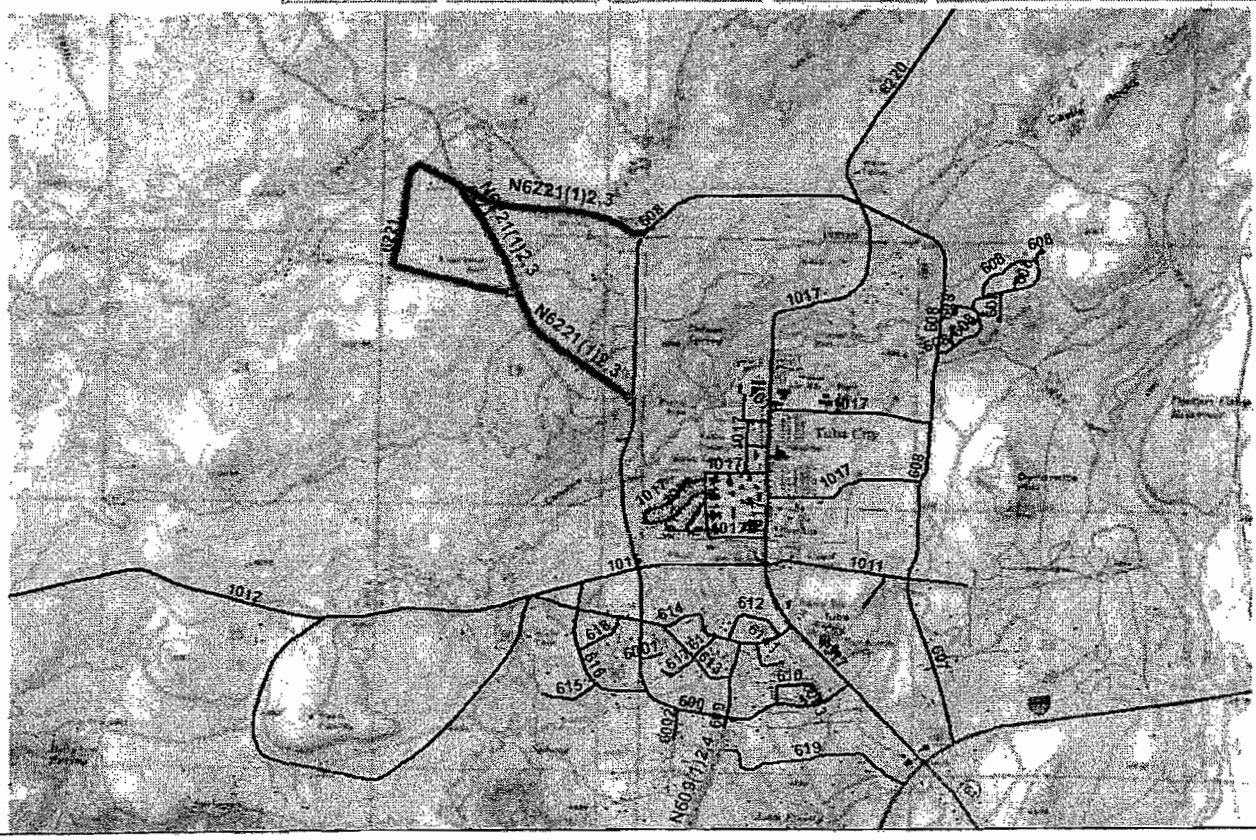
Tribal Transportation Program
Transportation Improvement Program

Agency:	Western	**Priority No.:**		**To Be Delivered by:**	NDOT
Tribe	Navajo Nation			**Date**	9/10/2013
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		**Current FY**	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount $0

Project Name	N6221(1)2,3 Chee Willie Drive Tuba City Sec 20
Location	Tuba City
Type of Work	Grade, Drain & Gravel
Route Num and Section	N6221 Sec 20
Project Number	N6221(1)2,3
Length	2.81 Miles
County	Coconino
State	AZ
Construction Year	2020
Comments	NDOT to deliver the PS&E and NEPA compliance

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$200,000	$0	$0	$0	$0	$200,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$200,000	$0	$0	$0	$0	$200,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

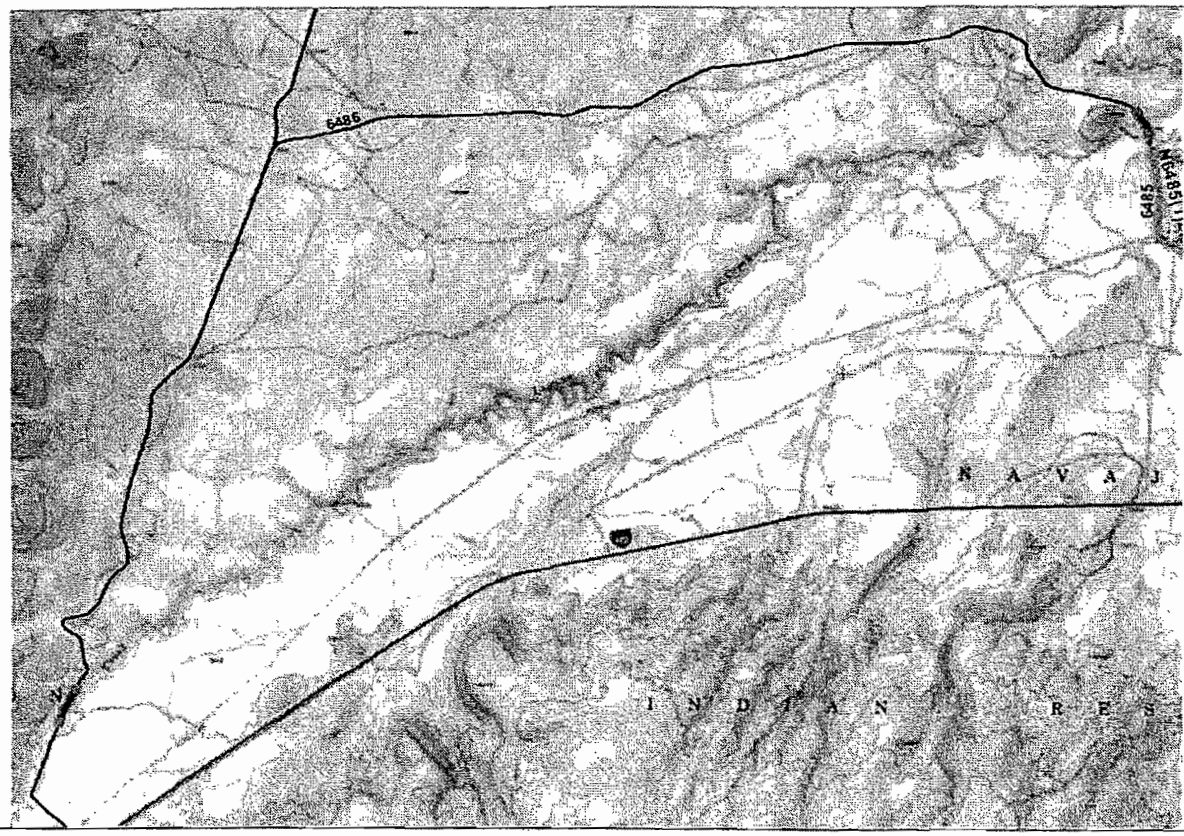
Tribal Transportation Program
Transportation Improvement Program

Agency:	Western	Priority No.:		To Be Delivered by:	BIA
Tribe	Navajo Nation			Date	9/10/2013
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount $0

Project Name	N6486(1)1,2,3 N308 & N314 Lower Laguna Creek Bridge Rehab
Location	Kayenta
Type of Work	Bridge, Grade, Drain & Gravel
Route Num and Section	N6486 — Project Number: N6486(1)1,2,3 N308 & N3
Length	0.6 Miles — County: Navajo
State	AZ — Construction Year: 2020
Comments	Designs for both bridges and roadway approaches need to be updated to FP-03 specifications. Total cost of project = $5.0 Million. PS & E completed. May able to apply for a ROW in FY 2015. Need to proposed testing of 2 Archaeological sites near bridge.According to BIA, Chapter wants the bridge constructed first then construct gravel road.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$25,000	$5,000	$0	$0	$0	$30,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$25,000	$5,000	$0	$0	$0	$30,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

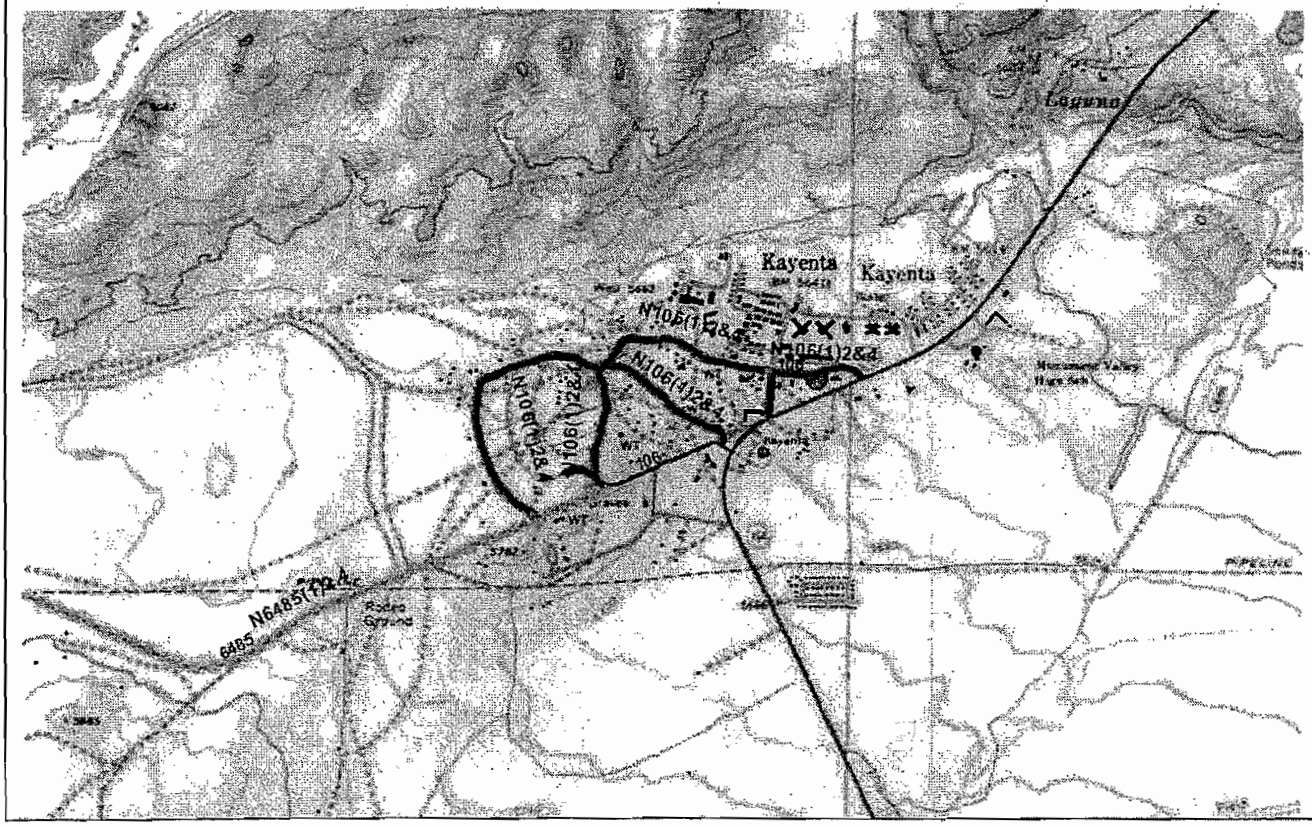
Tribal Transportation Program
Transportation Improvement Program

Agency:	Western	**Priority No.:**		**To Be Delivered by:**	BIA
Tribe	Navajo Nation			**Date**	9/10/2013
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		**Current FY**	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount $0

Project Name	N106(1)2,4 Kayenta PHS Street-Wetherill Road
Location	Kayenta
Type of Work	Grade & Drain, Pavement Construction
Route Num and Section	N106 — **Project Number** N106(1)2,4
Length	2.4 Miles — **County** Navajo
State	AZ — **Construction Year** 2020
Comments	Archaeology and EA covered under Kayenta Township EIS. Portion of road has been chip-sealed by Township. Do we still need to improve? Project was slated to be constructed with N6485(1)2,4

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$50,000	$0	$0	$0	$0	$50,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$50,000	$0	$0	$0	$0	$50,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

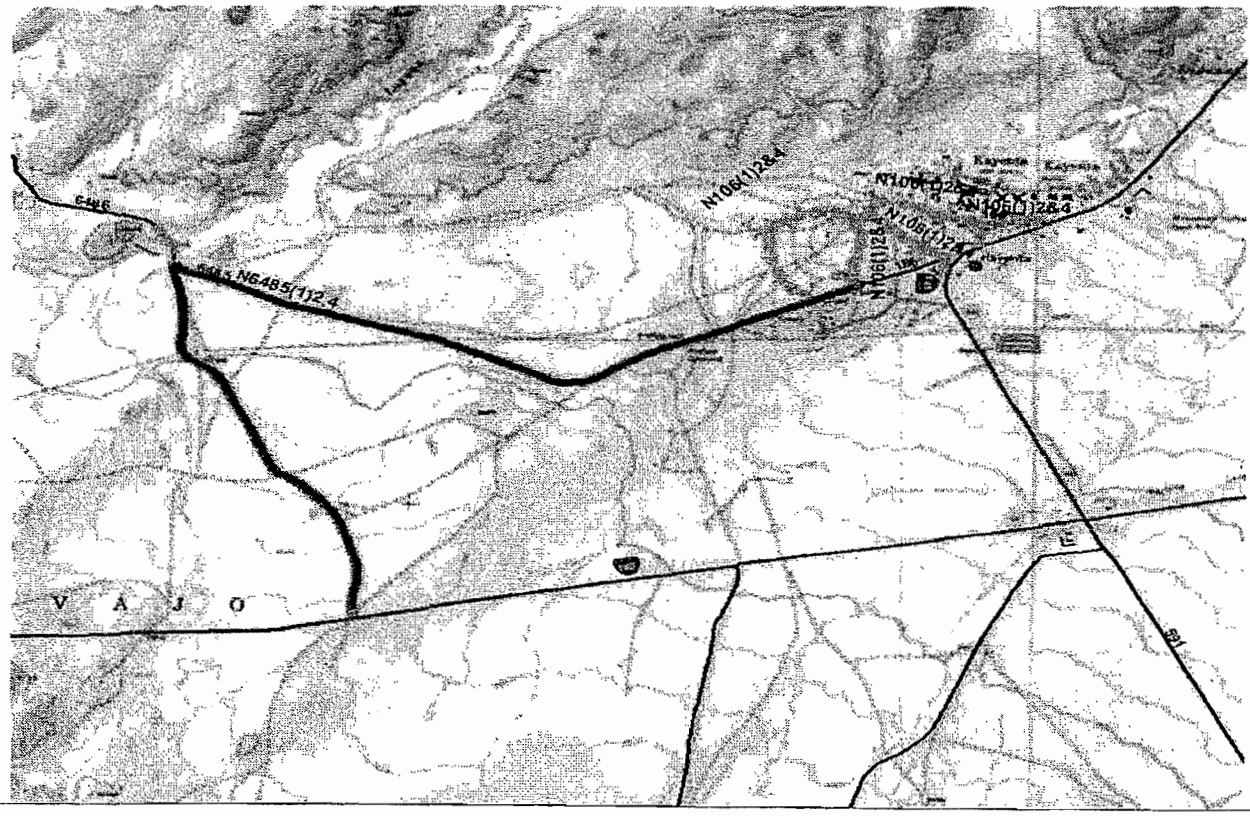
Tribal Transportation Program
Transportation Improvement Program

Agency: Western | Priority No.: | To Be Delivered by: BIA | Date: 9/10/2013
Tribe: Navajo Nation | Current FY: 2015
Funding Source: TTP (Bridge, 2% Planning, Safety, etc)

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount: $0

Project Name	N6485(1)2,4 Kayenta Access US 163 to US160 Wetherill Road
Location	Kayenta
Type of Work	Grade & Drain, pavement
Route Num and Section	N6485 — Project Number: N6485(1)2,4
Length	1.70 Miles — County: Navajo
State	AZ — Construction Year: 2020
Comments	Preliminary Alignment is being established. Additional survey work and design are needed. Project goes into Kayenta. N6485(1) will cost $6 million to construct 4.6 miles. Archaeological survey but not sure if EA has been started. Need to design surveys and develop plans. Existing road incised and need to find borrow source.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$100,000	$100,000	$0	$0	$0	$200,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$100,000	$100,000	$0	$0	$0	$200,000



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FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

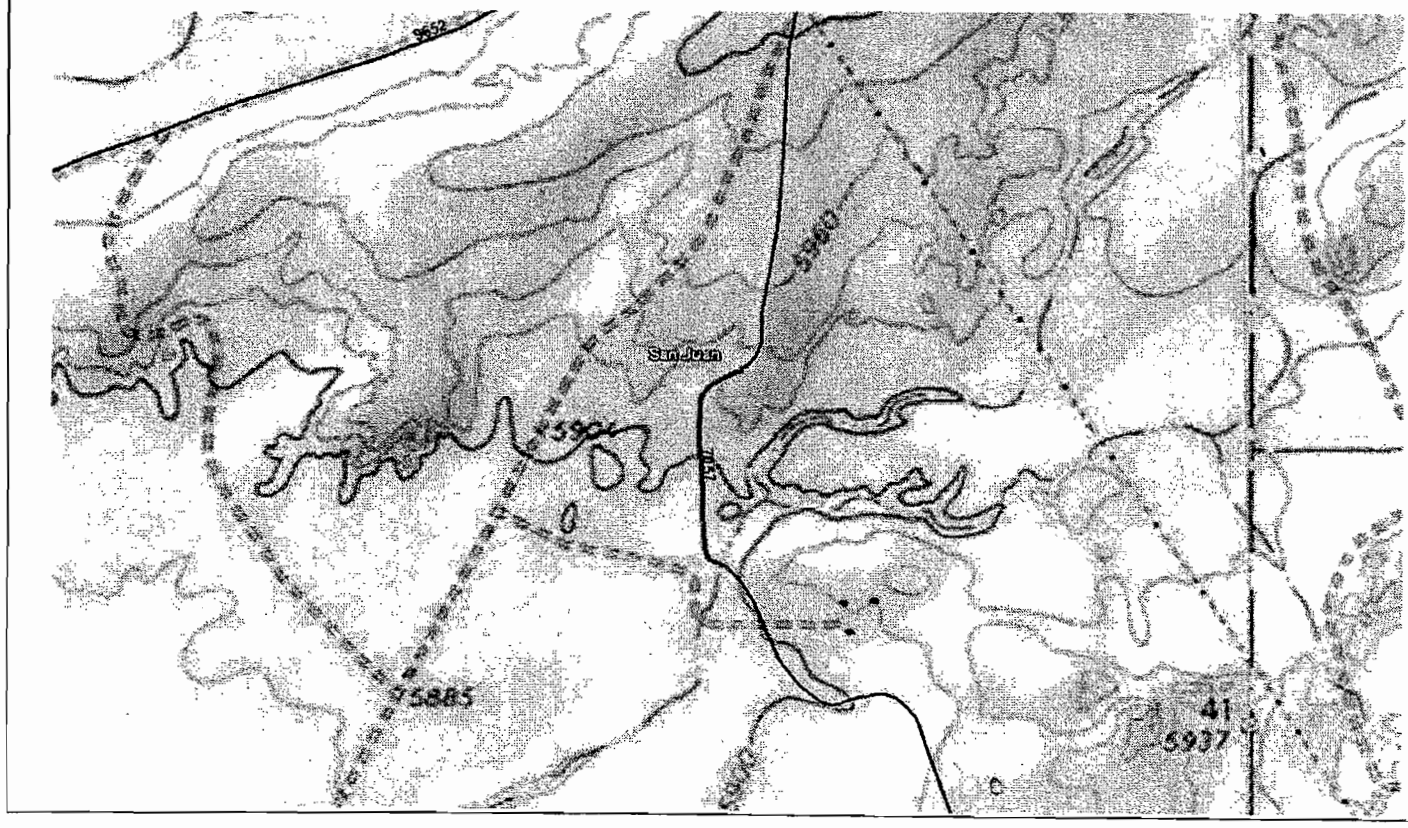
Tribal Transportation Program
Transportation Improvement Program

Agency: Eastern | Priority No.: | To Be Delivered by: | Date: 7/2/2013
Tribe: Navajo Nation | Current FY: 2015
Funding Source: TTP & BP (Bridge, 2% Planning, Safety, etc)

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount: $0

Project Name: N7057(1)1,2,3 White Rock Wash Brdg N487
Location: White Rock Chapter
Type of Work: Grade, Drain, and Bridge Construction
Route Num and Section: N7057 | Project Number: N7057(1)1,2,3
Length: .10 Miles | County: McKinley
State: NM | Construction Year: 2013
Comments: Design Completed. Project fully funded and waiting on status. Need Construction & CE to close out and cover mods.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$5,000	$0	$0	$0	$0	$5,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$5,000	$0	$0	$0	$0	$5,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

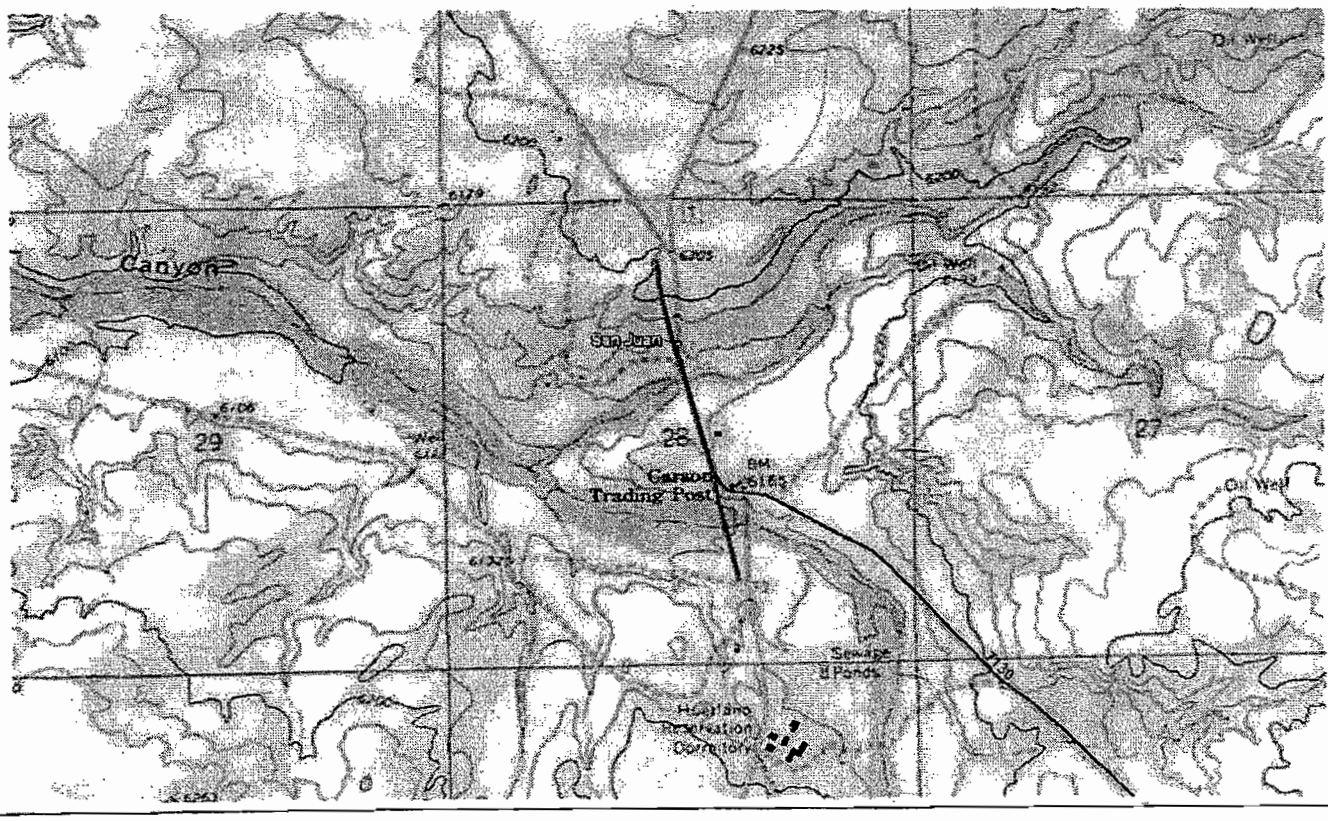
Tribal Transportation Program
Transportation Improvement Program

Agency:	Eastern	Priority No.:		To Be Delivered by:	NDOT
Tribe	Navajo Nation			Date	6/6/2013
Funding Source	TTP, State, County	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☑ Include In STIP ☑ STIP Amount $2,550,000

Project Name	N7150(1) 1,2,3 San Juan County Bridge Replacement N. 8105 (Huerfano Bridge)
Location	SAN JUAN COUNTY ROAD 7150 BRIDGE NO. 8105 Huerfano
Type of Work	Bridge Rehabilitation- No Added Capacity
Route Num and Section	N7150 — Project Number N7150(1) 1, 2, 3
Length	0.1 Miles — County San Juan
State	New Mexico — Construction Year 2013
Comments	Local Match: $51, 250; National Highway Performance Program: $648,480; Other Local Funds: $350,000: TTP: $1,500,000 NM-DOT will be providing oversight. Project is in NM approved STIP. FY13FUNDS=$2,550,000 UNDER CONSTRUCTION - COMPLETION BY SPRING 2015

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$0	$0	$0	$0	$0	$0



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

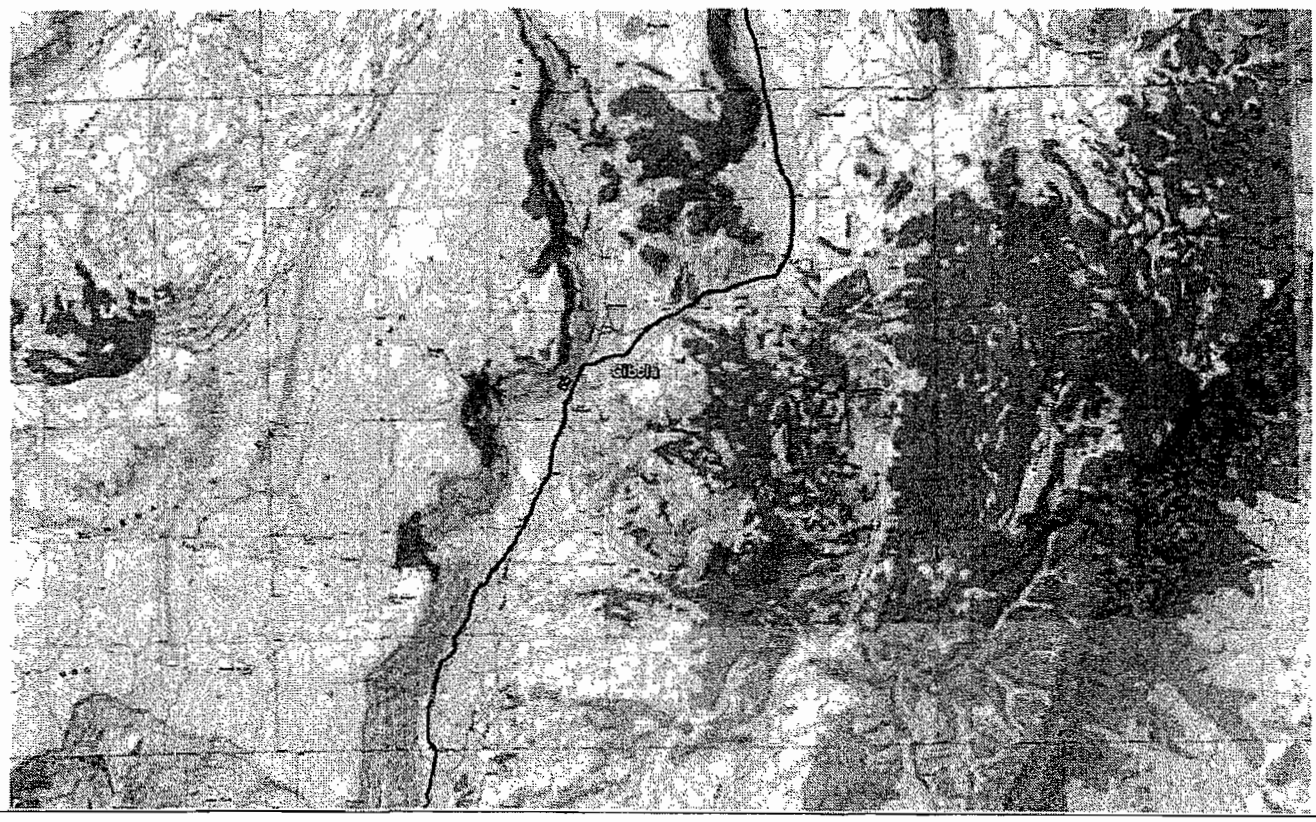
Tribal Transportation Program
Transportation Improvement Program

Agency: Eastern | Priority No.: | To Be Delivered by: BIA | Date: 7/2/2013
Tribe: Navajo Nation | Current FY: 2015
Funding Source: TTP (Bridge, 2% Planning, Safety, etc)

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount: $15,610,000

Project Name: N55(2)1,2,4 Alamo to I-40
Location: Alamo Chapter
Type of Work: Grade, Drain, and Bridge Construction
Route Num and Section: N55 | Project Number: N55(2)1,2,4
Length: 9.7 Miles | County: Cibola
State: NM | Construction Year: 2014
Comments: POO= $15,000,000(FY2012)
Under construction by Meridian and scheduled for completion by Oct. 2014

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$125,000	$10,000	$0	$0	$0	$135,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$125,000	$10,000	$0	$0	$0	$135,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation · Federal Highway Administration

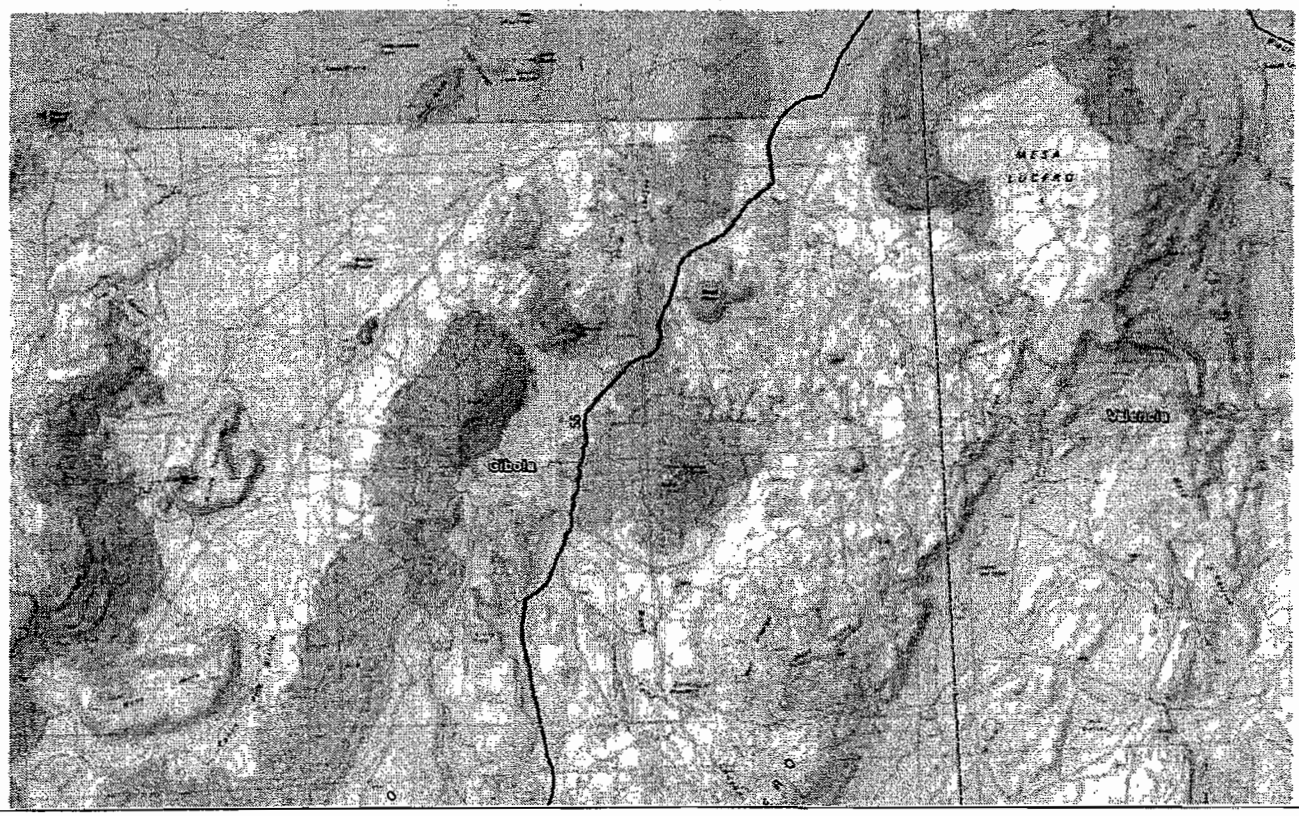
Tribal Transportation Program
Transportation Improvement Program

Agency:	Eastern	Priority No.:		To Be Delivered by:	BIA
Tribe	Navajo Nation			Date	7/2/2013
Funding Source	TTP (Bridge, 2% Planning, Safety, etc)			Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount $16,000,000

Project Name	N55(3)1,2&4 Alamo to I-40		
Location	Alamo Chapter		
Type of Work	Grade, Drain, and Pavement Construction		
Route Num and Section	N55	Project Number	N55(3)1,2&4
Length	9.78 Miles	County	Cibola
State	NM	Construction Year	2014
Comments	POO= 7.5M from FY13 FY 2014 Construction funds programmed for $7.5 million. However BIA plans to POO $10 million in FY 2014 Construction funds. Total funds available for construction is $17.5 million. PS & E completed with bid opening the week 7/14/2014. Anticipated Notice To Proceed late August 2014.		

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$10,000	$0	$0	$0	$0	$10,000
Construction	$125,000	$0	$0	$0	$0	$125,000
Construction Engineering	$150,000	$100,000	$25,000	$0	$0	$275,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$285,000	$100,000	$25,000	$0	$0	$410,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

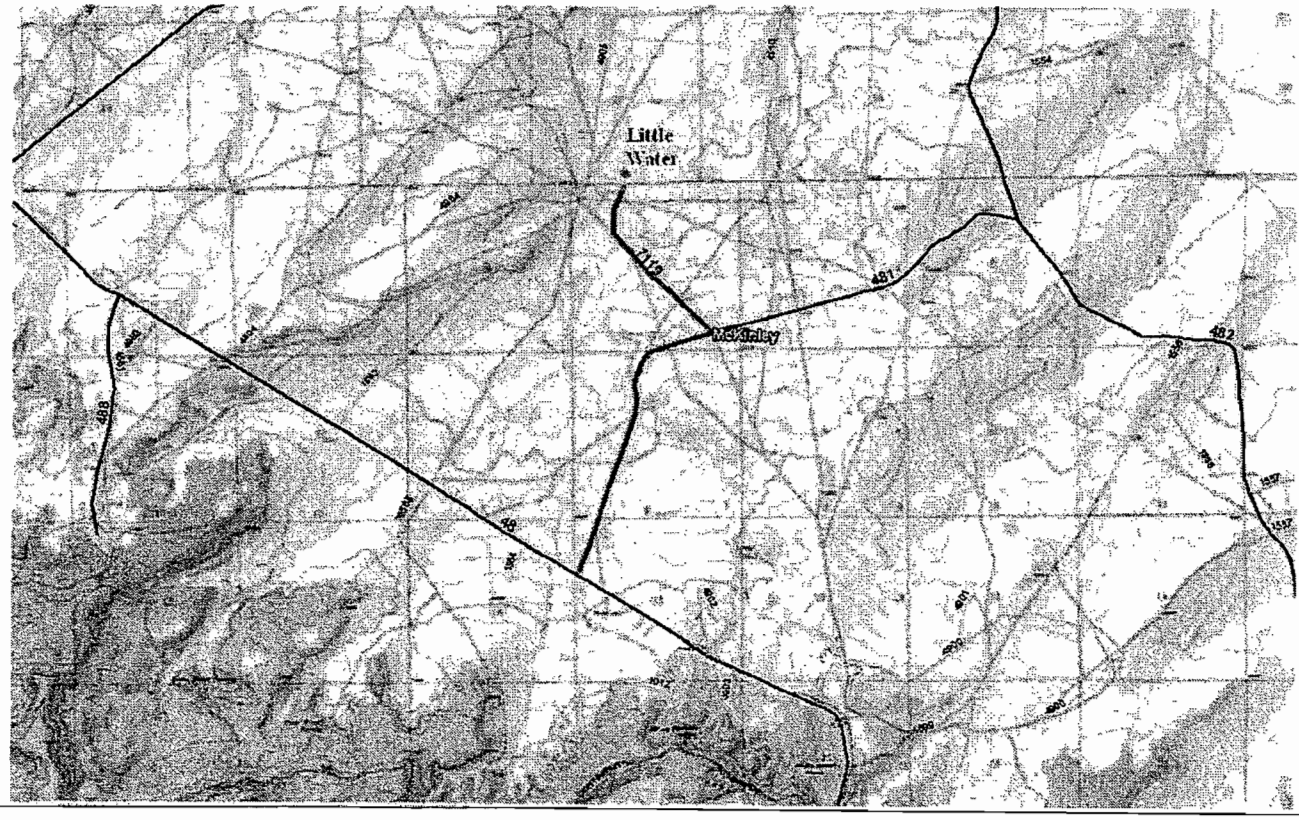
Tribal Transportation Program
Transportation Improvement Program

Agency:	Eastern	Priority No.:		To Be Delivered by:	NDOT
Tribe	Navajo Nation			Date	7/2/2013
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount $0

Project Name	N7119(1)/N481(1)2,3 Little Water Chapter Access
Location	Little Water Chapter
Type of Work	Grade, Drain, and Gravel Construction
Route Num and Section	N7119/N481 — Project Number: N7119(1)/N481(1)2,3
Length	3.0 Miles — County: McKinley
State	NM — Construction Year: 2016
Comments	ROW Needed, Environmental Assessment Needed, Archeological Clearance Needed, Survey Data Needed. NDOT consultant will deliver PS & E and NEPA compliance.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$225,000	$0	$0	$0	$0	$225,000
Construction	$0	$2,000,000	$0	$0	$0	$2,000,000
Construction Engineering	$0	$200,000	$0	$0	$0	$200,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$225,000	$2,200,000	$0	$0	$0	$2,425,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

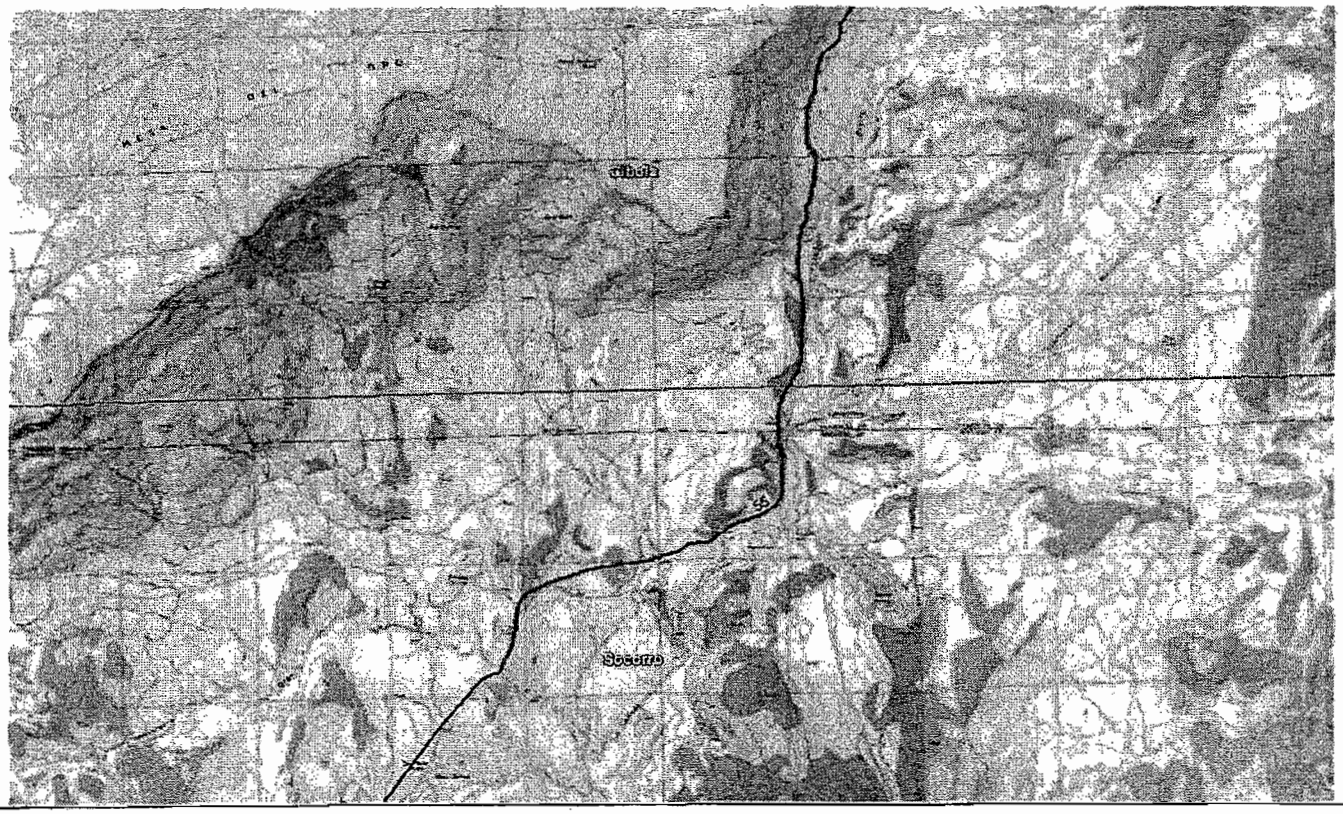
Tribal Transportation Program
Transportation Improvement Program

Agency:	Eastern	Priority No.:		To Be Delivered by:	BIA
Tribe	Navajo Nation			Date	7/2/2013
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount $0

Project Name	N55(1-1)2,4 Alamo to I-40
Location	Alamo Chapter
Type of Work	Grade, Drain, and Pavement Rehab
Route Num and Section	N55
Project Number	N55(1-1)2,4
Length	6.81 Miles
County	Cibola
State	NM
Construction Year	2017
Comments	Need survey data and additional geotechnical data. Utility Relocation Needed. BIA has EA already and will submit for CATEX. BIA will fix subgrade and put new asphalt matt down.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$60,000	$5,000	$0	$0	$0	$65,000
Construction	$0	$0	$1,530,000	$0	$0	$1,530,000
Construction Engineering	$0	$0	$140,000	$0	$0	$140,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$60,000	$5,000	$1,670,000	$0	$0	$1,735,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

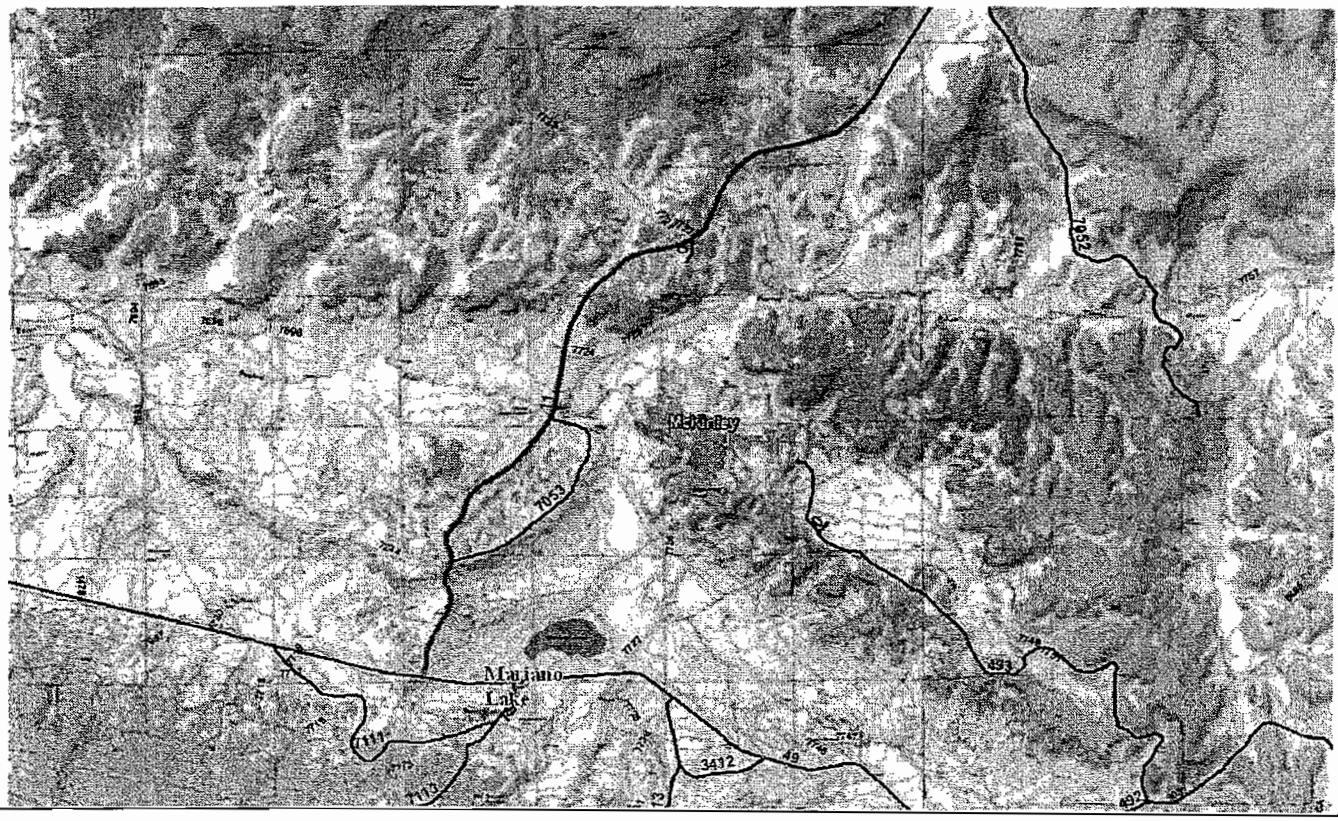
Tribal Transportation Program
Transportation Improvement Program

Agency: Eastern
Tribe: Navajo Nation
Priority No.:
To Be Delivered by: BIA
Date: 9/10/2013
Funding Source: TTP (Bridge, 2% Planning, Safety, etc)
Current FY: 2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount: $0

Project Name: N11(1a)1,2,4 N9 to Mariano Lake south end
Location: Mariano Lake
Type of Work: Grade, Drain, Gravel
Route Num and Section: N11
Project Number: N11(1a)1,2,4
Length: 6.2 Miles
County: McKinley
State: New Mexico
Construction Year: 2018
Comments: Survey, Archaeology/EA and PS & E are completed. ROW needs to be completed. Includes BLM and FEE land. Orginal construction estimate $8 million but now revised to $11 million.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$5,000	$5,000	$15,000	$0	$0	$25,000
Construction	$0	$0	$0	$10,800,000	$150,000	$10,950,000
Construction Engineering	$0	$0	$0	$200,000	$125,000	$325,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$5,000	$5,000	$15,000	$11,000,000	$275,000	$11,300,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

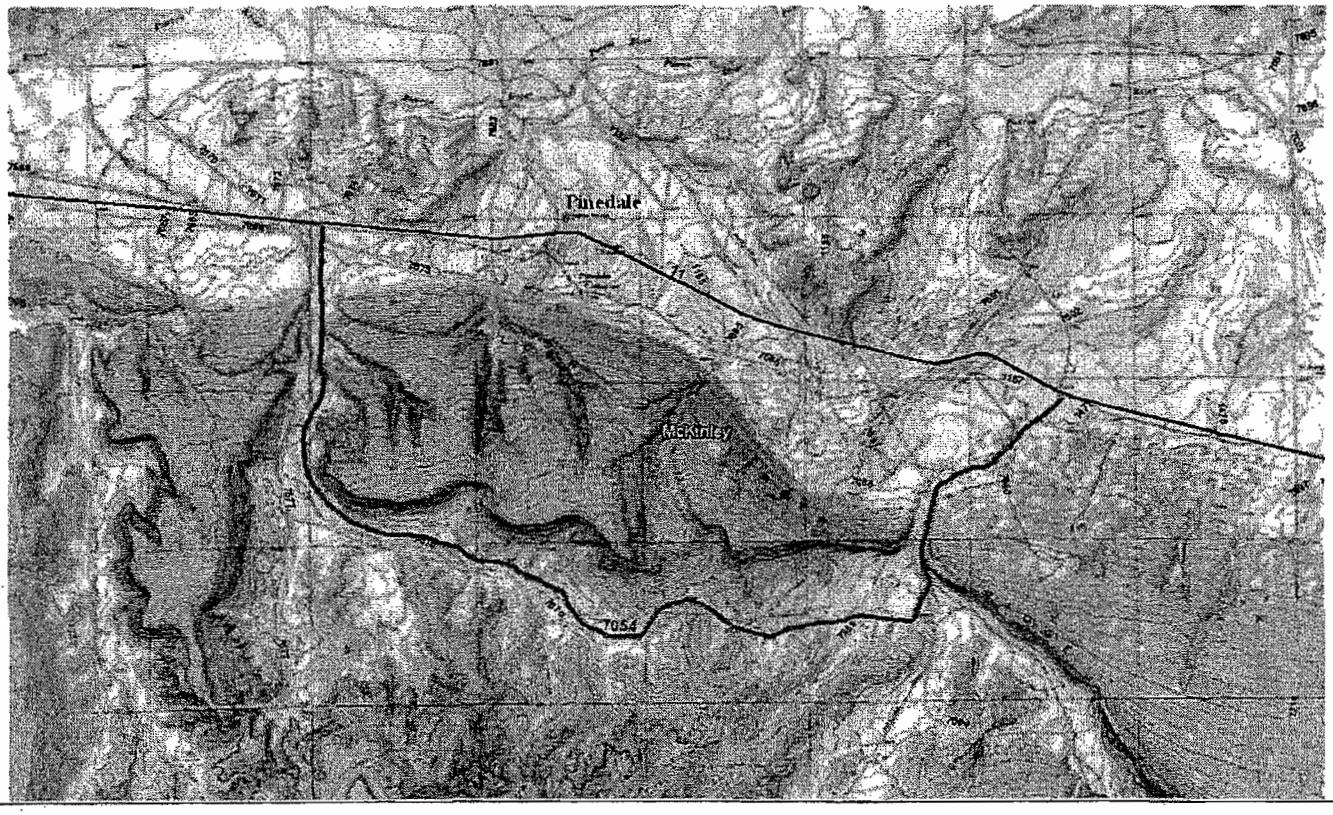
Tribal Transportation Program
Transportation Improvement Program

Agency:	Eastern	**Priority No.:**		**To Be Delivered by:**	BIA
Tribe	Navajo Nation			**Date**	7/2/2013
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		**Current FY**	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount $0

Project Name	N7054(1)2,3 Pinedale east entrance off N11 (Safety)
Location	Pinedale Chapter
Type of Work	Grade, Drain, and Gravel Construction
Route Num and Section	N7054 — **Project Number** N7054(1)2,3
Length	3.5 Miles — **County** McKinley
State	NM — **Construction Year** 2018
Comments	BIA consultant surveyed 7.5 miles. BIA to design the entire 7.5 miles but complete PS & E for east 3.5 miles. Archaeology is complete but $700,000 needed for arch mitigation on east side. EA needs to be updated. ROW is needed.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$250,000	$50,000	$25,000	$0	$0	$325,000
Construction	$0	$0	$0	$2,500,000	$25,000	$2,525,000
Construction Engineering	$0	$0	$0	$250,000	$25,000	$275,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$250,000	$50,000	$25,000	$2,750,000	$50,000	$3,125,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

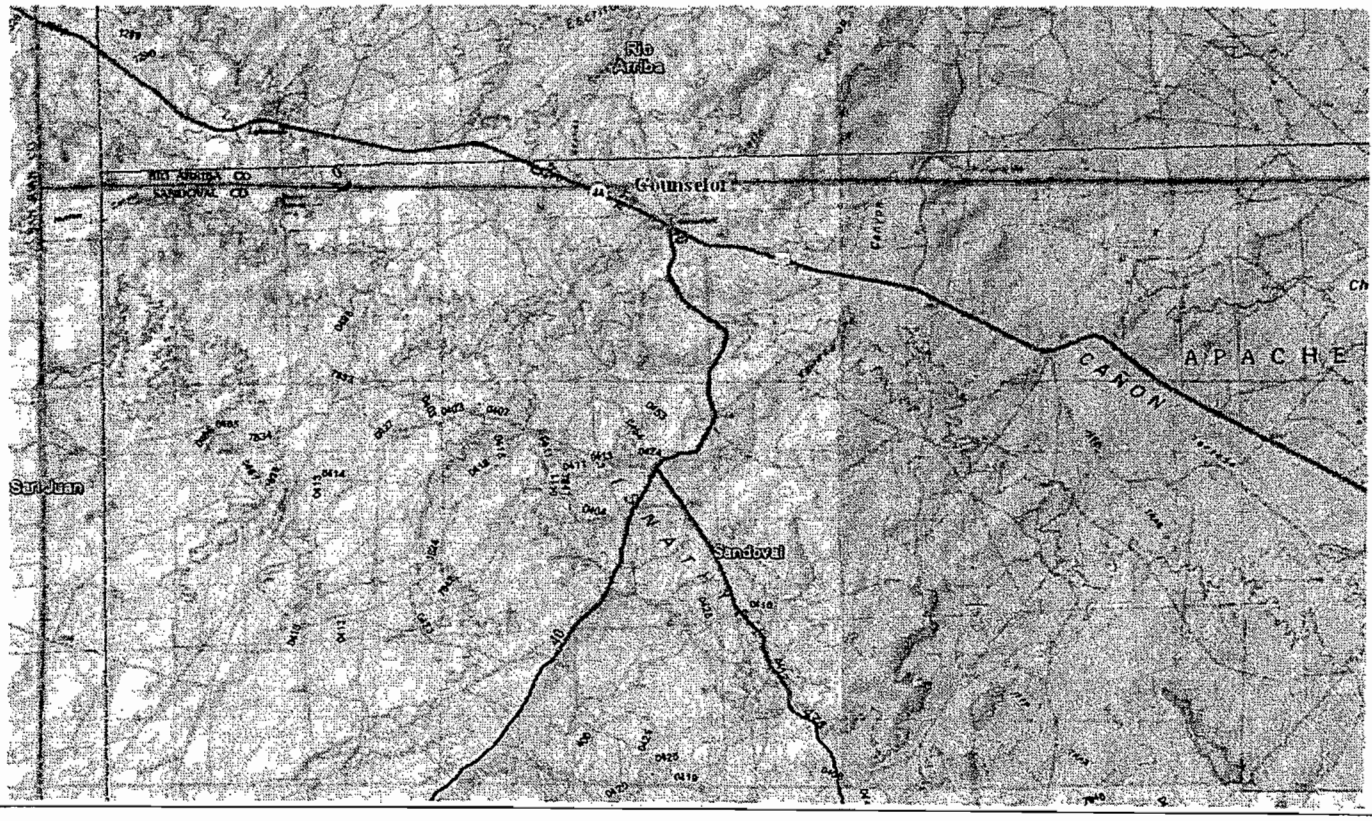
Tribal Transportation Program
Transportation Improvement Program

Agency:	Eastern	Priority No.:		To Be Delivered by:	BIA
Tribe	Navajo Nation			Date	7/2/2013
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount $0

Project Name	N46(4) / N474(4)1,2,4 to Counselor SR550
Location	Counselor
Type of Work	Grade, Drain, and Surfacing (Pavement) Construction
Route Num and Section	N46 — Project Number: N46(4)/N474(4)1,2,4
Length	7.6 Miles — County: San Juan
State	New Mexico — Construction Year: 2019
Comments	ROW Needed, Environmental Assessment Needed, Archeological Clearance Needed, Survey Data Needed, Design Needed Archaeology completed on N474(4). And majority of N46(4) on BLM land

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$250,000	$50,000	$50,000	$0	$0	$350,000
Construction	$0	$0	$0	$0	$14,800,000	$14,800,000
Construction Engineering	$0	$0	$0	$0	$200,000	$200,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$250,000	$50,000	$50,000	$0	$15,000,000	$15,350,000



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FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

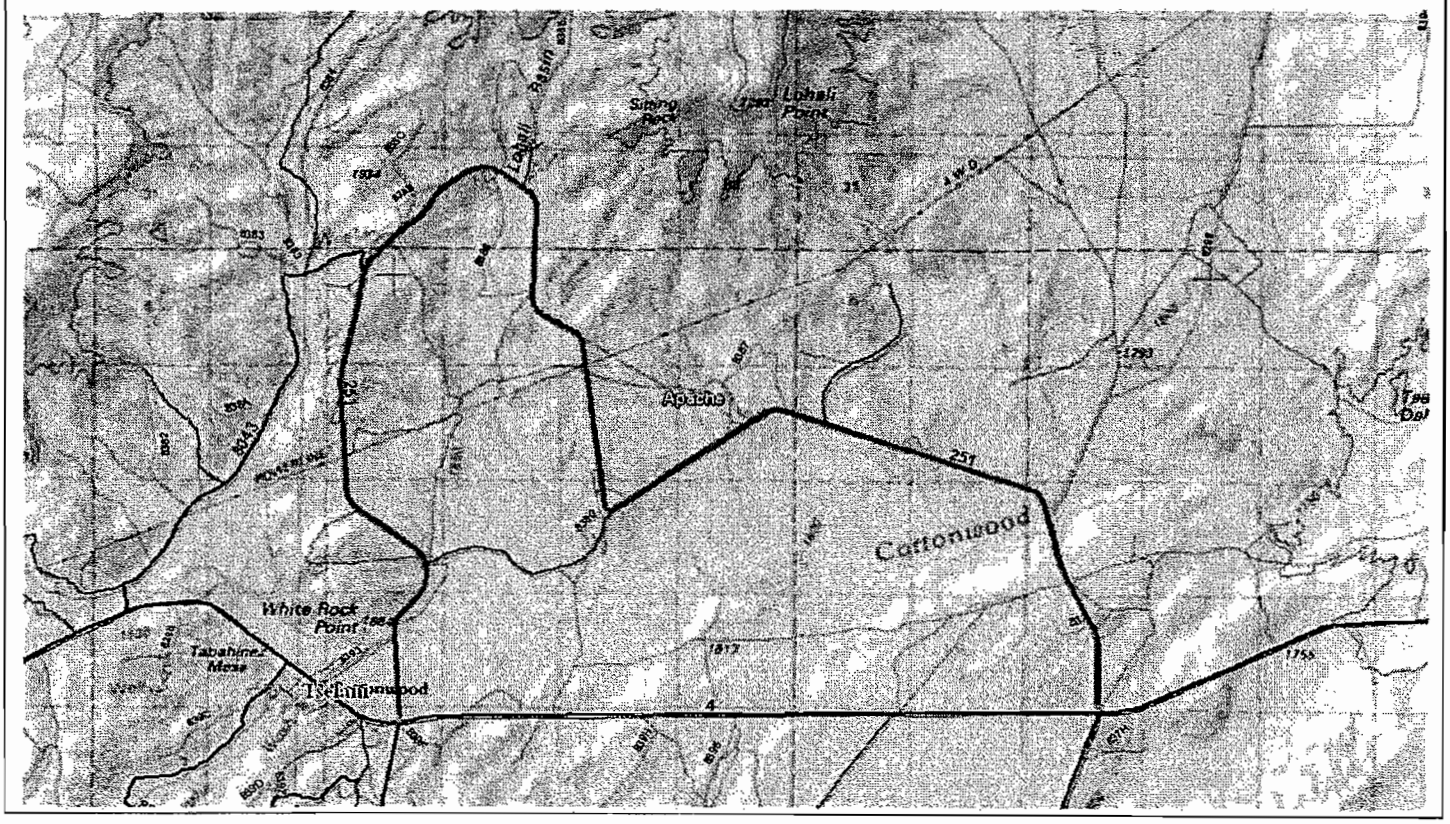
Tribal Transportation Program
Transportation Improvement Program

Agency:	Chinle	Priority No.:		To Be Delivered by:	BIA
Tribe	Navajo Nation			Date	9/10/2013
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☑ Include In STIP ☑ STIP Amount $0

Project Name	N251(5-1)2,3 North loop Tselani off N4
Location	Tselani/Cottonwood
Type of Work	Grade, Drain, and Gravel Construction
Route Num and Section	N251
Project Number	N251(5-1)2,3
Length	14.5 Miles
County	Apache
State	AZ
Construction Year	2015 & 2016
Comments	Project is 100% complete and ready for construction. Permits are pending. Plans will be sent to BIA FA for cost proposal. FY 2014. FY 2014 Construction funds programmed for $5.5 million. However BIA plans to POO $7,607,763.35 in FY 2014 Construction funds. (073014) BIA does not plan on POO'ing $7,607,763.35 in FY 2014 Construction funds, will be obtain in FY 2015 as $7.5 Million.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$5,000	$0	$0	$0	$0	$5,000
Construction	$3,225,000	$5,875,000	$0	$0	$0	$9,100,000
Construction Engineering	$75,000	$125,000	$0	$0	$0	$200,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$3,305,000	$6,000,000	$0	$0	$0	$9,305,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

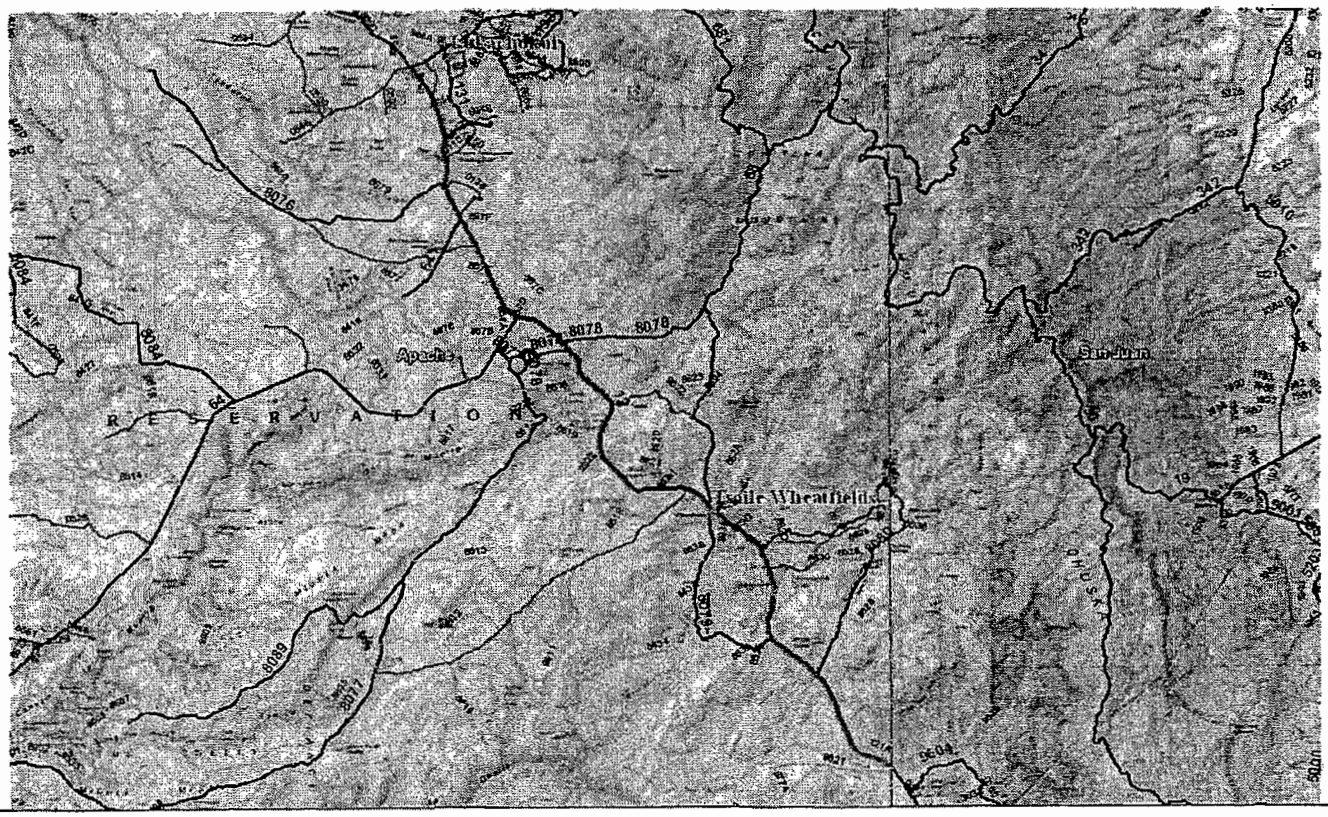
Tribal Transportation Program
Transportation Improvement Program

Agency:	Chinle	**Priority No.:**		**To Be Delivered by:**	BIA
Tribe	Navajo Nation			**Date**	7/2/2013
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		**Current FY**	2015

PROJECT INFORMATION: **Is Project on Current LRTP?** ☐ **Include In STIP** ☑ **STIP Amount** $0

Project Name	N12(19-4)(13-2)(12-2)1,2&4 Wheatfields Lake to N13 Junction
Location	Wheatfields Lake to Lukachukai N13 Junction
Type of Work	Grade, Drain, and Surfacing (Pavement) Construction
Route Num and Section	N12 — **Project Number** N12(19-4)(13-2)(12-2)1,2&
Length	21.6 Miles — **County** Apache
State	AZ — **Construction Year** 2015 & 2016
Comments	Full EA & BE needed, Archeological Clearance completed. BIA has set roadway alignment and survey is needed. Field review and scoping meeting scheduled for Fall 2014

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$350,000	$400,000	$0	$0	$0	$750,000
Construction	$5,146,763	$14,000,000	$0	$0	$0	$19,146,763
Construction Engineering	$0	$200,000	$0	$0	$0	$200,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$5,496,763	$14,600,000	$0	$0	$0	$20,096,763



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

Tribal Transportation Program
Transportation Improvement Program

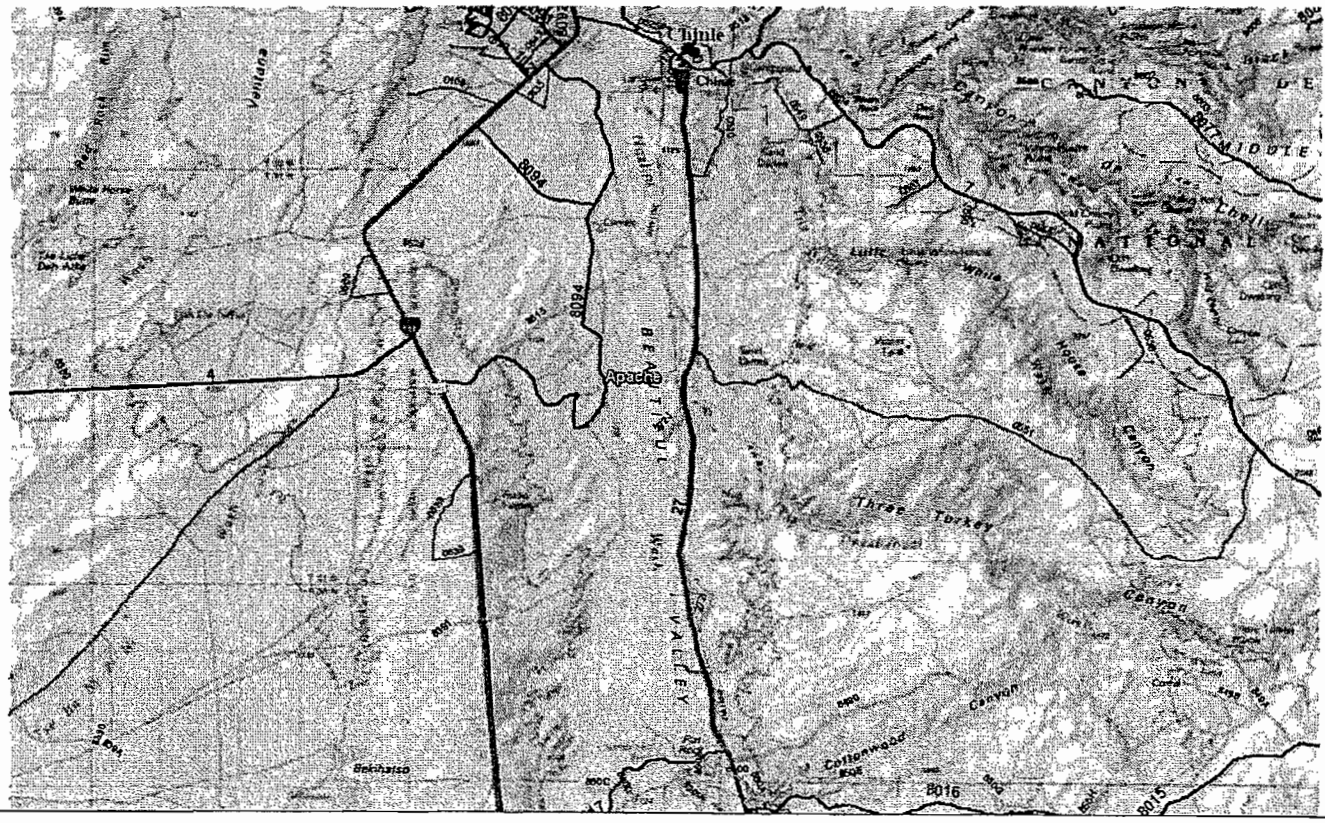
Agency:	Chinle	Priority No.:		To Be Delivered by:	BIA
Tribe	Navajo Nation			Date	7/2/2013
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount $0

Project Name	N27(2-2)(2-3)(1-2)1,2&4/N7(2-3)2&4 Nazlini North to Chinle		
Location	Chinle and Nazlini		
Type of Work	Grade, Drain, and Surfacing (Pavement) Construction		
Route Num and Section	N27	Project Number	N27(2-2)(2-3)(1-2)1,2&4/N
Length	9.8 Miles	County	Apache
State	Arizona	Construction Year	2015 & 2016

Comments: RDC approved adding .80 mile of N27 plus Round-About and N7 Approaches to the project for the PE only. Survey and Field review are completed and 4 dikes were added to adjust drainage. NDOT is working on archaeology for the dike locations. Plans are 90% completed
BIA Force Acct to complete Grade & Drain work and paving will be competitive bid.
CONSTRUCTION COST ESTIMATE FOR ADDITIONAL ITEMS .80 MILES OF N27, ROUND-ABOUT AND N7 APPROACHES IS $5.7 MILLION

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$100,000	$50,000	$25,000	$0	$0	$175,000
Construction	$7,333,237	$11,000,000	$5,400,000	$100,000	$0	$23,833,237
Construction Engineering	$100,000	$200,000	$125,000	$75,000	$0	$500,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$7,533,237	$11,250,000	$5,550,000	$175,000	$0	$24,508,237



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

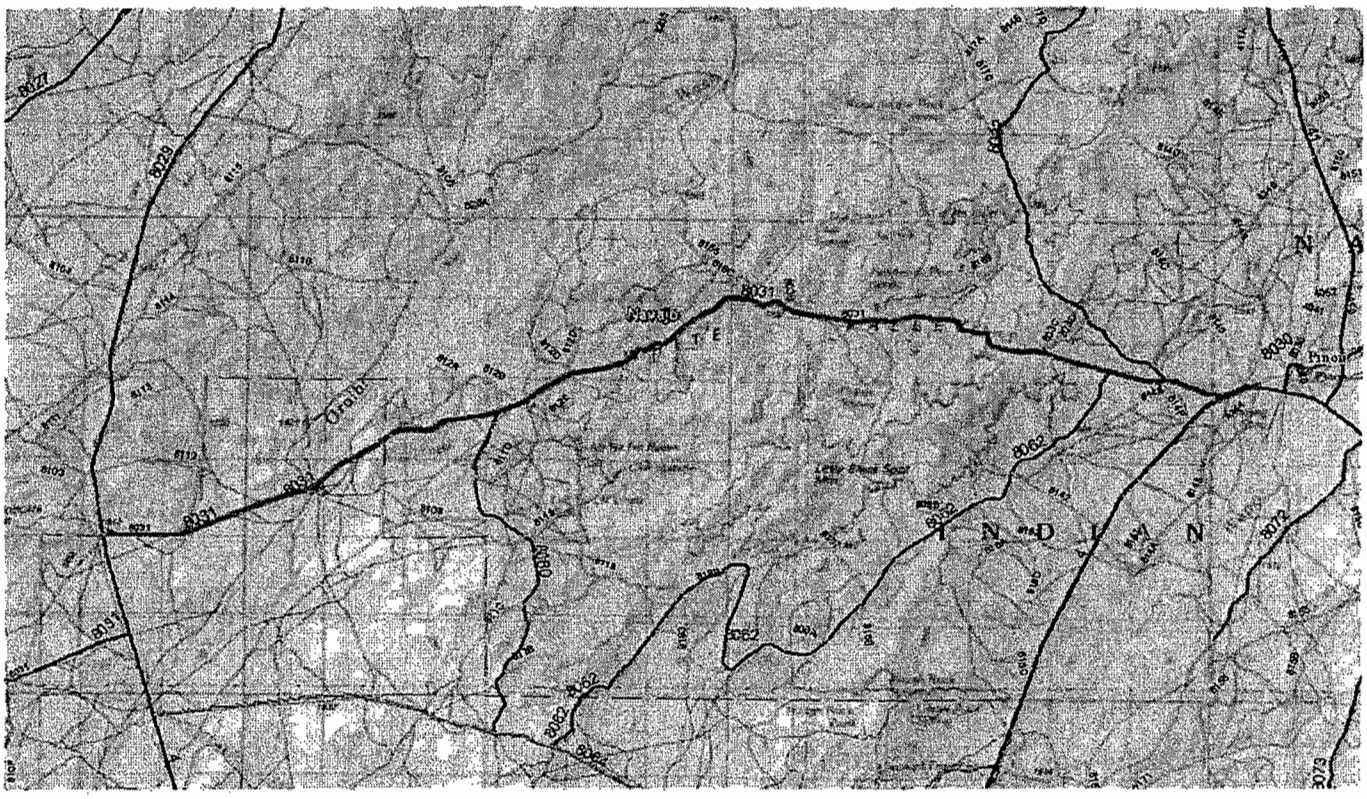
Tribal Transportation Program
Transportation Improvement Program

Agency:	Chinle	Priority No.:		To Be Delivered by:	BIA
Tribe	Navajo Nation			Date	9/10/2013
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount $0

Project Name	N4(5)/N8031(2)/N8031(3)/N8031(4)1,2,3 Pinon to Hard Rocks		
Location	Pinon		
Type of Work	Grade & Drain, Gravel		
Route Num and Section	N4	Project Number	N4(5)/N8031(2)/N8031(3)/
Length	6.30 Miles	County	Navajo
State	AZ	Construction Year	2017
Comments	Need PE to complete A&E contract. RDC approves BIA to continue with the PE thru Hopi. Total cost to construct 15 miles of Grade, Drain, Gravel and drainage structures is about $34 million. If road is paved cost is about $40 million. Design completed for N4(5)/N8031(2)/N8031(3). Need Archaeology report from NNAD. Needs EA and BE BIA consultant will deliver the PS & E and NEPA for N8031(4), Hopi Land		

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$50,000	$25,000	$0	$0	$0	$75,000
Construction	$0	$0	$11,400,000	$2,620,000	$8,280,000	$22,300,000
Construction Engineering	$0	$0	$200,000	$200,000	$250,000	$650,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$50,000	$25,000	$11,600,000	$2,820,000	$8,530,000	$23,025,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

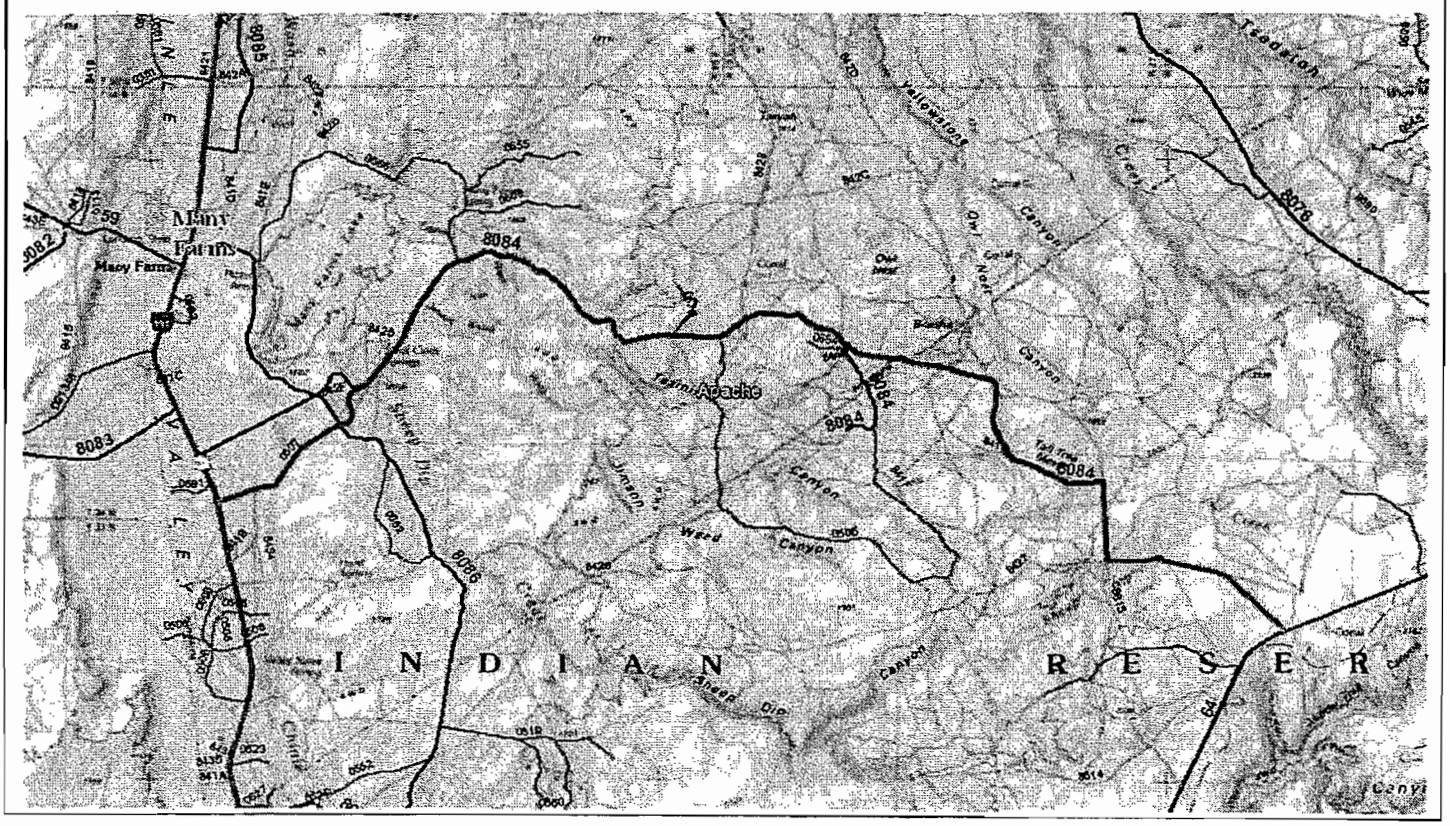
Tribal Transportation Program
Transportation Improvement Program

Agency:	Chinle	Priority No.:		To Be Delivered by:	BIA
Tribe	Navajo Nation			Date	9/10/2013
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount $0

Project Name	N8084(1)(2)(3)(4)1,2,3 US 191 to N64		
Location	Many Farms		
Type of Work	Bridge and Grade & Drain, Gravel Construction		
Route Num and Section	N8084	Project Number	N8084(1)(2)(3)(4)1,2,3
Length	15 Miles	County	Apache
State	AZ	Construction Year	2019
Comments	4 phases with a total cost of $40 million (Bridge and Grade & Drain, Gravel) Construction.N8084(1) 3.5 miles with 2 bridges will cost $10 million. Survey is done, alignment is set. Need EA and BE. Waiting for Archaeology report.		

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$5,000	$25,000	$25,000	$0	$0	$55,000
Construction	$0	$0	$0	$0	$12,187,000	$12,187,000
Construction Engineering	$0	$0	$0	$0	$250,000	$250,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$5,000	$25,000	$25,000	$0	$12,437,000	$12,492,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

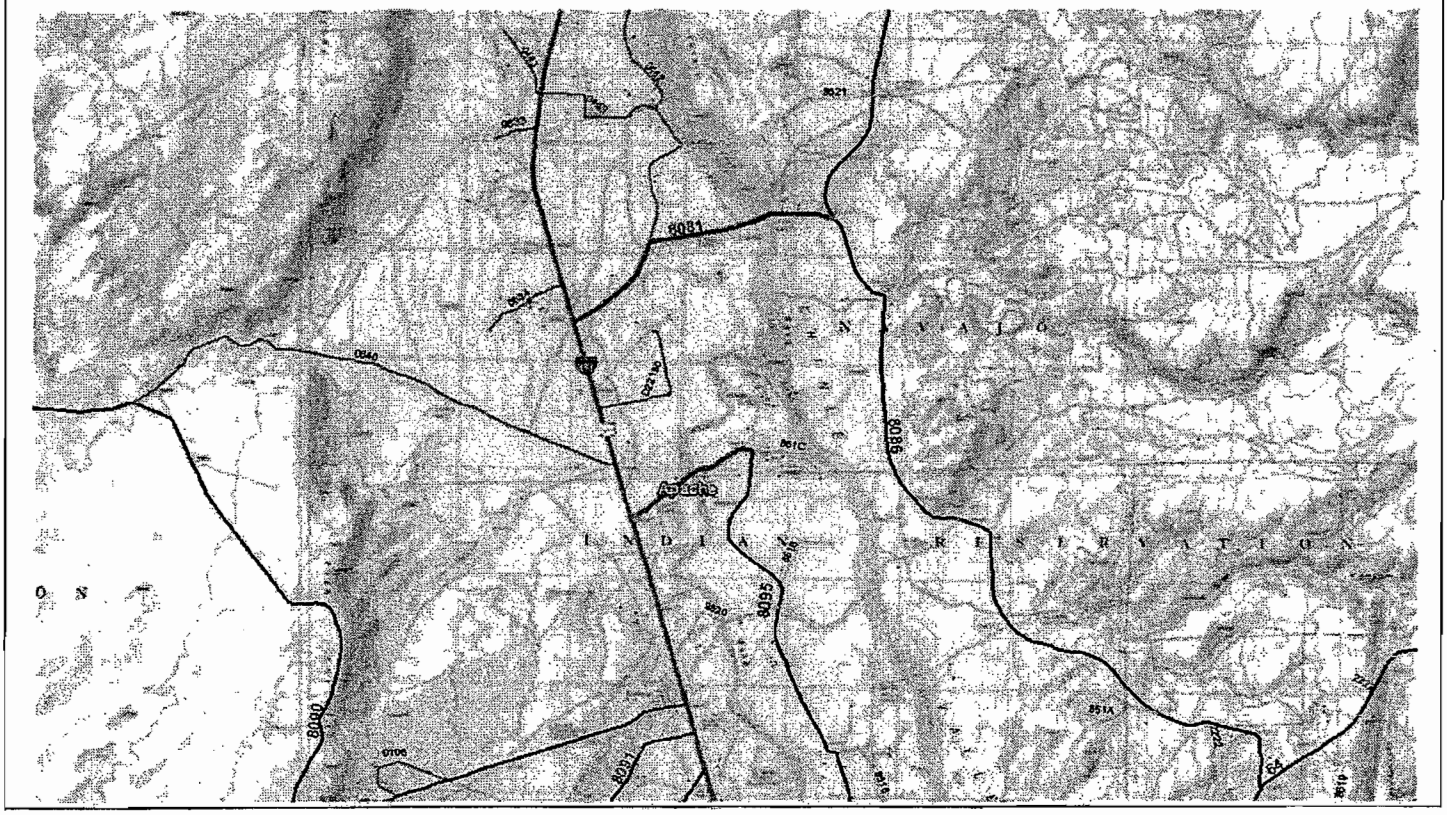
Tribal Transportation Program
Transportation Improvement Program

Agency:	Chinle	Priority No.:		To Be Delivered by:	BIA
Tribe	Navajo Nation			Date	9/10/2013
Funding Source	TTP (Bridge, 2% Planning, Safety, etc)			Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount $0

Project Name	N8081(1)/N8095(1)1,2,3		
Location	Chinle		
Type of Work	Grade, Drain & Bridge		
Route Num and Section	N8081	Project Number	N80081(1)/N8095(1)1,2,3
Length	1.7 Miles	County	Apache
State	AZ	Construction Year	2020
Comments	Needs survey, design, Archaeology, EA/EE, NEPA and ROW. N8081(1) bridge over Chinle wash will be a 3-span bridge costing more than the roadway.		

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$100,000	$0	$0	$0	$0	$100,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$100,000	$0	$0	$0	$0	$100,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

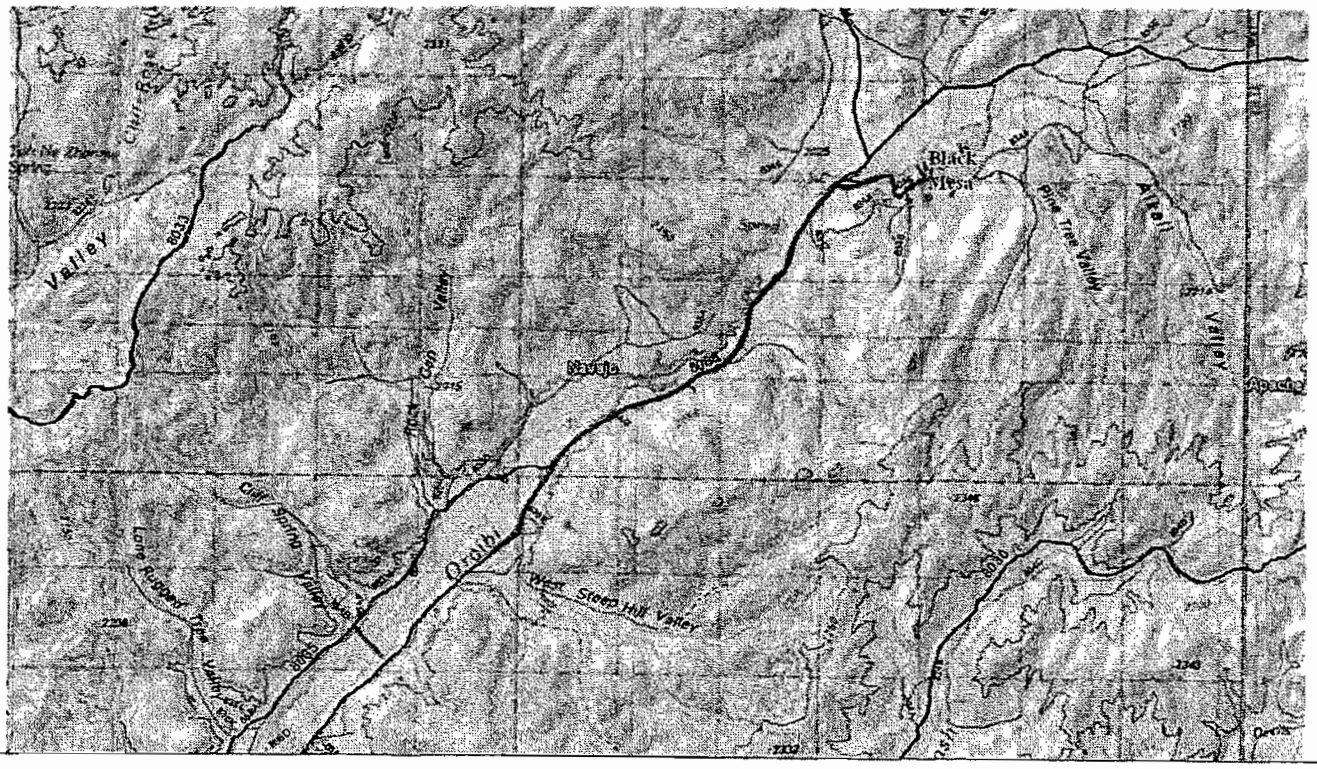
Tribal Transportation Program
Transportation Improvement Program

Agency:	Chinle	Priority No.:		To Be Delivered by:	BIA
Tribe	Navajo Nation			Date	9/10/2013
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount $0

Project Name	N8066(3)/N8065(1)1,2,4 N41 to Kitsilli		
Location	Black Mesa		
Type of Work	Bridge & Grade, Drain & Pavement		
Route Num and Section	N8066/N8065	Project Number	N8066(3)/N8065(1)1,2,4
Length	7.5 Miles	County	Navajo
State	AZ	Construction Year	2020
Comments	Total cost of project without pavement = $12.5 Million. Need to collect survey data to begin design. Archaeology is done except for N8065(1).		

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$285,000	$0	$0	$0	$0	$285,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$285,000	$0	$0	$0	$0	$285,000



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FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

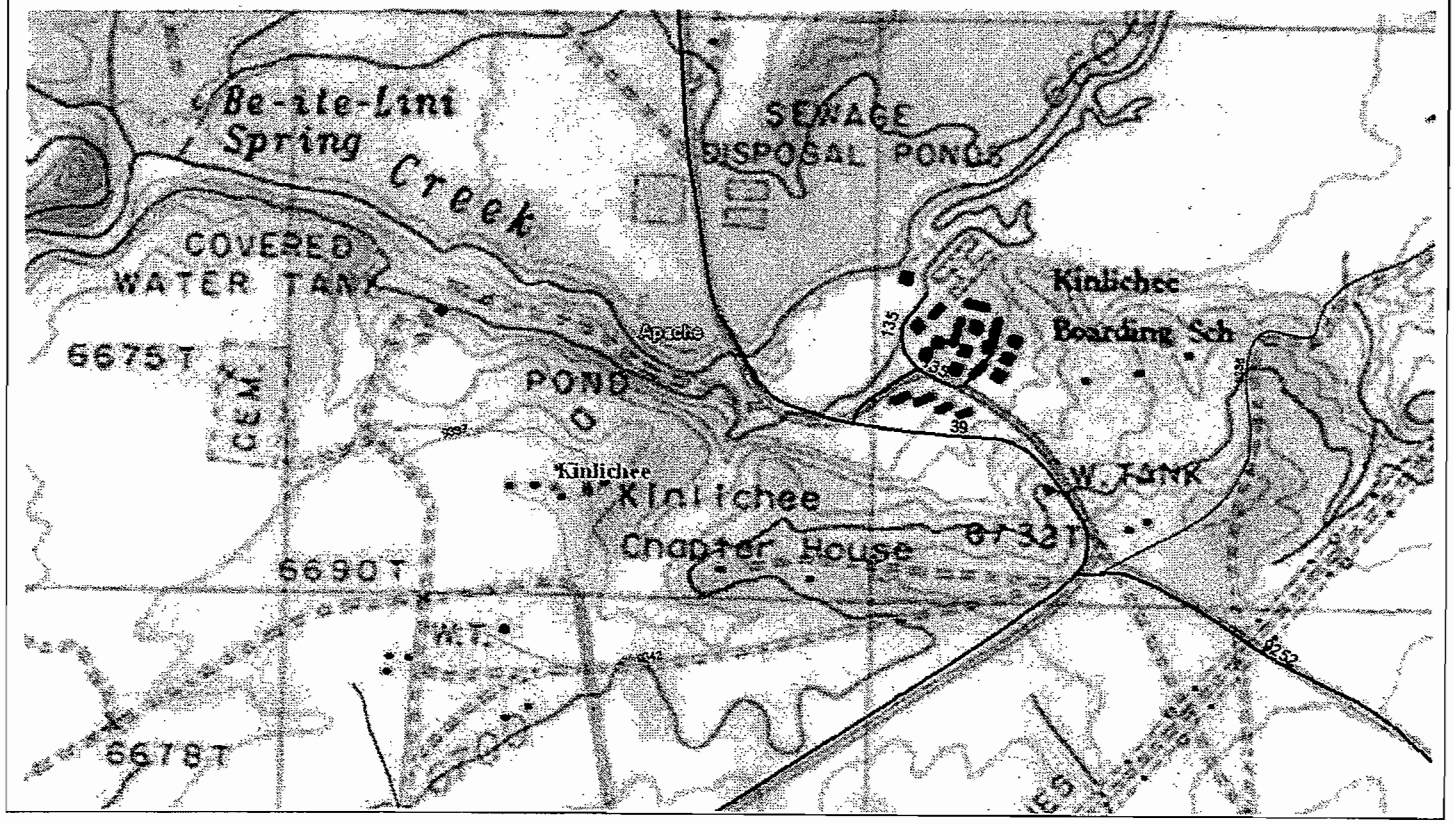
Tribal Transportation Program
Transportation Improvement Program

Agency: Fort Defiance | Priority No.: | To Be Delivered by: BIA | Date: 9/10/2013
Tribe: Navajo | Current FY: 2015
Funding Source: TTP (Bridge, 2% Planning, Safety, etc)

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount: $0

Project Name: N39(1-1)(2)1,2,4 Kinlichee Wash Bridge N628
Location: Kinlichee
Type of Work: Bridge, Grade & Drain, Pavement
Route Num and Section: N39 | Project Number: N39(1-1)(2)1,2,4
Length: .10 Miles | County: Apache
State: AZ | Construction Year: 2013
Comments: Project complete. Need final quantities, need Construction and CE for close out and cover any mods.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$5,000	$0	$0	$0	$0	$5,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$5,000	$0	$0	$0	$0	$5,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

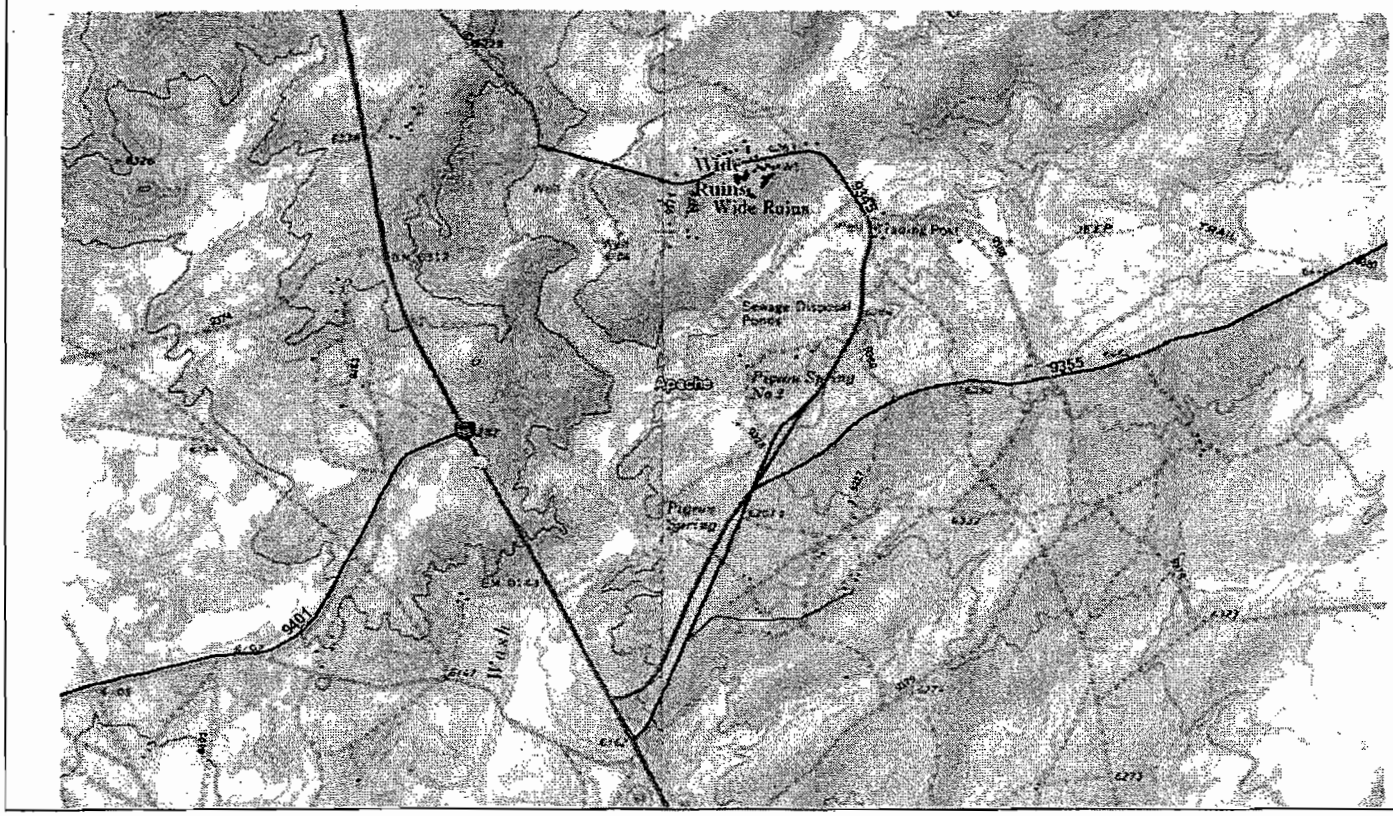
Tribal Transportation Program
Transportation Improvement Program

Agency:	Ft. Defiance	Priority No.:		To Be Delivered by:	BIA
Tribe	Navajo Nation			Date	7/2/2013
Funding Source	TTP (Bridge, 2% Planning, Safety, etc)			Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount $0

Project Name	N9345(2)2&4 Wide Ruins Access		
Location	Wide Ruins Trading Post		
Type of Work	Grade, Drain, and Surfacing (pavement) Construction		
Route Num and Section	N9345	Project Number	N9345(2)2&4
Length	1.6 Miles	County	Apache
State	AZ	Construction Year	2014
Comments	POO= $1,350,000(FY2012) & $1,150,000(FY2013). NECA submitted proposal $6.2 million. BIA recommends award.		

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$25,000	$0	$0	$0	$0	$25,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$150,000	$0	$0	$0	$0	$150,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$175,000	$0	$0	$0	$0	$175,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

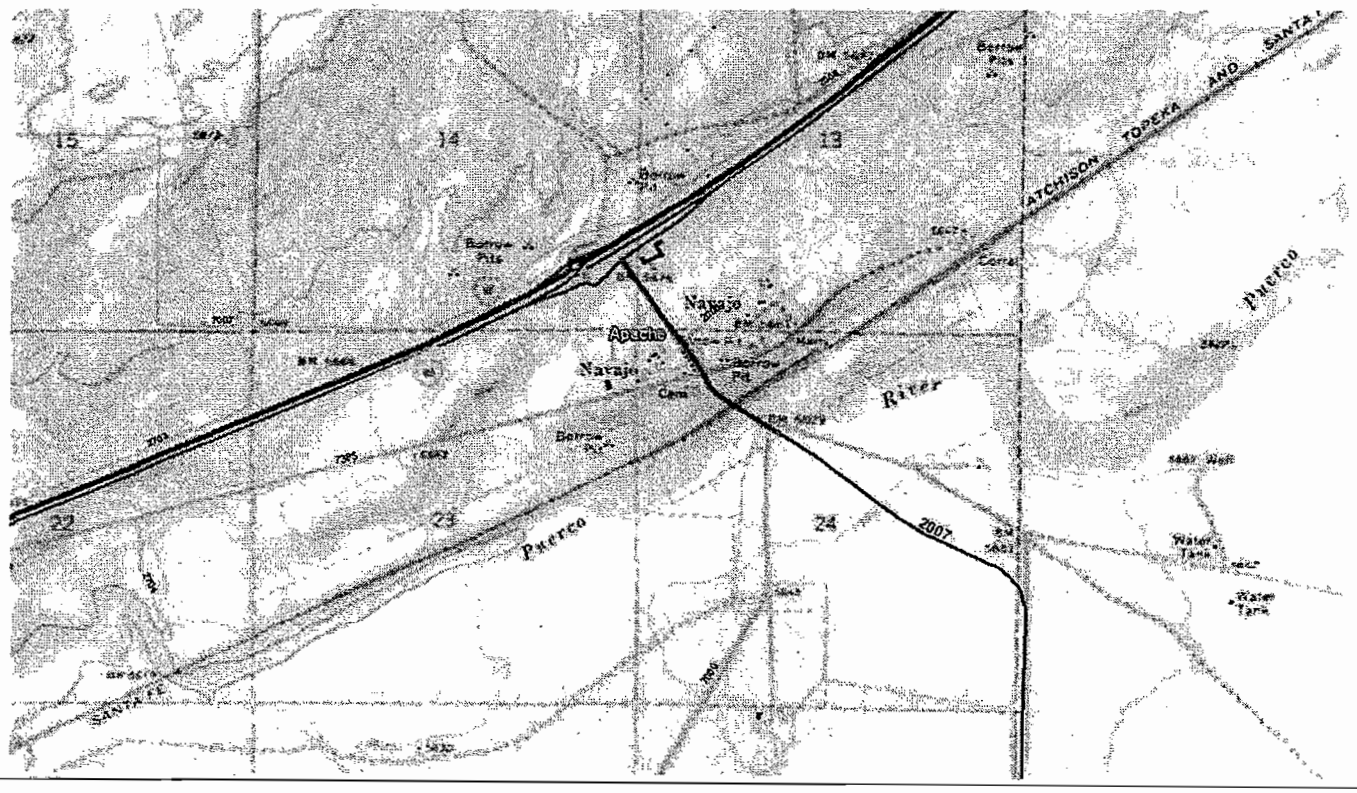
Tribal Transportation Program
Transportation Improvement Program

Agency: Nlands | Priority No.: | To Be Delivered by: BIA | Date: 7/2/2013
Tribe: Navajo Nation | Current FY: 2015
Funding Source: TTP (Bridge, 2% Planning, Safety, etc)

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount: $0

Project Name	N2007(1-1)1,2,4 N666 New Lands Rio Puerco Bridge Replace
Location	Navajo, AZ
Type of Work	Grade, Drain, Surfacing (Pavement), & Bridge Construction
Route Num and Section	N2007 — Project Number: N2007(1-1)1,2,4 N666
Length	1.10 Miles — County: Apache
State	AZ — Construction Year: 2014
Comments	Construction cost approximately $12.6M BIA has POO= $8,200,000(FY2012) & $3,000,000(FY2013) Need final comments from BNSF. BNSF will contribute $380,000 for signal relocation. Need to submit application to AZ Commission. May not have negotiated price from NECA until Oct. 2014.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$5,000	$0	$0	$0	$0	$5,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$250,000	$0	$0	$0	$0	$250,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$255,000	$0	$0	$0	$0	$255,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

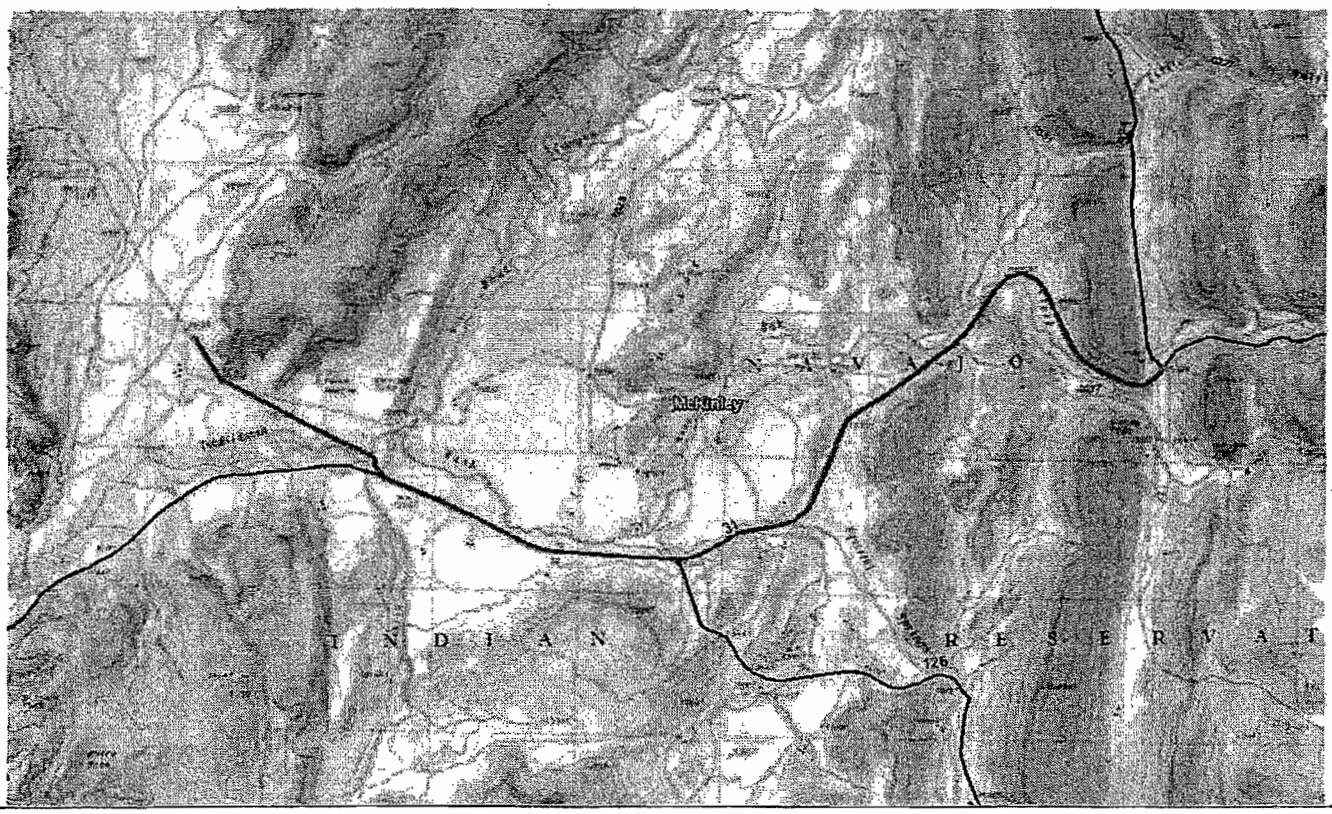
Tribal Transportation Program
Transportation Improvement Program

Agency:	Ft. Defiance	Priority No.:		To Be Delivered by:	BIA
Tribe	Navajo Nation			Date	7/2/2013
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount $17,500,000

Project Name	N31(4)1,2,4 Navajo toward Mex Springs N31/N321 Jct w/75m Brdg
Location	Navajo, NM
Type of Work	Grade, Drain, Bridge Construction, and Surfacing (Pavement)
Route Num and Section	N31 — Project Number N31(4)1,2,4
Length	5.24 Miles — County McKinley
State	New Mexico — Construction Year 2014
Comments	POO= $17.531(FY2013) Contingencies: 150K NECA awarded the contract for $17.2 million. Under construction by NECA. Scheduled for completion by Spring 2016.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$0	$0	$0	$0	$0	$0
Construction	$185,000	$0	$0	$0	$0	$185,000
Construction Engineering	$200,000	$20,000	$0	$0	$0	$220,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$385,000	$20,000	$0	$0	$0	$405,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

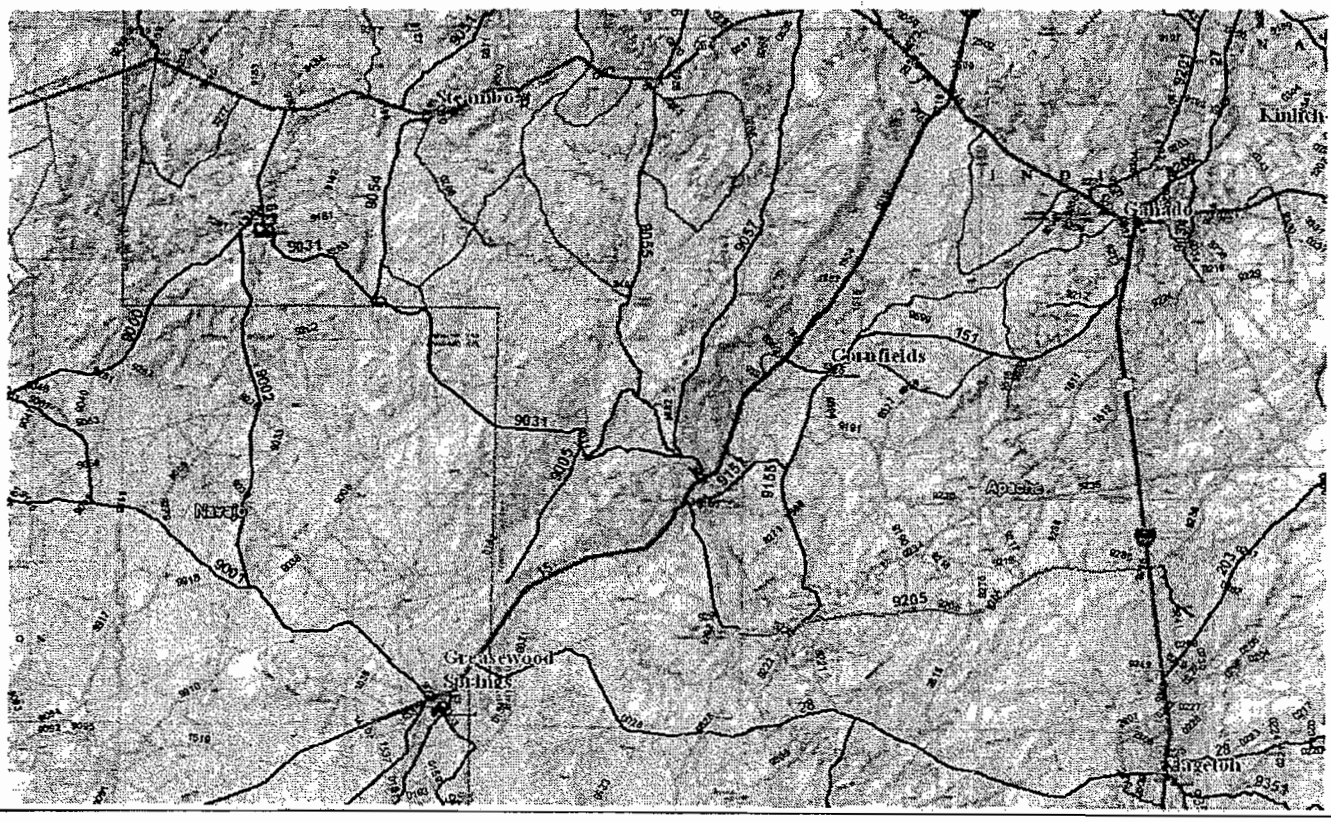
Tribal Transportation Program
Transportation Improvement Program

Agency: Ft. Defiance | Priority No.: | To Be Delivered by: NDOT | Date: 9/10/2013
Tribe: Navajo Nation | Current FY: 2015
Funding Source: TTP (Bridge, 2% Planning, Safety, etc)

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount: $0

Project Name	N15(2-2)(3-1)(4-1) ROW Fencing Project from Burnside to Greasewood Springs
Location	Burnside to Greasewood Springs
Type of Work	ROW Fencing
Route Num and Section	N15 — Project Number: N15(2-2)(3-1)(4-1)
Length	23 Miles — County: Apache
State	AZ — Construction Year: 2015
Comments	NDOT to deliver PS&E. NDOT is waiting on ROW survey from BIA to begin development of plans and NEPA. EA, BE and Archaeology to be outsource to NDOT consultant. FY 2014 construction funds of $2.0 available for construction. Need additional $3.0 million to complete the project.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$50,000	$0	$0	$0	$0	$50,000
Construction	$3,000,000	$0	$0	$0	$0	$3,000,000
Construction Engineering	$150,000	$0	$0	$0	$0	$150,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$3,200,000	$0	$0	$0	$0	$3,200,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

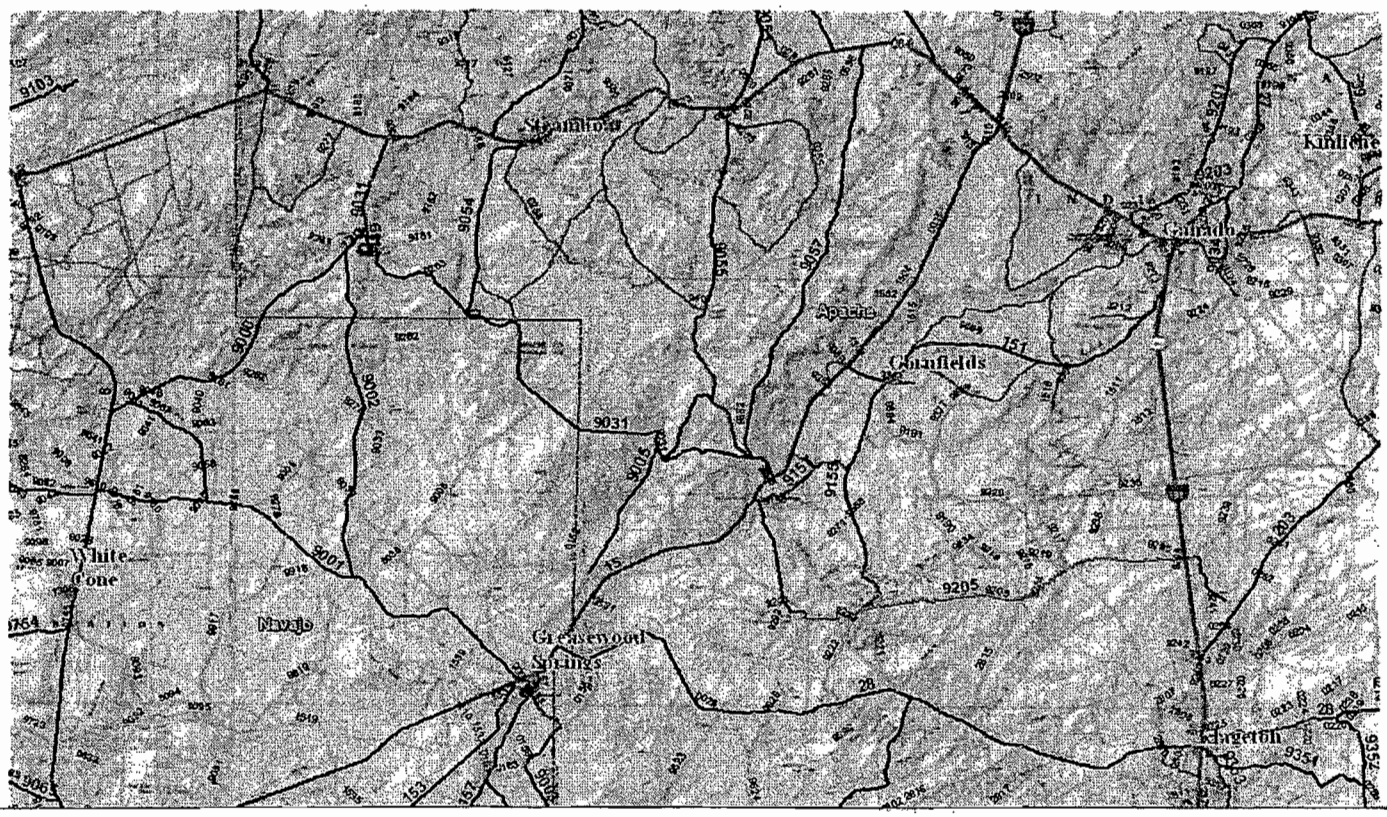
Tribal Transportation Program
Transportation Improvement Program

Agency:	Ft. Defiance	**Priority No.:**		**To Be Delivered by:**	BIA
Tribe	Navajo Nation			**Date**	7/2/2013
Funding Source	TTP (Bridge, 2% Planning, Safety, etc)			**Current FY**	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount $0

Project Name	N15(2-2)(3-1)(4-1)2&4 SR264 to Cornfields-Sunrise		
Location	Burnside to Cornfields-Sunrise		
Type of Work	Grade, Drain, and Surfacing (Pavement) Construction		
Route Num and Section	N15	**Project Number**	N15(2-2)(3-1)(4-1)2&4
Length	6.59 Miles	**County**	Apache
State	AZ	**Construction Year**	2017
Comments	BIA to deliver PS&E for three separate projects. BIA is surveying the entire 22 miles and amend the ROW plat. BIA will deliver PS & E for the first phase for construction in FY 2017. Archaeology completed for the N15(2-2), 7 miles; Archaeology need for the (3-1) 7 miles; (4-1) 8 miles. EA and BE is needed for all phases.		

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$75,000	$25,000	$0	$0	$0	$100,000
Construction	$0	$0	$11,900,000	$0	$0	$11,900,000
Construction Engineering	$0	$0	$200,000	$0	$0	$200,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$75,000	$25,000	$12,100,000	$0	$0	$12,200,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

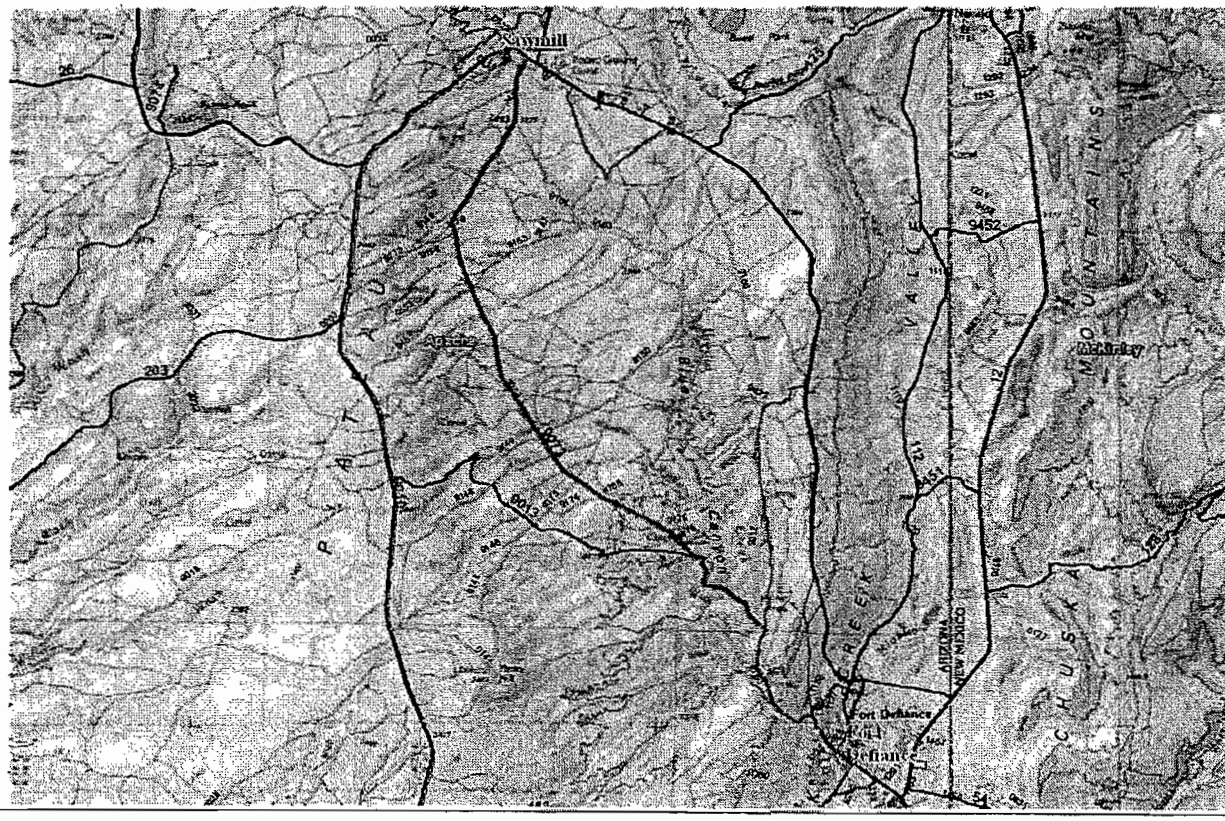
Tribal Transportation Program
Transportation Improvement Program

Agency: Fort Defiance | Priority No.: | To Be Delivered by: | Date: 9/10/2013
Tribe: Navajo Nation | Current FY: 2015
Funding Source: TTP (Bridge, 2% Planning, Safety, etc)

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount: $0

Project Name: N9073(1)(2)1,2,4 Blue Canyon Road w/ Bridge N606
Location: Fort Defiance
Type of Work: Bridge, Grade & Drain
Route Num and Section: N9073 | Project Number: N9073(1)(2)1,2,4
Length: 6.5 Miles | County: Apache
State: AZ | Construction Year: 2018
Comments: BIA has set final alignment and needs survey. The scoping meeting was completed. Design for the bridge replacement are completed. Access road to chapter, 7.12 miles with single span bridge. Alos of drainage problems, need retaining wall. Entire route, phases 1 & 2 for 13 miles. Archaeology survey along the existing road but additional survey may be required. EA & BE needs to be updated

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$125,000	$50,000	$0	$0	$0	$175,000
Construction	$0	$0	$0	$11,300,000	$6,733,000	$18,033,000
Construction Engineering	$0	$0	$0	$250,000	$250,000	$500,000
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$125,000	$50,000	$0	$11,550,000	$6,983,000	$18,708,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

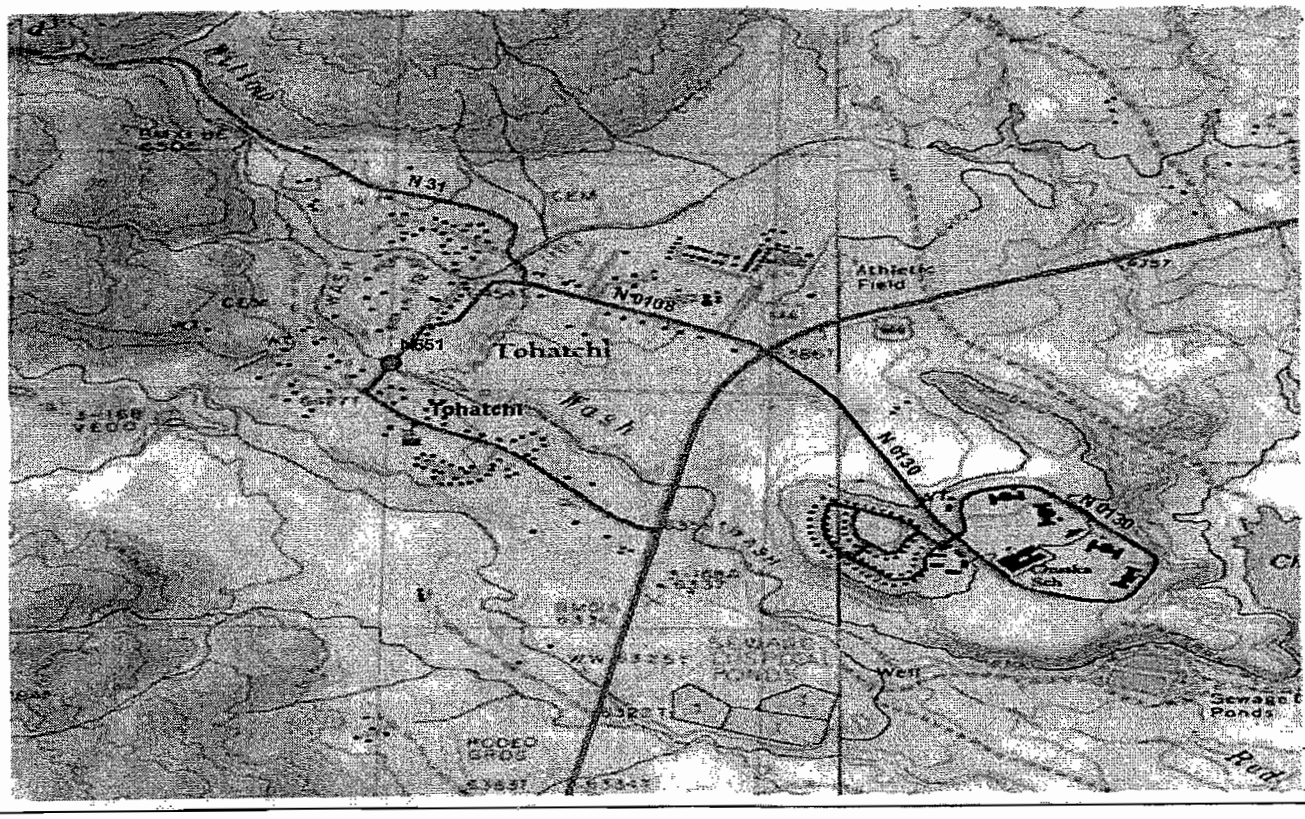
Tribal Transportation Program
Transportation Improvement Program

Agency:	Fort Defiance	Priority No.: 3	To Be Delivered by: BIA	Date	8/29/2014
Tribe	Navajo				
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount $0

Project Name	N108(1)1,2,4 Brdg N651		
Location	Tohatchi		
Type of Work	Bridge Replacement		
Route Num and Section	N108	Project Number	N108(1)1,2,4 Brdg N651
Length	.02 Miles	County	Mckinley
State	New Mexico	Construction Year	2020
Comments	Bridge Replacement		

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$10,000	$0	$0	$0	$0	$10,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$10,000	$0	$0	$0	$0	$10,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

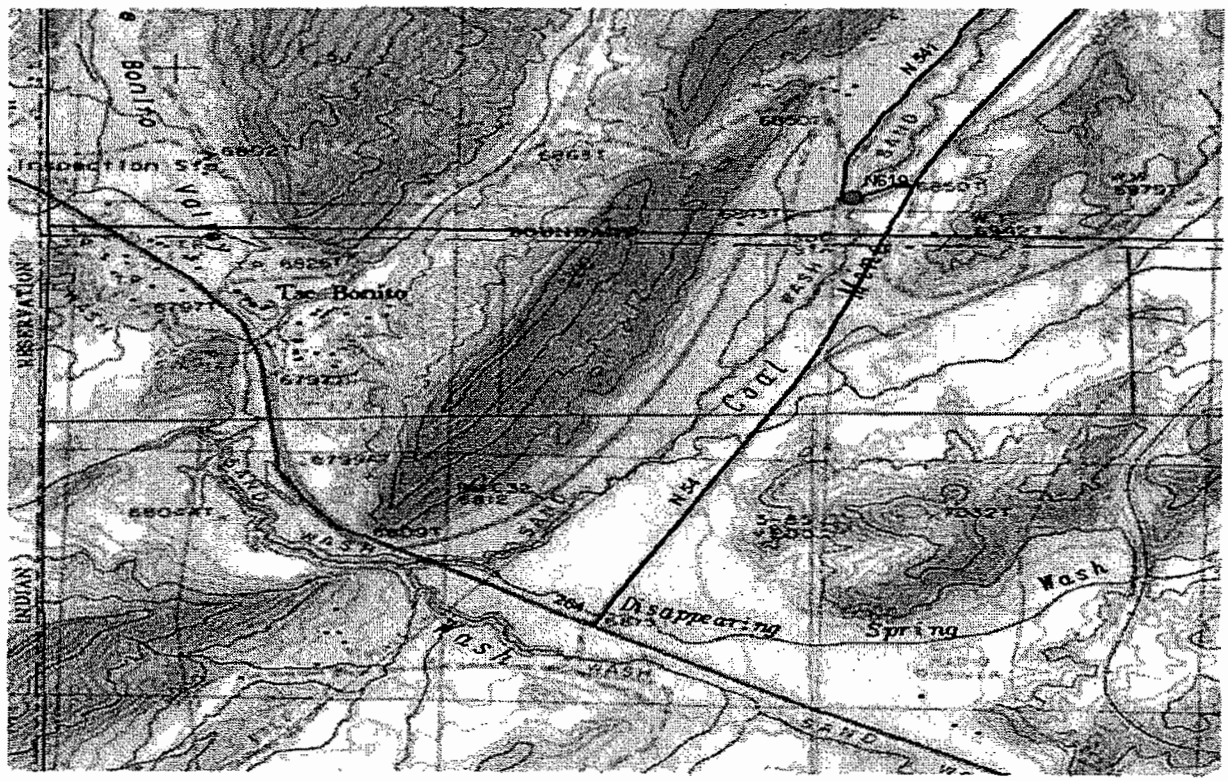
Tribal Transportation Program
Transportation Improvement Program

Agency:	Fort Defiance	Priority No.:	1	To Be Delivered by:	BIA
Tribe	Navajo			Date	8/29/2014
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount $0

Project Name	N541(1)1,2,3 Brdg N619		
Location	Tse Bonito		
Type of Work	Bridge Replacement		
Route Num and Section	N541	Project Number	N541(1)1,2,3 Brdg N619
Length	.01 Miles	County	Mckinley
State	New Mexico	Construction Year	2020
Comments	Bridge Replacement		

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$5,000	$0	$0	$0	$0	$5,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$5,000	$0	$0	$0	$0	$5,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

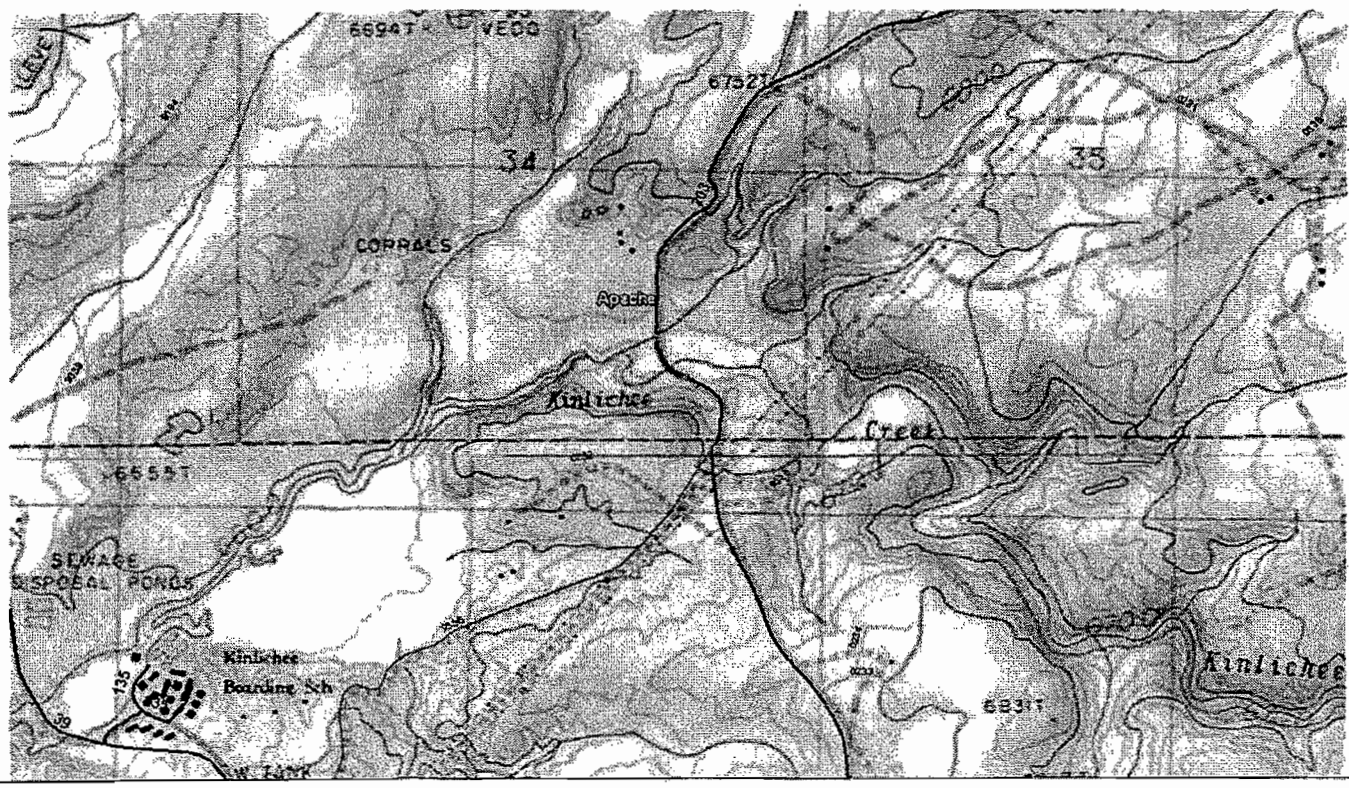
Tribal Transportation Program
Transportation Improvement Program

Agency: Fort Defiance | Priority No.: | To Be Delivered by: BIA | Date: 9/10/2013
Tribe: Navajo Nation | Current FY: 2015
Funding Source: TTP (Bridge, 2% Planning, Safety, etc)

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount: $0

Project Name: N203(2)1,2 Kinlichee Wash Bridge N629
Location: Kinlichee
Type of Work: Bridge, Grade & Drain
Route Num and Section: N203 | Project Number: N203(2)1,2
Length: 0.2 Miles | County: Apache
State: AZ | Construction Year: 2020
Comments: Designs are 99% complete but an 1 archaeological site needs to be addressed. Draft EA needs to be updated and completed. Need to apply for ROW
NOTE: The Compliance is under the 93-638 contract.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$25,000	$0	$0	$0	$0	$25,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$25,000	$0	$0	$0	$0	$25,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

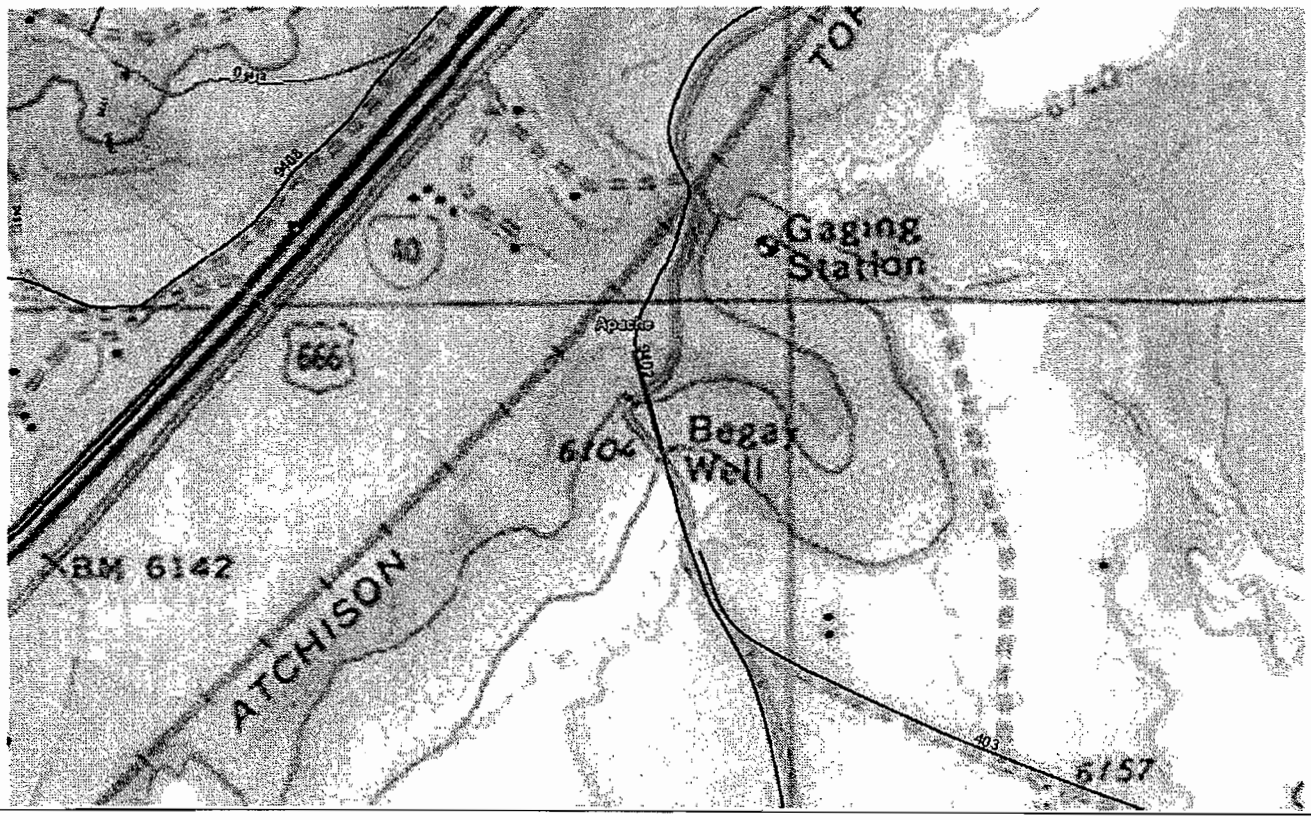
Tribal Transportation Program
Transportation Improvement Program

Agency:	Ft. Defiance	Priority No.:		To Be Delivered by:	BIA
Tribe	Navajo Nation			Date	7/2/2013
Funding Source	TTP& BP	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount $0

Project Name	N9402(1)1,2 Rio Puerco Brdg N656
Location	Lupton
Type of Work	Grade, Drain, & Bridge Construction
Route Num and Section	N9402 — Project Number N9402(1)1,2
Length	.10 Miles — County Apache
State	AZ — Construction Year 2020
Comments	Design 100% complete but ROW Needed, BIA will check with their Compliance office to see what is completed. May need to do BE. 5-span bridge costing $3.5 million. One of the 4 bridges recommended by BIA for replacement.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$10,000	$0	$0	$0	$0	$10,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$10,000	$0	$0	$0	$0	$10,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

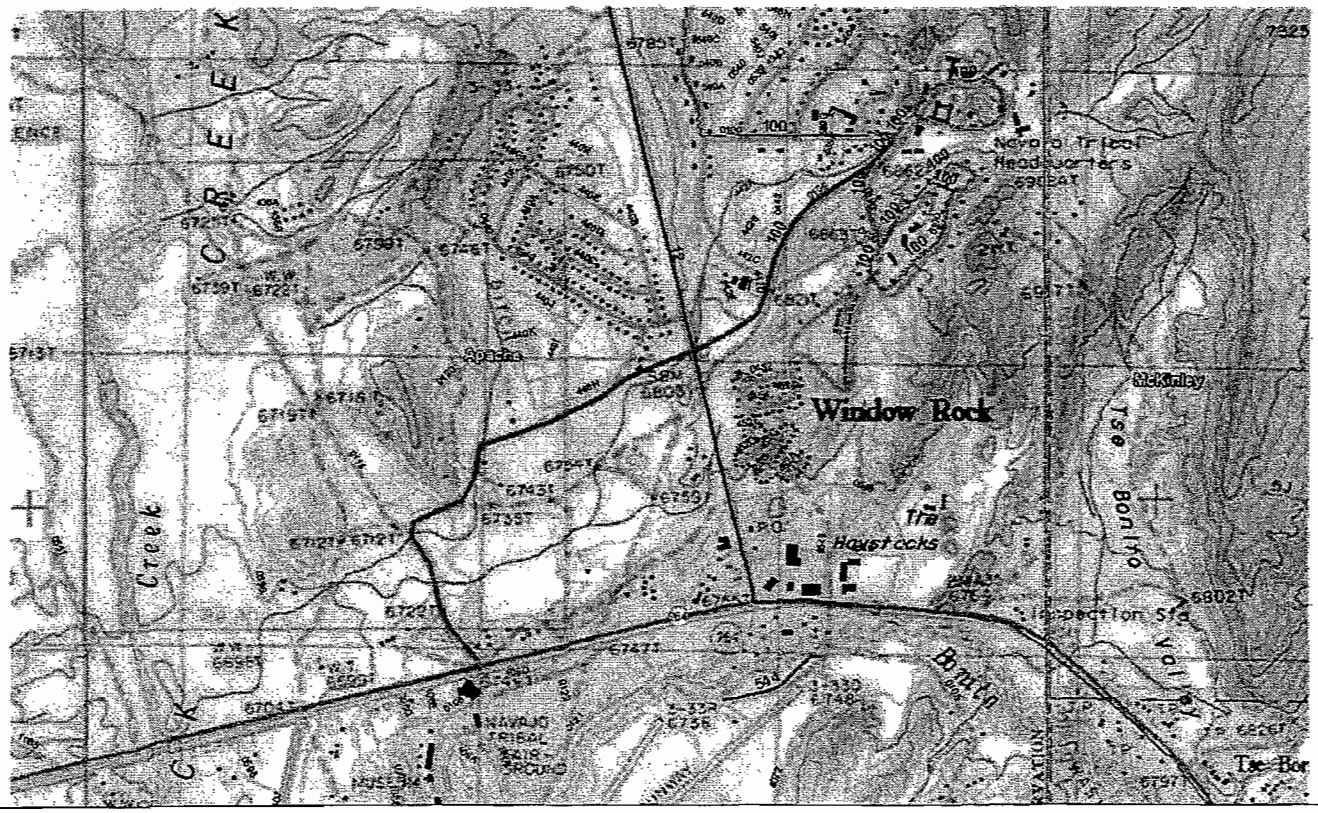
Tribal Transportation Program
Transportation Improvement Program

Agency:	Ft. Defiance	**Priority No.:**		**To Be Delivered by:**	NDOT
Tribe	Navajo Nation			**Date**	7/2/2013
Funding Source	TTP (Bridge, 2% Planning, Safety, etc)			**Current FY**	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ **STIP Amount** $0

Project Name	N100(1-1)/N12(1A)2,4 NN Capitol Streets & Access to Judicial Complex		
Location	Window Rock		
Type of Work	Pavement Rehabilitation & Widening		
Route Num and Section	N100 Sec. 50	**Project Number**	N100(1-1)/N12(1A)2,4
Length	.70 Miles	**County**	Apache
State	Arizona	**Construction Year**	2020
Comments	BIA is negotiating with their consultant to develop feasibility for alternate alignment into NN Capital administrative area. BIA recommends Round-About at the intersection of N100 and N12. Need Archeology, EA/BE and NEPA.		

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$60,000	$25,000	$0	$0	$0	$85,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$60,000	$25,000	$0	$0	$0	$85,000



FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

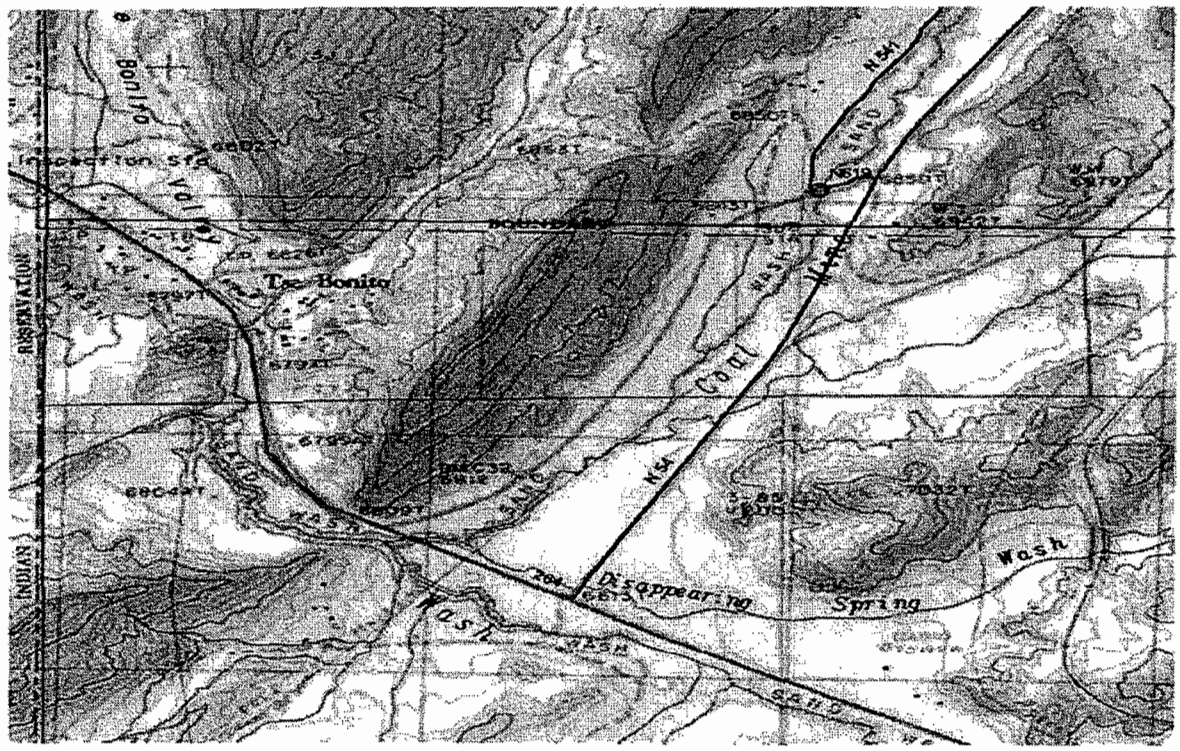
Tribal Transportation Program
Transportation Improvement Program

Agency:	Fort Defiance	Priority No.:	1	To Be Delivered by:	BIA
Tribe	Navajo			Date	8/29/2014
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☐ STIP Amount $0

Project Name	N541(1)1,2,3 Brdg N619		
Location	Tse Bonito		
Type of Work	Bridge Replacement		
Route Num and Section	N541	Project Number	N541(1)1,2,3 Brdg N619
Length	.01 Miles	County	Mckinley
State	New Mexico	Construction Year	2020
Comments	Bridge Replacement		

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$5,000	$0	$0	$0	$0	$5,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$5,000	$0	$0	$0	$0	$5,000



LEGISLATIVE BRANCH
NAVAJO NATION

HONORABLE LORENZO C. BATES
Speaker Pro Tem, 22nd Navajo Nation Council

September 11, 2014

MEMORANDUM

TO : *Honorable* Members
Resources and Development Committee

FROM : 9-15-14
Hon. LoRenzo C. Bates, *Speaker Pro Tem*
22nd Navajo Nation Council

SUBJECT : **ASSIGNMENT OF LEGISLATION**

Pursuant to 2 N.N.C § 164 (A)(4), this memorandum serves to inform and advise you that I assign the following legislation to the Resources and Development Committee;

Legislation No. 0251-14

RELATING TO RESOURCES AND DEVELOPMENT; APPROVING THE FISCAL YEAR 2015 NAVAJO NATION TRIBAL TRANSPORTATION IMPROVEMENT PLAN.

As the Committee assigned to consider the legislation, Legislation No. 0251-14 must be placed on the Resources and Development Committee's agenda at the next regular meeting for final consideration.

ATTACHMENT: Legislation No. 0251-14

xc: Hon. Ben Shelly, *President*
The Navajo Nation
Harrison Tsosie, *Attorney General*
Mark Grant, *Controller*
Dominic Beyal, *Executive Director, OMB*
Honorable Katherine Benally, Council Delegate (*Prime Sponsor*)

Office of Legislative Counsel
Telephone: (928)871-7166
Fax # (928)871-7576

Honorable LoRenzo Bates
Pro-Tem Speaker
22nd Navajo Nation Council

MEMORANDUM

TO: Honorable Katherine Benally
Chair, Resources and Development Committee
Navajo Nation Council

FROM: _____
Levon B. Henry, Chief Legislative Counsel
Office of Legislative Counsel

DATE: September 11, 2014

SUBJECT: AN ACTION RELATING TO RESOURCES AND DEVELOPMENT; APPROVING THE FISCAL YEAR 2015 NAVAJO NATION TRIBAL TRANSPORTATION IMPROVEMENT PLAN

Pursuant to your request, attached is the above-referenced proposed resolution and associated legislative summary sheet. Based on existing law and review of the documents submitted, the resolution as drafted is legally sufficient. However, as with all legislation, it is subject to review by the courts in the event of a challenge.

Please review the proposed resolution to ensure it is drafted to your satisfaction. If this proposed resolution is acceptable to you, please sign it where it indicates "Prime Sponsor", and submit it to the Office of Legislative Services for the assignment of a tracking number and referral to the Speaker.

If the proposed resolution is unacceptable to you, or if you have further questions, please contact me at the Office of Legislative Counsel and advise me of changes you would like made to the proposed resolution. You may contact me at (928) 871-7166. Thank you.

THE NAVAJO NATION
LEGISLATIVE BRANCH
INTERNET PUBLIC REVIEW PUBLICATION

LEGISLATION NO: _0251-14__ SPONSOR: Katherine Benally

TITLE: An Action Relating To Resources And Development; Approving The Fiscal Year 2015 Navajo Nation Tribal Transportation Improvement Plan

Date posted: September 15, 2014 at 3:31pm

Digital comments may be e-mailed to comments@navajo-nsn.gov

Written comments may be mailed to:

Executive Director
Office of Legislative Services
P.O. Box 3390
Window Rock, AZ 86515
(928) 871-7586

Comments may be made in the form of chapter resolutions, letters, position papers, etc. Please include your name, position title, address for written comments; a valid e-mail address is required. Anonymous comments will not be included in the Legislation packet.

Please note: This digital copy is being provided for the benefit of the Navajo Nation chapters and public use. Any political use is prohibited. All written comments received become the property of the Navajo Nation and will be forwarded to the assigned Navajo Nation Council standing committee(s) and/or the Navajo Nation Council for review. Any tampering with public records are punishable by Navajo Nation law pursuant to 17 N.N.C. *§374 et. seq.*

THE NAVAJO NATION
LEGISLATIVE BRANCH
INTERNET PUBLIC REVIEW SUMMARY

LEGISLATION NO.: 0251-14

SPONSOR: Honorable Katherine Benally

TITLE: Relating To Resources And Development; Approving The Fiscal Year 2015 Navajo Nation Tribal Transportation Improvement Plan.

Posted: September 15, 2014 at 3:31pm

5 DAY Comment Period Ended: September 20, 2014

Digital Comments received:

Comments Supporting	***None***
Comments Opposing	***None***
Inclusive Comments	**1. Nazlini Chapter Government; Request to keep Phase NR 27 (2-2) and (2-3) North Nazlini to Chinle a top priority.**

Executive Director
Office of Legislative Services

9/22/2014 - 10:32 ~~AM~~

Date/Time

Fw: Nazlini N-27 Road Resolution

kabjr <keebegay@mfcouncil-kbjr.com>

Wed 9/17/2014 11:51 PM

To:comments <comments@navajo-nsn.gov>;

1 attachment

NAZL-2014-09-063 No delays.pdf;

Please add the following Nazlini Chapter resolution to Legislation #0251-14. Thx

---

Kee Allen Begay Jr., LDA
Legislative District Assistant for Speaker Naize
(Tselani/Cottonwood, Tachee/Blue Gap, Low Mountain, Nazlini and Many Farms Chapters)
Navajo Nation Legislative Branch
PO Box 3390
Window Rock, Arizona 86515
Phone: (928) 871-7160
Cell: (928) 221-6484

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----- Forwarded Message -----
From: Judy Donaldson <jdonaldson@navajochapters.org>
To: kabjr <keebegay@mfcouncil-kbjr.com>
Sent: Wednesday, September 17, 2014 11:39 AM
Subject: Nazlini N-27 Road Resolution

Good Morn' Mr. Begay,

Here's the resolution for "No Delays" N-27 Construction.

have a Good Day!
Later,
Judy

RESOLUTION OF NAZLINI CHAPTER
NAZL-2014-09-063
NAZLINI CHAPTER GOVERNMENT

JOHNSON CLAW, PRESIDENT
JOSEPH DEDMAN JR., VICE PRESIDENT
JOANN DEDMAN, SECRETARY/TREASURER
JOHNNY NAEZ, GRAZING OFFICIAL
IRVIN SHIRLEY, DELEGATE
JUDY DONALDSON, COORDINATOR

RESPECTFULLY REQUESTING TO EACH MEMBER OF THE CURRENT 22nd AND UPCOMING 23rd NAVAJO NATION COUNCIL RESOURCES AND DEVELOPMENT COMMITTEE (RDC) TO KEEP CONSTRUCTION OF PHASE NR 27 (2-2) AND (2-3) NORTH NAZLINI TO CHINLE A TOP PRIORITY FOR FISCAL YEAR 2015 AND 2016 FUNDING CYCLE, AND NOT MOVE IT BACK FURTHER DUE TO POLITICS.

WHEREAS:

1. The Nazlini Chapter, pursuant the Navajo Nation Council Resolution #CJ-20-55 dated April 26,1957, is a recognized local unit of Navajo government with duties and responsibilities to review matters pertaining to its community members; advocate for the safety and welfare needs and what's in the best interest of its people; AND

2. The Nazlini Chapter, met with key representatives from the BIA (Gallup) Roads Department and Navajo Department of Transportation on September 08, 2014 (Agenda and Sign in sheet attached) in Chinle and were informed the new drafted Tribal Transportation Improvement Program (TTIP) is currently pending RDC approval; AND

3. Nazlini Chapters as well as Chinle Chapter were informed the RDC Committee may change the plan again due to politics: However, the BIA Area Roads Department and Navajo Department of Transportation assured the Nazlini Chapter they support construction of NR (2-2) and (2-3) as a priority that adding the Roundabout Intersection at NR7 and NR27 and .8 miles of widening shouldn't delay it; AND

4. The Community of Nazlini and Chinle have been patiently waiting for all weather road for over half a century, how much longer must we wait for this to happen, priorities should be based on needs not politics.

NOW, THEREFORE BE IT RESOLVED THAT:

1. The Nazlini Chapter hereby respectfully requesting to each member of the current 22nd and upcoming 23rd Navajo Nation Council Resources and Development Committee (RDC) to keep construction of Phase NR 27 (2-2) and (2-3) North Nazlini to Chinle a TOP PRIORITY for Fiscal Year 2015 and 2016 Funding Cycle and not move it back further due to politics.

2. Requesting NDOT, BIA Roads Department, and the RDC of the Navajo Nation Council to consult with Nazlini Chapter Community of any modification on N27 construction plan; AND

3. Requesting the Navajo Nation Government and BIA to seek additional funding to expedite the N27 construction activity

CERTIFICATION

We, hereby certify the foregoing resolution was duly considered by the Nazlini Chapter at the duly called Chapter Meeting at Nazlini, Navajo Nation, Arizona at which a quorum was present and that same was passed by a vote of 26 in favor, 0 opposed, 1 abstained, this 9th day of SEPTEMBER, 2014.

NAZL-2014-09-063

Motion by: Art Tracy Sr. Seconded by: John C. Wilson

Johnson Claw, Chapter President

Joseph Dedman Jr., Vice President

JoAnn Dedman, Secretary/ Treasurer

Johnny Nuize, Council Delegate

EXHIBIT
tabbies
C

OPUS Hamilton

FEDERAL HIGHWAY ADMINISTRATION

N-12 (NAVAJO NATION)

ROAD SAFETY AUDIT

FINAL REPORT

OPUS

OPUS Hamilton

FEDERAL HIGHWAY ADMINISTRATION

N-12 (NAVAJO NATION)

ROAD SAFETY AUDIT

DRAFT REPORT

Opus Hamilton Consultants Ltd.

Prepared by:

Margaret Gibbs, P.Eng., PTOE
Senior Transportation Engineer

Reviewed by:

Jeff Bagdade, P.E.
Manager, Detroit Office

January 2007

H-08113.00

900 - 1199 West Hastings St.
Vancouver, BC
Canada, V6E 3T5

Tel: 604 684 4488
Fax: 604 684 5908
www. opushamilton.com

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ATTACHMENT 2 SITE VISIT NOTES
ATTACHMENT 3 RSA FINDINGS AND SUGGESTIONS

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PREFACE

In December 2005, the FHWA Office of Safety commissioned a series of four tribal road safety audits as part of a Task Order under FHWA Contract DTFH61-05-D-00024. FHWA would like to demonstrate the usefulness and effectiveness of audits for tribal road agencies. The audits are being conducted by Opus Hamilton Consultants Ltd. and Vanasse Hangen Brustlin, Inc.

This audit of Highway N-12 in the Navajo Nation is one of the four audits being performed as part of the Task Order. The results of the tribal road safety audits will be compiled in a case studies document for use as a marketing and information tool to demonstrate the practical cost-effectiveness of road safety audits.

1.0 INTRODUCTION

1.1 Background

Highway N-12 is a rural minor arterial on the Navajo Nation reservation. The highway, which is under the jurisdiction of the BIA, intersects I-40 near Lupton, AZ, and continues northward to I-191, passing through three states (Arizona, New Mexico, and Utah). This road safety audit (RSA) has focused on the portion of N-12 north of Highway 264 between Window Rock and Fort Defiance (FIGURE 1.1), and also included two smaller sites south of Highway 264.

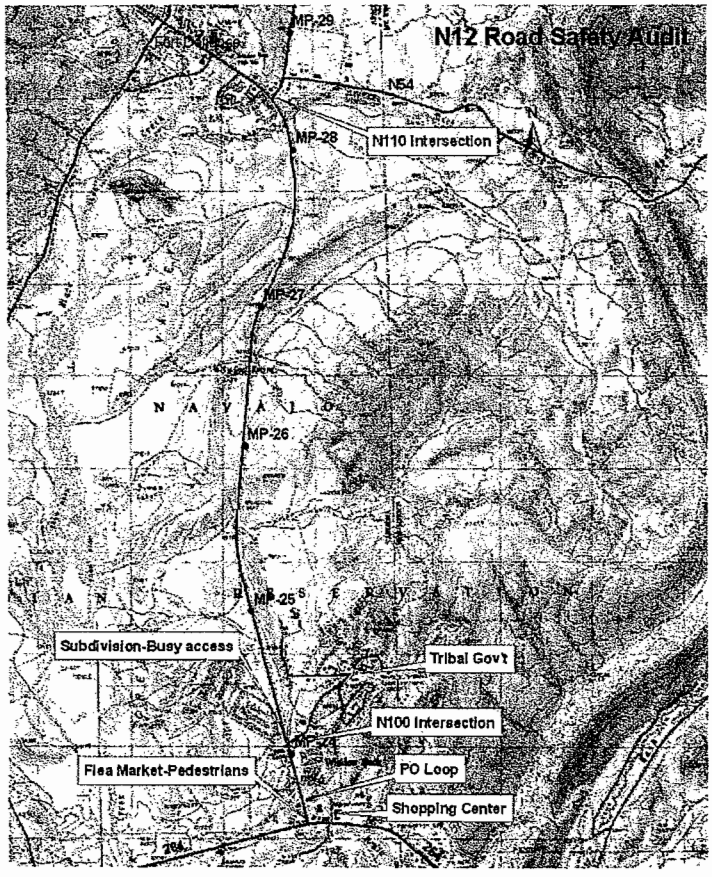


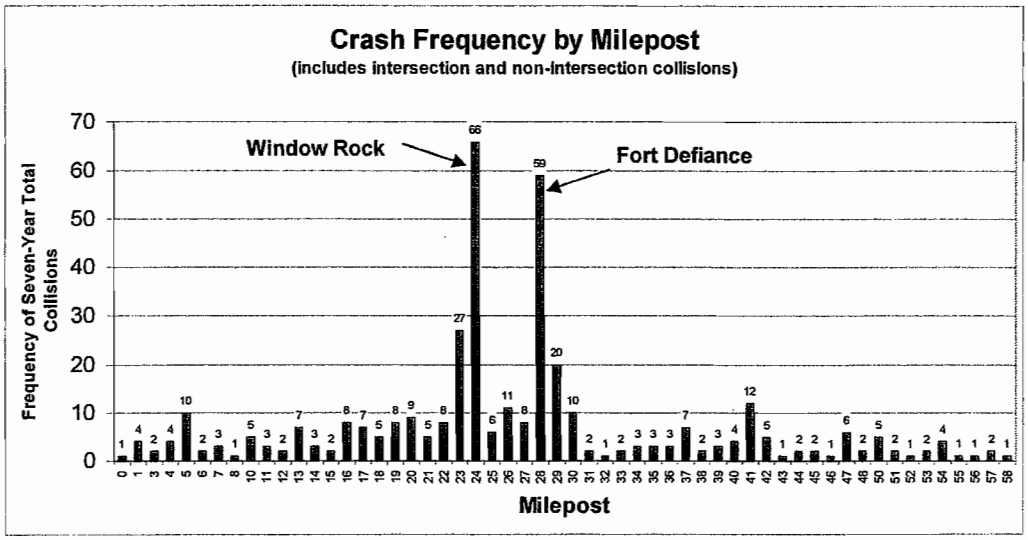
FIGURE 1.1 HIGHWAY N-12
BETWEEN WINDOW ROCK AND FORT DEFIANCE

On the segment between Window Rock and Fort Defiance, Highway N-12 has an AADT ranging between 14,000 and 24,000 vehicles, reflecting use by:

- residents of the Navajo Nation reservation, especially employees and visitors associated with the tribal government, which is centered in Window Rock;
- residents and visitors to commercial establishments in Window Rock;
- visitor and long-distance traffic on N-12.

The highway accommodates a substantial truck volume. Speed limits along the audit segments vary from 35 to 55 mph.

Seven years (1999 through 2005) of collision summaries along N12 have been reviewed. Over seven years, a total of 386 collisions were reported along N12. Annual collision frequency peaked in 2002 with 60 reported collisions, and declined each subsequent year to a low of 21 reported collisions in 2005. FIGURE 1.2 shows the spatial distribution of collisions along the entire highway segment from MP 0.0 to MP 58.5. Peaks are evident around MP 23/24 and MP 28/29, which correspond to the Window Rock and Fort Defiance areas.



NOTE: *Shows collision locations reported on N12 over seven years (1999 through 2005). Distribution is shown in one-mile segments, so (for example) all collisions at MP 24.0 through 24.9 are shown at "MP24" in the chart.*

FIGURE 1.2 COLLISIONS ALONG HIGHWAY N12

Intersection Crashes

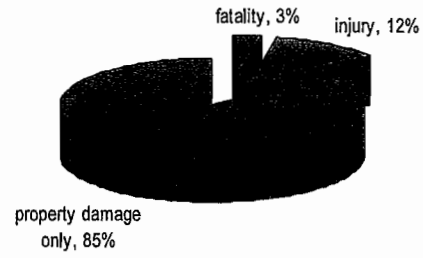
The collisions identified in police reports as occurring at the intersections of N12/N100 (in Window Rock) and N12/N110 (in Fort Defiance) were extracted and examined separately. Collision summaries for these crashes are summarized in FIGURE 1.3 (N12/N100 in Window Rock) and FIGURE 1.4 (N12/N110 in Fort Defiance).

Among the intersection collisions, the following trends were observed:

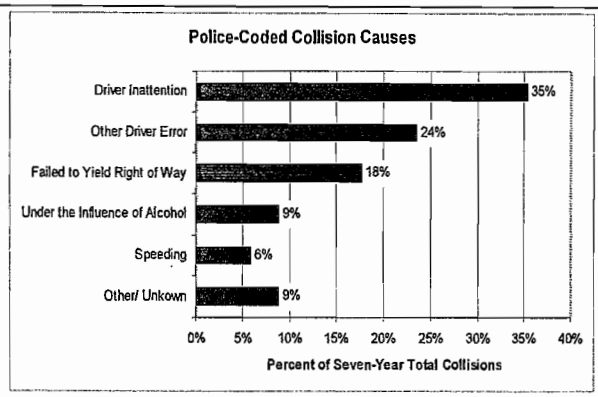
- Collision peaks appeared to coincide with commuter volume peaks more at the Window Rock (N12/N100) intersection than at the Fort Defiance (N12/N110) intersection, possibly reflecting increased commuter traffic related to the tribal government and commercial land uses in Window Rock.
- Although most collisions resulted in property damage only, injury-causing collisions were more frequent, and typically involved more injured occupants per crash, at the Fort Defiance (N12/N110) intersection than at the Window Rock (N12/N100) intersection. One fatality was reported at each intersection.
- Driver error was the major police-reported cause of collisions at both intersections. Alcohol impairment was reported in 23 percent of the N12/N110 (Fort Defiance) crashes. Few or no crashes were attributed to speeding at the intersections.
- Most collisions occurred on dry pavement. Wet or winter road conditions did not appear to be over-represented at either intersection.

1.2 Road Safety Audits

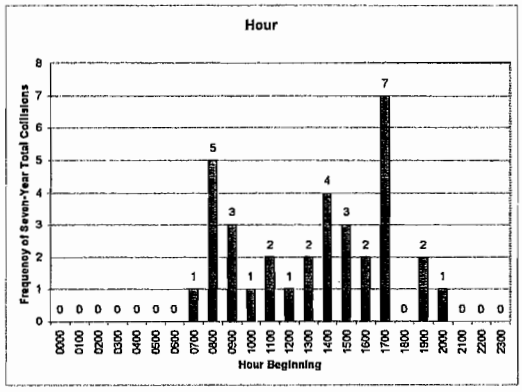
A road safety audit is a formal safety performance examination of an existing or future road or intersection by an independent audit team. Road safety audits help to promote road safety by identifying safety issues at the design and implementation stages, promoting awareness of safe design practices, integrating multimodal safety concerns, and considering human factors in the design.



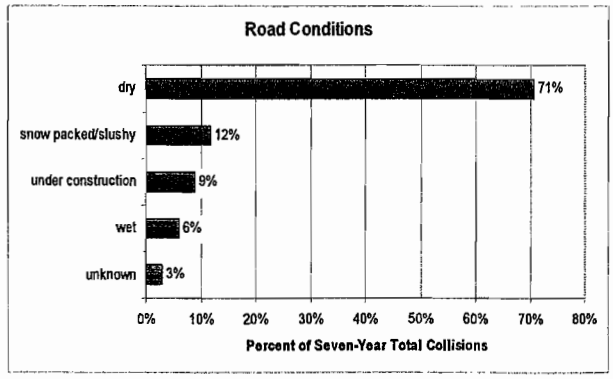
Crash Severity: *Most collisions (85 percent) were low-severity events that resulted in property damage only. Five injury collisions (representing 12 percent of the 7-year total crashes) were reported, four of which involved injury to a single occupant. One collision resulted in one injury and one fatality.*



Collision Causes: *Over ¾ of crashes were attributed to some kind of driver error ("driver inattention", "failure to yield right of way", or "other driver error"). Alcohol-impaired drivers were cited in 9 percent of crashes. Only 6 percent of crashes were attributed to speeding.*



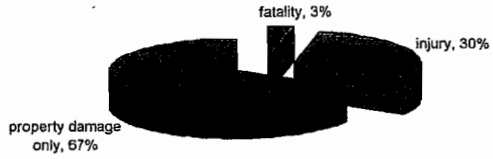
Hourly Distribution: *Crashes peaked during the morning and afternoon commuter peaks, with a smaller mid-day peak. No collisions were recorded between 9:00 pm and 7:00 am.*



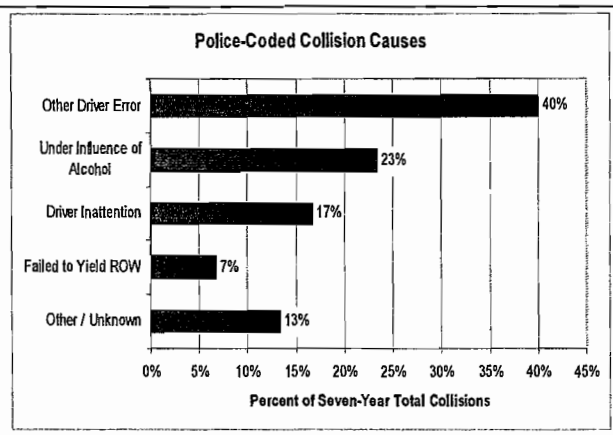
Road Conditions: *Most collisions (71 percent) occurred on dry pavement. Winter road conditions were cited in 12 percent of crashes, and 9 percent of crashes occurred where construction was reported.*

Note: A total of 34 collisions were reported at this intersection in the 7-year reporting period.

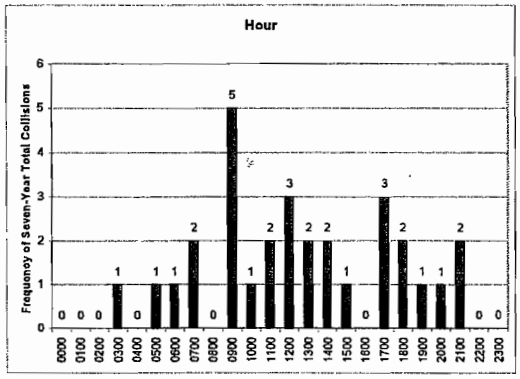
FIGURE 1.3 COLLISION DISTRIBUTIONS AT N12/N100 (WINDOW ROCK)



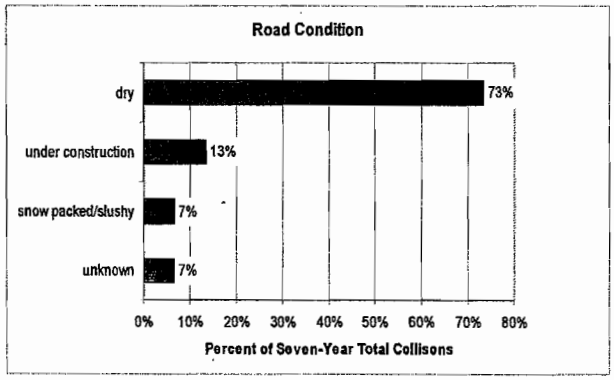
Crash Severity: *Twenty of the 30 collisions reported at this intersection were low-severity events that resulted in property damage only. Of the remaining ten collisions, nine resulted in injury to a total of 22 vehicle occupants, and one collision resulted in a pedestrian fatality. One-third of the injury crashes involved alcohol.*



Collision Causes: *Just under two-thirds of crashes were attributed to some kind of driver error ("driver inattention", "failure to yield right of way", or "other driver error"). Alcohol impairment was cited in just under a quarter of all crashes. No crashes were attributed to speeding.*



Hourly Distribution: *Crashes occurred throughout the day, with a morning peak between 9:00 and 10:00 am. Only one collision was reported between 10:00 pm and 5:00 am.*



Road Conditions: *Most collisions (73 percent) occurred on dry pavement. Winter road conditions were cited in 7 percent of crashes, and 13 percent of crashes occurred where construction was reported.*

Note: A total of 30 collisions were reported at this intersection in the 7-year reporting period.

FIGURE 1.4 COLLISION DISTRIBUTIONS AT N12/N110 (FORT DEFIANCE)

1.3 Reminder

The audit team has conducted this audit to the best of its professional abilities within the time available and by referring to available information. While every attempt has been made to identify significant safety issues, the project owner is reminded that responsibility for the design, construction, and performance of the roadway remains with the engineers of record.

1.4 RSA Team and Process

The audit team and the project material on which the RSA was based are described in *Attachment 1.*

Site visits were conducted in November 2006 to gain an understanding of the existing conditions and surroundings, and to identify existing safety concerns. Notes on the site visits are contained in *Attachment 2.*

A road safety audit framework was applied in both the audit analysis and presentation of findings. The expected frequency and severity of crashes caused by each safety issue have been identified and rated according to the categories shown in TABLES 1.1 and 1.2. These two risk elements were then combined to obtain a risk assessment on the basis of the matrix shown in TABLE 1.3. Consequently, each safety issue is assessed on the basis of a ranking between F (highest risk and highest priority) and A (lowest risk and lowest priority).

For each safety issue identified, possible mitigation measures have been suggested. The suggestions have focused on measures that can be cost-effectively implemented at the current design stage, and consequently include few geometric changes.

TABLE 1.1 FREQUENCY RATING

ESTIMATED		EXPECTED CRASH FREQUENCY (per audit item)	FREQUENCY RATING
EXPOSURE	PROBABILITY		
high	high	10 or more crashes per year	*Frequent*
medium	high		
high	medium	1 to 9 crashes per year	*Occasional*
medium	medium		
low	high		
high	low	less than 1 crash per year, but more than 1 crash every 5 years	*Infrequent*
low	medium		
medium	low	less than 1 crash every 5 years	*Rare*
low	low		

TABLE 1.2 SEVERITY RATING

TYPICAL CRASHES EXPECTED (per audit item)	EXPECTED CRASH SEVERITY	SEVERITY RATING
crashes involving high speeds or heavy vehicles, pedestrians, or bicycles	probable fatality or incapacitating injury	*Extreme*
crashes involving medium to high speed; head-on, crossing, or run-off-road crashes	moderate to severe injury	*High*
crashes involving medium to low speeds; left-tum and right-turn crashes	minor to moderate injury	*Moderate*
crashes involving low to medium speeds; rear-end or sideswipe crashes	property damage only or minor injury	*Low*

TABLE 1.3 CRASH RISK ASSESSMENT

FREQUENCY RATING	SEVERITY RATING			
	Low	*Moderate*	*High*	*Extreme*
Frequent	C	D	E	F
Occasional	B	C	D	E
Infrequent	A	B	C	D
Rare	A	A	B	C

Crash Risk Ratings:

A: lowest risk level
B: low risk level
C: moderate-low risk level
D: moderate-high risk level
E: high risk level
F: highest risk level

2.0 RSA FINDINGS

2.1 Safety Features of the Existing Roadway

The BIA and Navajo Nation DOT have undertaken several measures to improve safety along N12:

Navajo Department of Transportation: The Navajo tribal government includes a Department of Transportation (NDOT) that provides administrative and technical services to the Navajo Nation and the Bureau of Indian Affairs. The goal of NDOT is to plan, implement, and maintain transportation infrastructure to ensure safe and reliable year-round mobility for the Navajo People.

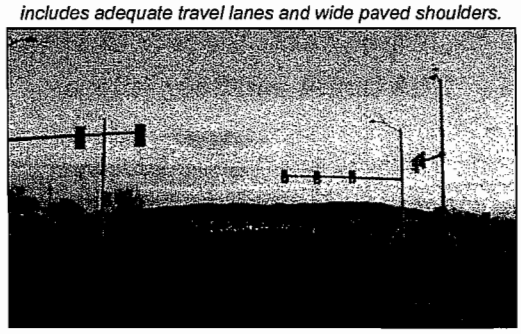
Pedestrian Facilities: Continuous sidewalks have been implemented over substantial distances along N12 north of Highway 264, along with pedestrian heads at signalized intersections. The sidewalks provide separation between traffic and pedestrians, and the pedestrian signal heads provide guidance to pedestrians concerning when it is safe to cross at signalized intersections.

Sidewalk east of N12 between Window Rock and Fort Defiance: A continuous sidewalk, separated from travel lanes by about 25 feet, enhances pedestrian comfort and safety. Sidewalks appeared to be well used by pedestrians and cyclists.

Roadway and Intersection Geometry: N12 appears to meet and often exceed geometric design standards, with good lane and shoulder widths, horizontal and vertical alignments, and turning lanes at major intersections. The roadway geometry typically provides a level of consistency that meets driver expectancy and facilitates the driving task.

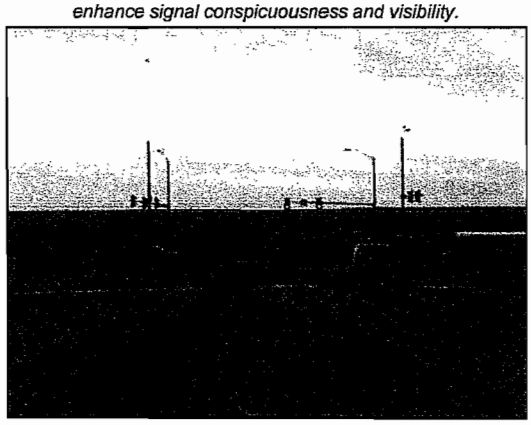
Southbound on N12 south of Highway 264: Roadway geometry includes adequate travel lanes and wide paved shoulders.

Signal Design and Implementation: Traffic signal installations at the intersections of N12 with N100 and N110 are well designed and implemented. Signals include mast arms, 12-inch signal lenses, backboards, and multiple overhead displays for two-lane approaches. A good signal display improves visibility and conspicuousness, making the driving task easier and encouraging compliance.



Intersection of N12 and N100 (Window Rock): Mast-mounted multiple signal heads with 12-inch lenses and backboards enhance signal conspicuousness and visibility.

Lighting at Signalized Intersections: Lighting has been provided at signalized intersections along N12. Lighting improves intersection conspicuousness, so that approaching drivers are more aware of the intersection and the potential for conflicting movements. Lighting also improves the visibility of other road users, including pedestrians and cyclists, at night.



Intersection of N12 and N100 (Window Rock): Overhead lighting is provided at this signalized intersection.

Delineation: Centerlines, edge lines, and delineators are provided along most of N12. These delineation devices enhance driver guidance, particularly at night.

Southbound on N12 south of Highway 264: Centerline and edgeline markings, and post-mounted delineators, provide guidance at dusk under low-light conditions.

2.2 RSA Issues and Suggestions

Seven safety issues associated with N12 are discussed in ATTACHMENT 3, and summarized in TABLE 2.1. Suggestions to address these safety issues have also been identified and discussed.

TABLE 2.1 SUMMARY OF RSA ISSUES AND SUGGESTIONS

	SAFETY ISSUE (Number and Description)	Risk Rating	Suggestions
1	*Signing and Pavement Marking:* Worn or missing signs and pavement markings may limit driver guidance, especially at night.	C	• policy measures • measures to improve visibility and reduce maintenance requirements
2	*Pedestrian Facilities:* The design and maintenance of some pedestrian facilities may limit their usefulness. Pedestrians who are unable or unwilling to use pedestrian facilities may use the roadway instead, where they are exposed to vehicle traffic.	D	• maintenance schedule review • completion of pedestrian networks with sidewalk segments and marked crosswalks (where currently missing) • removal of obstructions in sidewalk

	SAFETY ISSUE (Number and Description)	Risk Rating	Suggestions
3	*Poor Pavement Conditions:* Cracked, worn, rutted, and dusty/muddy pavement may reduce driver control, especially for motorcyclists.	C	• pavement repair and rehabilitation
4	*Intersection of N12 and N100 (Window Rock):* • Peak period left-turn volumes exceed the capacity of the left turn lanes. • Access to the residential area interferes with operations at the N12/N100 intersection. • Fixed-object hazards are located in the right-turn channelizing island. • Laning on the east exit leg is not clear.	C	• extend left turn lane to accommodate peak demand • revise signal operation to clear queue • introduce staggered work hours to reduce peak volumes • reconfigure intersection to four legs • relocate signal controller box • clarify laning requirements on eastbound exit leg
5	*Intersection of N12 and N110 (Fort Defiance):* • The intersection configuration and conspicuousness may be limited. • Movements at driveways near the intersection may contribute to conflicts. • A fixed-object hazard is located close to travel lanes. • Laning on the east exit leg is not clear.	C	• improve signing and pavement markings • upgrade the signal display • review opportunities for access management • upgrade the east exit leg
6	*N12 near St Michael's School:* • Horizontal and vertical curves limit sight distance on the approaches to the school driveway. • Roadside hazards may increase the potential risk and severity of an off-road collision.	C	• improve signing around the school driveway • increase the length of the guardrail • improve curve delineation

	SAFETY ISSUE (Number and Description)	Risk Rating	Suggestions
7	*S-curve on N12:* • A steep roadside slope may increase the potential risk and severity of an off-road collision. • Drivers may be unprepared for vehicles pulling into or out of a school bus stop.	C	• install rumble strips • improve signing • increase length of guardrail

2.3 Funding Sources

An important consideration in identifying and implementing road safety improvements is funding. The *Tribal Highway Safety Improvement Implementation Guide* (http://www.fhwa.dot.gov/hep/tribaltrans/saf_guide.htm) advises that the implementation plan for a THSIP or highway safety project will depend greatly on which funding sources the Tribe pursues, since each source has different program eligibility requirements. The website discusses several funding sources (briefly described below) that constitute some of the important government traffic safety-funding sources. Additional sources specific to Arizona may be available from the Arizona DOT.

- *FHWA funds* administered by the state include the Hazard Elimination (HES) program, which is being superseded by the Highway Safety Improvement Program (HSIP). Funding can be used for a wide variety of improvements directed at eliminating or mitigating hazards affecting traffic safety, including safety planning and studies and safety project construction. Up to 25 percent of HSIP funds may be allocated for local/tribal use in Arizona, with allocation based in part on demonstrated crash problems.

- *FHWA funds,* administered by the states for activities, include the Surface Transportation Program (STP), which provides flexible funding that can be used on rural minor collectors.

- The *Transportation Enhancement Program* was established under the Arizona DOT Enhancement and Scenic Roads Section to enhance surface transportation activities. Authorized uses for TE funding include facilities

and safety/educational activities for pedestrians and bicycles, and scenic highway programs. This program typically has an 80/20 matching requirement, but the tribal share may be "in kind".

- *National Highway Traffic Safety Administration (NHTSA)* funds administered by the BIA Highway Safety Office or the Arizona Governors Office of Highway Safety include the *State and Community Highway Grant Program*. This program expends Section 402 funds for non-construction programs dealing with road safety, speed control, alcohol countermeasures, police enforcement (potentially including GPS units), traffic records, and pedestrian and bicycle safety.

- The *IRR Program,* jointly administered by BIADOT and the Federal Lands Highway Office and funded by FHWA, includes funds for projects to improve highway safety. Twenty-five percent of the IRR Program funds are now usable for maintenance. Examples of activities that are eligible for funding include sidewalks, installation/replacement of safety-related signs when designated as part of a highway safety project, and guardrail and pavement markings.

- The Indian Health Service *Injury Prevention Program* provides funding for basic and advanced injury prevention projects. Funding can be used to build tribal capacity for preventing any type of injury problem facing a tribal government, and is currently being used on the reservation to help fund a re-striping project.

- The *Navajo Nation Road Fund,* funded by the Navajo Nation Fuel Excise Tax, has a competitive grant program open to tribal departments and programs. The Road Fund finances public road improvement projects, and may be used as matching funds.

- The *Public Lands Highways Discretionary Program* provides funding for improvements to roads that are open to public travel and serve federal property. This program is entirely discretionary in nature and there is no minimum level of funding for projects. Public Lands Discretionary funding requires no local match, but state and local financial support of a project is

one of the factors considered when the FHWA decides which projects it will fund.

In addition to these and other programs, all Surface Transportation Reauthorization legislation currently under consideration proposes expanding the federal commitment to highway safety. Some proposed Reauthorization legislation may provide funding set-asides for tribal highway safety programs.

2.4 Conclusions

Seven safety issues have been identified in this in-service road safety audit. Suggestions for improvements have been identified and are described in this report. The owners are invited to consider the suggested changes. To complete the audit process, the owners may prepare a short written response to the issues and options outlined in this report.

ATTACHMENT 1

ROAD SAFETY AUDIT TEAM AND MATERIALS

Location	N-12 on the Navajo Nation reservation
Audit Team	Margaret Gibbs, P.Eng. (Opus Hamilton Consultants Ltd.) Jeff Bagdade, P.E. (Opus Hamilton Consultants Ltd.) Salisa Norstog (Navajo Department of Transportation) Sherylene Yazzie (Navajo Department of Transportation) Geri Arviso (Navajo Department of Transportation) Clinton Curtis (Navajo Police) Aaron King (BIA) Harold Riley (BIA) Calvin Castillo (BIA) Dineh Benally (BIA) Vickie Begay (BIA) Clarence Tsosie (BIA) Russell Garcia (FHWA Federal Lands) Tim Penney (FHWA Office of Policy) Karla Petty (FHWA Office of Safety) Mike Blankenship (Arizona DOT)
Project Owners	Navajo Nation BIA
Review Date	1-3 November 2006
Audit Stage	in-service audit of existing roads
Start Up Meeting	1 November 2006
Attended by	Navajo Department of Transportation Navajo Police BIA FHWA Opus Hamilton

Documents Available for the Audit:

- aerial photographs of alignment
- N12 AADT traffic volumes
- collision data for 1999 through 2005

All documents were provided by Navajo DOT prior to or at the start-up meeting of 1 November 2006.

ATTACHMENT 2

NOTES OF SITE VISIT

RSA Segment: N12 on the Navajo Nation reservation

Site Visit Dates: Wednesday-Friday, 1-3 November 2006 (dry and clear/overcast conditions)

Land Uses: N12 follows a north/south alignment through the Navajo Nation lands. The main audit segment was north of Highway 264, adjacent to residential areas between Window Rock and Fort Defiance. Two audit segments south of Highway 264 were adjacent to St. Michaels School (near MP 22) and undeveloped lane (between MP13 and MP14).

Looking north along N12 at the intersection with N110 (near Fort Defiance). A 62-foot urban cross-section is provided, consisting of two through lanes in each direction, with curb and gutter and turn lanes (or a raised median) at intersections. Pavement and pavement markings were very worn along this segment of N12.

Road User Characteristics: Substantial commuter peaks were observed on N12 north of Highway 264, between Window Rock and Fort Defiance. Moderate truck traffic was observed at all audited sites. Pedestrians were observed (walking on the sidewalks and crossing the street) along the audited site north of Highway 264, but no pedestrians were observed at the sites south of Highway 264. No cyclists were observed at the time of the late autumn visits.

Looking south along N12 at audit site south of Highway 264. The cross-section is a two-lane rural road with wide paved shoulders.

Road and Roadside Physical Characteristics: Along most of its length, N12 is a two-lane rural road with wide paved shoulders. North of Highway 264, between MP23.5 and MP30.2 (which includes the main RSA segment), N12 has a five-lane cross-section with a pavement width of between 62 and 68 feet. Turning lanes are provided at major intersections, and a raised median is provided on the intersection approaches. Posted speed limits vary from 35 to 55 mph.

The audit segments included two signalized intersections at N12/N100 (Window Rock) and N12/N110 (Fort Defiance). These intersections provide access to the Navajo tribal government complex and the community of Fort Defiance.

The pavement condition along the audit segment north of Highway 264 was very worn, with worn pavement markings. The pavement condition at the audit sites south of Highway 264 was less worn, and pavement markings appeared to be in fair to good condition.

Night-time Conditions: Overhead lighting is not provided along the audit segments except at signalized intersections. Excessively worn pavement markings north of the Highway 264 provided little or no guidance at night on dry pavement. Pavement markings south of Highway 264 provided good guidance at night on dry pavement.

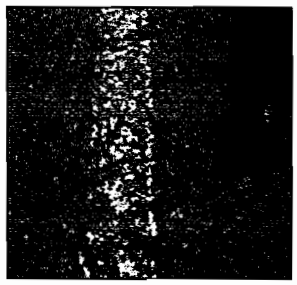
Road Safety Audit
N-12 (Navajo Nation)
Safety Issue 1: Signing and Pavement Marking

Safety Issue 1: Worn or missing signs and pavement markings may limit driver guidance, especially at night.

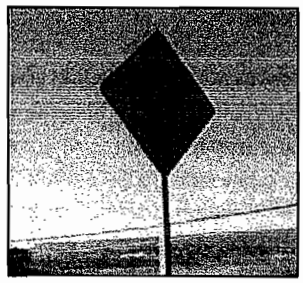
Safety Issue Description: Signs and pavement markings provide warning and guidance to drivers concerning road alignment and conditions. During site visits, the RSA team observed signs and pavement markings that were faded, worn, vandalized, or missing. At these locations, driver guidance was limited, with the result that drivers may have been unprepared for roadway conditions and elements such as:

- horizontal curves *(bottom left)*,
- pedestrians crossing the road *(bottom center)*,
- raised medians and islands in the roadway, which can pose fixed-object hazards *(bottom right)*.

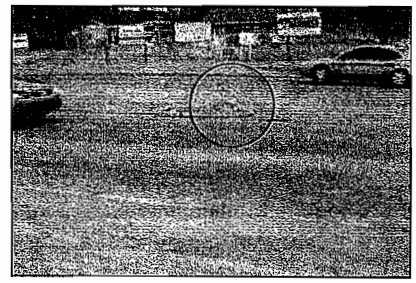
In addition, the RSA team observed the use of engineering-grade (ASTM Type 1) sign sheeting.



N12 south of Highway 264: Photo shows a worn edge line beside the southbound lane. The faded marking limits driver guidance, especially when the pavement is wet.



N12 on approach to N100: Graffiti obscures the message on a sign warning drivers of a pedestrian crosswalk ahead.



N12 at N110 (Fort Defiance): A raised median (red circle) has no delineation or object marker to warn drivers of its presence. Drivers (especially motorcyclists) striking the curb may lose control. Vehicle strikes also increase maintenance requirements by damaging the curb face.

Expected Crash Types: all collision types

Expected Frequency: occasional

Expected Severity: moderate

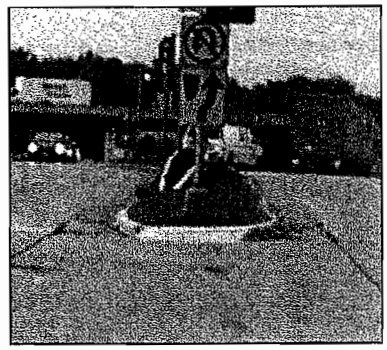
Risk Rating: C (moderate-low risk level)

Suggestions:

Policy: Improvements in signing and pavement marking practices and materials are in part a policy issue. The BIA and NDOT may consider improvements that would be implemented throughout the Navajo Nation, including a sign management program and sign sheeting upgrades. (BIA has indicated that a program to enhance signing and delineation throughout the Navajo nation is currently being planned.)

Measures to improve visibility and reduce maintenance requirements: A number of measures may be considered that would improve signing and pavement markings, while at the same time reducing longer-term maintenance requirements:

- *anti-graffiti sign sheeting:* Graffiti limits the effectiveness of signs, and creates an obligation for a potentially costly program of monitoring and replacement. Sign sheeting that resists spray paint, or that allows paint to be easily removed, may be considered.
- *sign sheeting upgrade:* To improve night-time conspicuousness and visibility, and reduce long-term maintenance requirements, a higher grade of sign sheeting may be considered. Engineering-grade sheeting (ASTM Type 1) may be replaced by high-intensity (ASTM Type 3) or "Diamond Grade" (ASTM Type 9) sheeting. In the run-up to the implementation of a planned reservation-wide sign upgrade program, higher-grade sheeting may be stocked by the maintenance group, and used to replace engineering-grade sheeting on a maintenance basis.
- *delineation of raised medians or islands:* When raised medians or islands are struck by drivers who are unaware of their presence, the crash risk is increased (if drivers subsequently lose control or overturn) and the resulting damage increases maintenance requirements. To improve their visibility and conspicuousness, especially at night, the noses of raised medians or islands may be painted with yellow retroreflective paint, as shown at right. Object markers or "Keep Right" (R4-7 or R4-8) signs may also be used to enhance driver guidance.



Painted median nose (Madison, Wisconsin)

- *redundant pavement markings:* Pavement markings may be used to supplement speed limit, "Stop Ahead", and school zone signing.

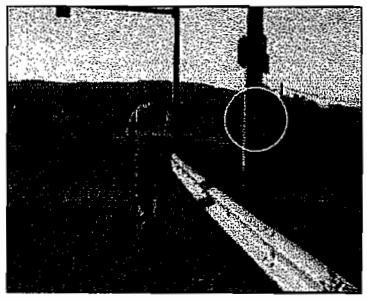
Road Safety Audit
N-12 (Navajo Nation)
Safety Issue 2: Pedestrian Facilities

Safety Issue 2: The design and maintenance of some pedestrian facilities may limit their usefulness. Pedestrians who are unable or unwilling to use pedestrian facilities may use the roadway instead, where they are exposed to vehicle traffic.

Design: Pedestrian facilities should be accessible, continuous, and convenient. *Accessibility* allows all pedestrians to safely use the facilities, including those with physical limitations (including the elderly or handicapped) or encumbrances (such as pedestrians with young children, either in strollers or walking). *Continuity* ensures that pedestrians can reach their destination along N12 while staying entirely on the pedestrian network, without the need to walk along the roadway, cross at unprotected crossings, or walk across unpaved surfaces. *Convenience* promotes pedestrians' use of facilities by designing and implementing them so that they meet pedestrian demand and follow pedestrian "desire lines" (intended pathways) as directly as possible. During site visits, issues were identified associated with accessibility *(examples shown below left, center, and right),* continuity *(example shown below left),* and convenience *(below left, center, and right).*

Maintenance: An extensive pedestrian network of sidewalks and crosswalks has been provided along parts of N12. The network facilitates pedestrian activity, but also generates a substantial maintenance requirement if the network is to be continuously and widely accessible to all users. During site visits, some maintenance issues were identified that could limit the usefulness of sidewalks *(below left and right).*

N12 at N110 (Fort Defiance): The surface of the sidewalk is partly covered by gravel and dirt (foreground), and the sidewalk width is partly obstructed by a barrier (background) installed to protect the signal poles. The accumulated debris limits the usefulness of the sidewalk (especially for pedestrians with strollers or scooters), and the obstruction interrupts its continuity for pedestrians needing the full sidewalk width (including those in wheelchairs).



N12 at N100 (Window Rock): The pushbutton for pedestrians wanting to cross N12 is placed on the far side of a Jersey barrier. Pedestrians unwilling or unable to climb over the barrier to activate the pedestrian signal will have to cross N12 without the aid of the pedestrian signal.

N100 near N12 (Window Rock): The sidewalk dips to accommodate a drainage channel. Pedestrians and cyclists on the sidewalk who do not see the dip (especially at night along this unlighted roadway) may be injured where the sidewalk drops. The drainage channel also directs dirt and gravel onto the sidewalk, where it accumulates. The dip and accumulated debris may create an accessibility issue for users of wheelchairs and scooters.

Expected Crash Types:	pedestrian collisions
Expected Frequency:	occasional
Expected Severity:	high
Risk Rating:	D (moderate-high risk level)

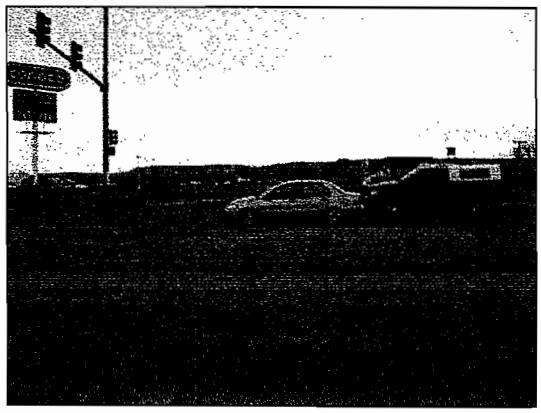
Suggestions: An overall review of the accessibility and continuity of the pedestrian network may be undertaken, with reference to design, implementation, and maintenance. Specific opportunities for improvement observed by the RSA team during site visits include:

General (N12):

- Review maintenance schedule to provide periodic sweeping of the sidewalk *(above left and right)* and testing of pedestrian pushbuttons.

N12 at N110 (Fort Defiance):

- Provide a marked crosswalk and pedestrian signal heads over N12 *(right)* at this intersection. The crossing facilities may be located on the north leg of the intersection to reduce conflicts (on the south leg) with a protected westbound-to-southbound left turn phase.
- Remove the Jersey barrier that partly obstructs the sidewalk on the west side of the intersection *(above left, see also Issue 6).*



N12 at N110 (Fort Defiance), looking east over the north leg of the intersection: No pedestrian crossing facilities are provided over N12 at this intersection, although paved sidewalks lead up to it.

N12 at N100 (Window Rock):

- Complete the pedestrian network on the west side of the intersection by installing a sidewalk connecting to the large residential area west of N12 (a walkable connection over the existing cattle guard may be necessary), and providing a marked crosswalk over N12 and N100.
- Improve the accessibility of the pedestrian pushbutton on the west side of the intersection *(above center).*

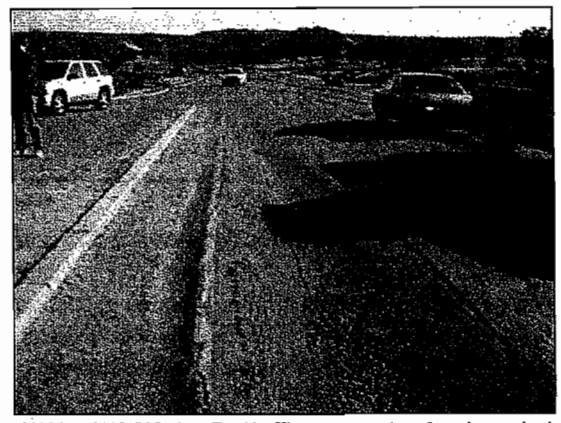
N12 at N100 (Window Rock), looking west: The residential area west of the intersection may generate pedestrians wanting to access the Window Rock administration area and the sidewalk passing along the east side of N12. No sidewalk is provided along the west side of N12, and no crosswalk is marked at the intersection, although a pedestrian pushbutton is provided.

Road Safety Audit
N-12 (Navajo Nation)
Safety Issue 3: Poor Pavement Conditions

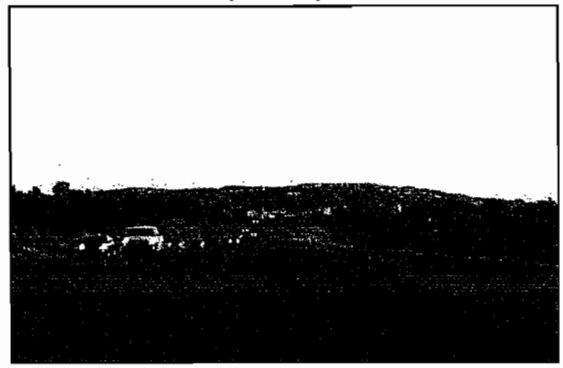
Safety Issue 3: Cracked, worn, rutted, and dusty/muddy pavement may reduce driver control, especially for motorcyclists.

Safety Issue Description: Drainage issues and limited maintenance and rehabilitation budgets have resulted in poor pavement conditions over parts of N12. Deterioration of the pavement is particularly evident:

- along higher-volume segments of N12, including the segment between Highway 264 and N110 *(right, top and bottom)*,
- on the approaches to signalized intersections, where vehicle acceleration and deceleration stresses the pavement surface *(right, at top)*,
- where limited or obstructed drainage may result in damage from standing or frozen water *(right, at top)*.



N100 at N12 (Window Rock): The pavement surface is cracked and rutted. Rain or ice in the ruts may reduce drivers' (especially motorcyclists') control. The photo also shows dirt that has accumulated between the travel lane and the right-turn island. The accumulated dirt may reduce cyclists' and drivers' control.



N12 south of N100 (Window Rock): Pavement surface is worn and rutted. Dry, wet, or icy ruts may affect vehicle control, especially for motorcyclists.

Poor pavement surfaces affect safety by:

- reducing braking efficiency where water or ice accumulates in tire ruts,
- affecting driver (especially motorcyclist) control along rutted sections,
- providing a poor surface for adhesion of pavement markings, limiting their durability (and therefore their visibility),
- providing a rough surface that limits drivers' ability to effectively brake and steer,
- affecting load stability, especially at intersections where trucks turning left must cross over transverse ruts in the intersecting through lanes.

In addition, limited maintenance has resulted in the accumulation of dust and debris adjacent to travel lanes *(right, at top)*. The accumulated material may reduce tire-pavement friction, particularly when it is wet, increasing the risk of drivers' and cyclists' loss of control in and on the approaches to intersections.

Expected Crash Types:	all crash types
Expected Frequency:	occasional
Expected Severity:	moderate
Risk Rating:	C (moderate-low risk level)

Suggestion: Pavement repair (short term) and rehabilitation/reconstruction (long term) can be considered by the BIA. While many roads within the Navajo Nation are likely to require rehabilitation or reconstruction, the segment of N12 north of Highway 264 is likely to be accorded a high priority on the basis of traffic volumes (including truck volumes) and its role in providing access to the administrative center in Window Rock.

Funding sources may be reviewed with regard to using funds to shorten the pavement maintenance and rehabilitation cycles. Discussions during the RSA preliminary findings meeting suggested that up to 25 percent of IRR Program funding may be used for maintenance.

Road Safety Audit
N-12 (Navajo Nation)
Safety Issue 4: Intersection of N12 and N100 (Window Rock)

The intersection of N12 and N100 is shown below. N100 provides access to the tribal administration complex, the police station, and the memorial park and Window Rock monument. A large residential area is located west of N12 north of the intersection.

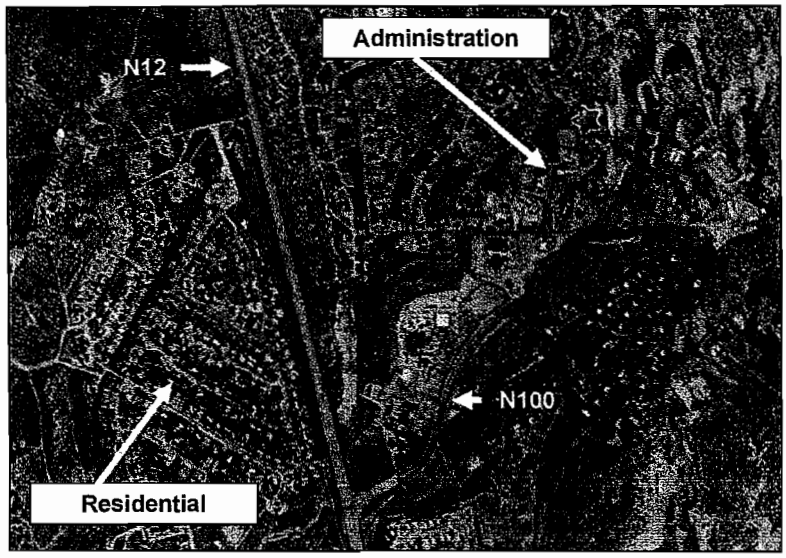


Figure 1.2 in the main text shows a collision peak at this intersection, likely reflecting high traffic volumes and conflicting intersection movements. Figure 1.3 shows that crashes peaked during the morning and afternoon commuter peaks, with a smaller mid-day peak. No collisions were recorded at night (between 9:00 pm and 7:00 am).

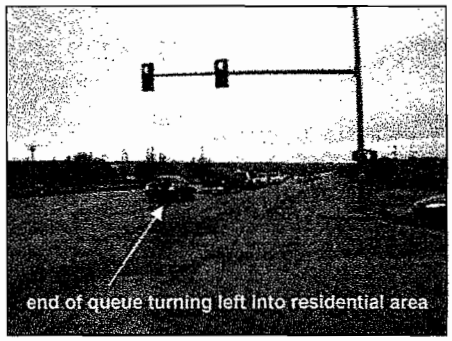
Safety Issue 4(a): The peak-period left turn volumes exceed the capacity of the left turn lanes.

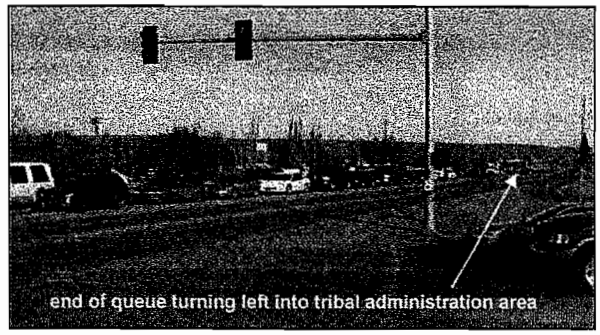
Safety Issue Description: During peak periods, the RSA team observed long left-turn queues on the north leg (morning peak period) and east leg (afternoon peak period). The long queues generated three safety-related issues:

- *north and east legs:* The queues extend past the end of the left turn lane into the adjacent through lane, obstructing through traffic (*below, left and right*).
- *north leg:* The RSA team observed drivers turning right from the residential area onto N12, then immediately turning left onto N100. Because of the close proximity of the residential and N100 intersections, the southbound left-turn queue sometimes extended past the south residential access *(below right)*. When this occurred, drivers from the residential area had to wait for the

left-turn queue to dissipate so they could either break into the queue or join it at its end. Waiting drivers typically obstructed vehicles behind them waiting to exit the residential area.

- *north leg:* Northbound drivers turning left into the residential area must turn through the southbound left-turn queue, which obstructs sightlines between the northbound left-turn traffic and southbound through traffic.





Safety Issues 4(a) and 4(b): *Both photos are looking northward from the intersection of N12 and N100 during the evening (left) and morning (right) peak periods. Back-to-back left-turn lanes are provided on the north leg of the intersection to accommodate left turns into the residential area west of N12 (left-turn queue shown in left photo) or the tribal administration center (left-turn queue shown in right photo). In both photos, the left-turn queues extend past the left turn lanes into the adjacent through lane. The southbound left-turn queue (right) also extends past the south access to the residential area west of N12, located approximately where the yellow school bus can be seen. Drivers exiting the residential area and wanting to turn left at the signal must break into the left turn queue to enter the left-turn lane.*

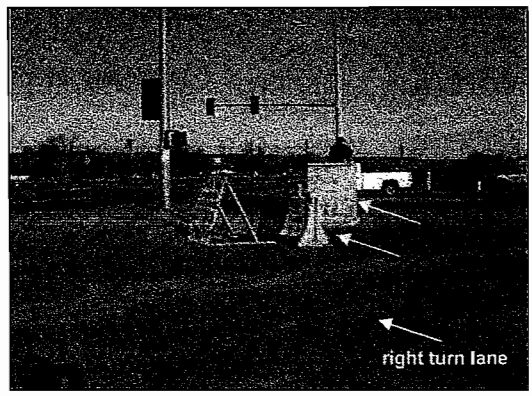
Left-turn vehicles in the through lane obstruct through traffic, increasing the risk of a rear-end collision with vehicles at the end of the queue, or a sideswipe collision with vehicles changing lanes to get around the queue.

Safety Issue 4(b). The access to the residential area west of N12 interferes with operations at the N12/N100 intersection.

Safety Issue Description: The south access to the residential area west of N12 is only about 300 feet from the intersection of N12/N100. Traffic turning left into *(above left)* and out of the residential area, as well as traffic turning right from the residential access and weaving over two lanes on N12 to turn left onto N100, interferes with traffic on the north leg of the N12/N100 intersection. The interference results in delays for vehicles exiting the residential area, and an increased risk of conflicts with potentially high-speed traffic on N12.

Safety Issue 4(c): Fixed-object hazards are located in the right-turn channelizing island.

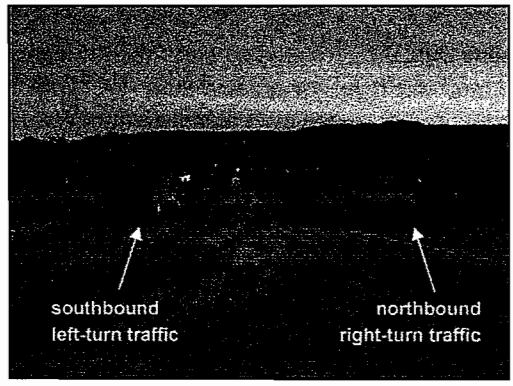
Safety Issue Description: A signal controller box is located on the right-turn channelizing island in the southeast quadrant of the intersection *(right)*. A Jersey barrier segment has been provided to shield the controller from a collision, but the barrier itself presents a fixed-object hazard because of its orientation (approximately perpendicular to a northbound vehicle). Errant vehicles leaving the northbound right through lane or right-turn lane may strike these fixed objects.



Safety Issue 4(c): *Looking north at the signal controller and Jersey barrier segment (yellow arrows) on the right-turn channelization island in the southeast quadrant of the intersection.*

Safety Issue 4(d): Laning on the east exit leg is not clear.

Safety Issue Description: Two streams of traffic from N12 (southbound left-turn traffic and northbound right-turn traffic) enter the east exit leg *(right)*, which is marked as a single lane but wide enough to accommodate two lanes. Drivers in the two joining streams of traffic may be confused regarding whether it is necessary to merge, and, if so, which stream must yield. The risk of conflict and collision between these two joining movements is increased by:



Safety Issue 4(d): *Looking east at two streams of traffic on the east exit leg.*

- the absence of signs or pavement markings designating the number of lanes or directing drivers to merge,
- vehicles turning into the police station driveway about 300 feet from the intersection, which may obstruct eastbound traffic,
- moderately high speeds among right-turning traffic, which enters the east exit leg from a wide-radius right-turn lane,
- jaywalking pedestrians on the east leg, which may obstruct eastbound traffic.

Expected Crash Types: rear-end, sideswipe, or pedestrian collisions

Expected Frequency: occasional

Expected Severity: moderate

Risk Rating: C (moderate-low risk level)

Suggestions:

Extend the westbound-to-southbound left turn lane to accommodate peak demand. The westbound left turn lane does not accommodate peak-period left-turn queues. To prevent the left turn queue from extending into the adjacent through lane, where it obstructs through traffic, the westbound left turn lanes may be extended. The designs to extend the left turn lanes should consider the presence of a horizontal curve on the east leg. The left turn taper should be developed before or after the curve, rather than in the curve. In addition, signing and pavement markings should be introduced clearly identifying the lane as a left-turn lane. (Extending the left turn lane on the *southbound* approach is likely infeasible, since it would interfere with left turns into and out of the residential area west of N12, generating new safety concerns.)

Revise signal operations to clear the southbound left turn queue. The signal timing may be reviewed to extend the green phases for the left turn movements, with the aim of clearing all or most of the left-turn queues during each cycle. Alternatively, the existing queue detection system may be updated to monitor the left turn queues and discharge them when they reach a pre-determined length. Currently, the signalized intersection of N12 and N100 appears to have excess capacity and would be able to accommodate increased green times for left-tum movements.

Introduce staggered working hours at the tribal administration offices to reduce morning and afternoon peak volumes. Much of the morning and afternoon peak demand appears to be commuter traffic related to the tribal administration employer on N100. To reduce peak demand on the N12/N100 intersection, which is the main access to the administration center, staggered working hours may be introduced among the tribal administration offices.

Reconfigure the intersection to include four legs. The south access to the residential area west of N12 is only about 300 feet from the intersection of N12/N100. Traffic turning left into and out of the residential area interferes with traffic on the north leg of the N12/N100 intersection, resulting in an increased risk of conflict and delays for vehicles exiting the residential area. To reduce conflicts and delays, the intersection may be reconfigured to include the access to the residential area, by realigning the main residential access road, providing a frontage road connecting the main access road to the intersection, or realigning N100 on the east side of the intersection.

Reconfiguration of this intersection may include consideration of a double-lane roundabout with right-turn bypass lanes. A roundabout would eliminate the need for a signal, and could be configured to include the residential access (probably realigned southward) and N100. A roundabout may have the added benefits of:

- providing a suitable "gateway" treatment for visitors to the tribal administration complex, memorial park, and Window Rock monument;
- reducing speeds along N12,
- accommodating high-volume left-turn movements,
- providing good intersection visibility.

Relocate the signal controller box on the southeast right turn channelizing island. Reconfiguration of this intersection, or pavement rehabilitation/reconstruction, may provide an opportunity for relocation of the signal controller box to the roadside area. Relocation may be used to increase the clearance distance between the controller box and active travel lanes, and to more effectively shield the box from collision using a more appropriate barrier installation.

Clarify the laning requirements on the eastbound exit leg. To reduce possible driver confusion on the east exit leg, laning may be more clearly designated. If two eastbound lanes are preferred, the following measures may be considered:

- *Install Added Lane (W4-3) warning signs.* The W4-3 sign should be installed in advance of a point where two roadways converge and merging movements are not required. When possible, the W4-3 sign should be placed such that it is visible from both roadways. If this is not possible, a W4-3 sign should be placed on the side of each roadway. When a W4-3 sign is to be installed on a roadway that curves before converging with another roadway that has a tangent alignment at the point of convergence, the *Entering Roadway Added Lane* (W4-6) sign should be used to better portray the actual geometric conditions to road users on the curving roadway.

W4-3

W4-6

- *Delineate the through and right-turn lanes on the exit leg* using pavement markings.

Road Safety Audit
N-12 (Navajo Nation)
Safety Issue 5: Intersection of N12 and N110 (Fort Defiance)

The intersection of N12 and N110 is shown below. N110 provides access to Fort Defiance. A large residential area is located west of the intersection (with vehicle access onto N110). A gas station and convenience store (with a Navajo Transit System bus stop) are located east of the intersection.

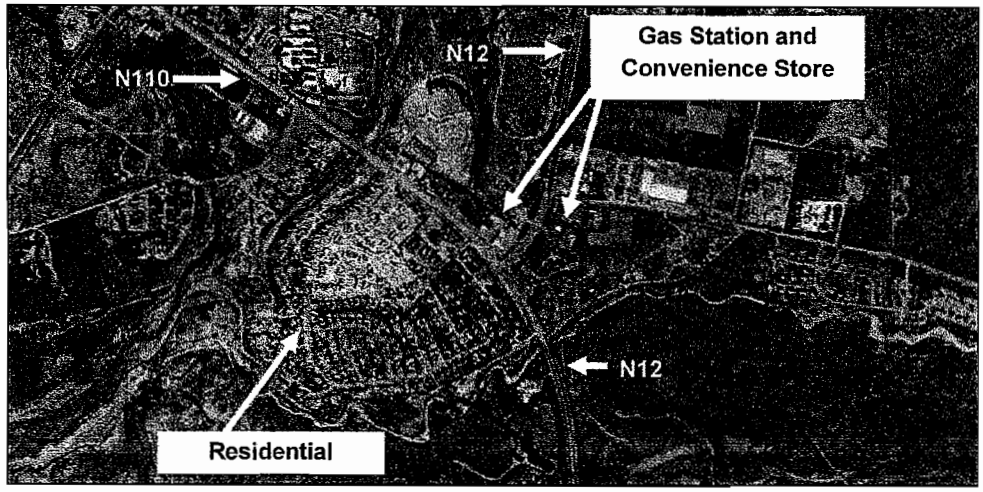


Figure 1.2 in the main text shows a collision peak at this intersection, with 59 reported collisions in seven years. This collision frequency was only marginally less than that at the intersection of N12/N100 in Window Rock (which was 66 crashes in seven years), although the ADT at the Fort Defiance intersection is only about 60 percent of that at the Window Rock intersection. In addition, the proportion of high-severity collisions at the N12/N110 intersection (33 percent) is more than double that at the N12/N100 intersection (15 percent). Figure 1.4 shows that crashes at the N12/N110 (Fort Defiance) intersection occurred throughout the day, with a morning peak between 9:00 and 10:00 am. Only one collision was reported at night (10:00 pm to 5:00 am).

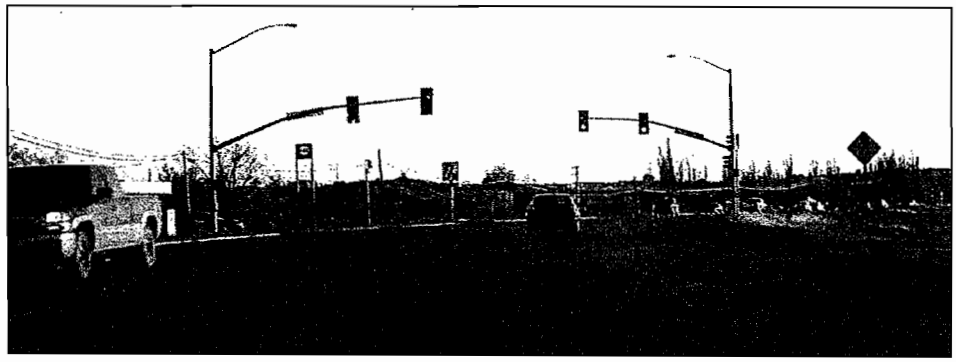
Safety Issue 5(a): The intersection configuration and conspicuousness may be limited, especially on the westbound approach.

Safety Issue Description: Through drivers wanting to stay on N12 must turn left (southbound) or right (northbound) at this intersection. Unfamiliar drivers who fail to anticipate the need for through traffic to turn may become confused on the approaches to the intersection. To assist drivers through this unexpected maneuver, laning and traffic control should be clearly visible sufficiently far in advance of the intersection that drivers can maneuver safely. However, laning and signal visibility is limited by:

- *horizontal and vertical curves:* Horizontal and vertical curves on the westbound approach to the intersection limit drivers' view of laning, traffic control, and conflicting vehicle movements at driveways *(below).*
- *inconspicuous signal display:* A review of the signal display *(below)* suggests that it is relatively inconspicuous for westbound drivers because of the exclusive use of post-mounted signal displays. The signal inconspicuousness may be aggravated by the relative conspicuousness of the adjacent overhead signal display at the intersection of N12/N54 (about 600 feet before the intersection of N12/N110), also shown below.

Drivers who fail to anticipate the intersection layout and control may be unprepared to stop or navigate through the intersection, increasing the risk of conflict and collision.

Intersection of N12 and N110 (looking west): *Signal display consists of three pole-mounted signal heads, only one of which has a backplate. The horizontal curve on this approach results in a signal placement that is well to the right of approaching traffic. The middle signal head has been oriented to face drivers who are closer to the intersection, and is therefore not visible further back on the approach where this photograph was taken. A slight vertical crest curve on this approach makes the signal display appear low, and may result in partial obstruction of the signal display for drivers following a tall vehicle such as a truck or SUV. Finally, the wide expanse of unmarked pavement offers little guidance to drivers concerning the configuration or laning at this T-intersection, where all westbound drivers must turn.*



Intersection of N12 and N54 (looking west), *for comparison with the adjacent RSA intersection): Signal display consists of three signal heads (two of which are mounted overhead on mast-arms) with 12-inch signal lenses and backplates. Because the westbound approach to this intersection is fairly straight, the signals are oriented toward approaching traffic.*

Safety Issue 5(b): Movements at driveways near the intersection may contribute to conflicts.

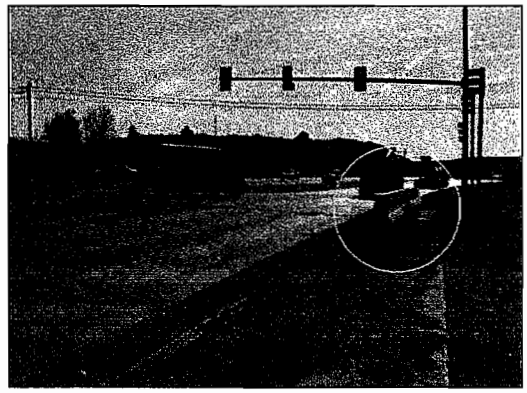
Safety Issue 5(b): *Northbound approach to the intersection, showing driveways for disused gas station at right.*

Safety Issue Description: Gas stations are located in the northeast and southeast quadrants of the intersection. The disused south gas station has two driveways on N12 close to the intersection *(right)*, and the north (Conoco) station has two driveways on N110. Turns into and out of the gas station driveways may conflict with operations at the signalized intersection, as well as pedestrian traffic.

Safety Issue 5(c): A fixed-object hazard is located close to travel lanes.

Safety Issue Description: Signal poles are located on the west side of the intersection *(right)*. A Jersey barrier segment has been placed in front of the signal poles to shield them from a collision, but the barrier itself presents a fixed-object hazard because of:

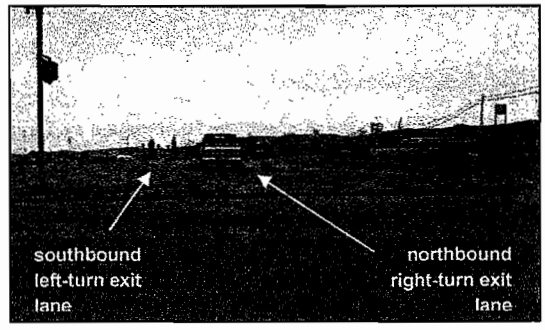
- its perpendicular orientation to westbound left-turn traffic;
- the absence of end treatments to mitigate the severity of a collision with southbound traffic;
- its close proximity to travel lanes and relatively large size.



Safety Issue 5(c): *Looking south at the Jersey barrier segment (yellow circle) on the west side of the intersection. The barrier is likely intended to protect drivers from striking the signal poles behind it, but the barrier itself presents a fixed-object hazard that is more likely to be struck because of its closer proximity to travel lanes and its larger size.*

Safety Issue 5(d): Laning on the east exit leg is not clear.

Safety Issue Description: Two streams of traffic (southbound left-turn traffic from N110 and northbound right-turn traffic from N12) enter the east exit leg *(right)*. The exit leg is marked for two lanes, though the markings are very faded. Five factors may increase the risk of conflict and collision on the east exit leg:



Safety Issue 5(d): *Looking east at the east exit leg*

- Faded lane markings provide little

guidance to drivers concerning the number of lanes on the exit leg, and consequently whether it is necessary to merge.

- Potentially busy gas-station and convenience-store driveways on the exit leg generate conflicting movements.
- Horizontal and vertical curves on the exit leg limit drivers' view of conditions ahead.
- Right-turning traffic enters the exit leg at a moderately high speed from a wide-radius right-turn lane.
- Jaywalking pedestrians on the east leg (walking to and from the Navajo Transit stop at the convenience store) may cause drivers to slow or stop unexpectedly.

Expected Crash Types: rear-end, sideswipe, or pedestrian collisions

Expected Frequency: occasional

Expected Severity: moderate

Risk Rating: C (moderate-low risk level)

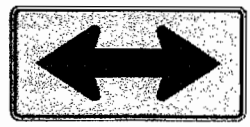
Suggestions: The frequency and high severity of crashes at this intersection, combined with a high proportion of crashes attributed to driver error (about 2/3) and alcohol (about 1/4), suggest that measures to improve driver guidance and promote driver expectancy would be beneficial.

Improve signing and pavement markings. Enhanced signing and pavement markings may be considered:

- Lane markings and arrows have been provided on the westbound approach, but are faded and worn *(right)*. Supplementary lane use signs are not provided. Improved pavement markings and advance supplementary lane control (R3-5 through R3-8) signs may be considered to improve driver guidance on the approaches to the intersection (especially the curved westbound approach). Posting the lane control signs overhead (on a mast arm) would enhance the conspicuousness of both the signs and the intersection. Overhead lane control signs could be supplemented with trailblazing signs indicating the movement required to continue along N12, and with signing indicating that trucks should turn in the outside left-turn lane.

- A Signal Ahead (W3-3) warning sign *(right)* may be posted on the westbound approach to advise drivers of the signalised intersection, which may not be conspicuous because of the horizontal and vertical curves on the westbound approach.

- To facilitate the dual left turn (westbound to southbound), turn path markings may be provided in the intersection.
- A Two-Direction Large Arrow (W1-7) sign *(right)* can be installed on the far side of a T-intersection in line with approaching traffic to advise drivers that they must turn at the intersection.



W1-7

- Staggered stop bars may be used to position vehicles in the dual left-turn lane (the southbound through movement on N12) slightly behind vehicles in the adjacent right-turn lane, improving sight lines for drivers turning right on red.

Other suggestions to improve signing and pavement markings are included under Issue 1 above.

Upgrade the signal display (and remove the Jersey barrier) on the west side of the intersection. The Jersey barrier segment shielding the signal poles on the west side of the intersection represents a fixed-object hazard. The Jersey barrier may be removed. To reduce the number of signal poles and remove them away from the path of a vehicle approaching from the west leg, the two signals mounted on separate poles opposite the westbound approach *(shown circled in red below)* may be removed and replaced with a dual signal display on a mast-arm, mounted to the right of the approach. The conspicuousness of the new signal display may be enhanced using 12-inch lenses and backplates. Lane control signing may be posted on the signal mast-arm.

Review opportunities for access management. The *Access Management Manual* (Transportation Research Board, 2003) notes that roads are an important public resource that are costly to build and maintain, and consequently should be effectively managed. Where access is not effectively managed, roadway safety and capacity may be affected. For this reason, the closure of redundant driveways may be considered. Redundant driveways nearest the intersection (where drivers' attention is focused on intersection control and conflicting movements, so interference from driveway traffic may be least expected) may be considered for closure. Removal of the redundant driveway from the disused gas station in the southeast quadrant of the intersection may be considered early, before the property is redeveloped and access changes are more difficult.

Upgrade the east exit leg. Faded lane markings, conflicting driveway movements, horizontal and vertical curves, jaywalking pedestrians, and moderately high right-turn speeds all contribute to a risk of conflict and collision on the east exit leg. To reduce this risk, the following measures may be considered:

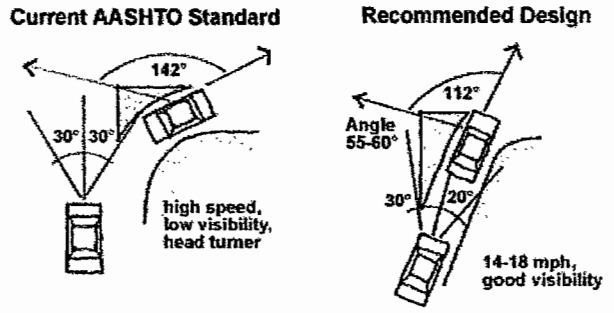
- *Improved pavement markings:* Faded lane markings may be refreshed to enhance driver guidance, particularly where horizontal and vertical curves may limit drivers' view of conditions ahead (especially at night). An "Added Lane" (W4-3) sign may be installed to provide additional guidance. The W4-3 sign should be installed in advance of the point where two roadways converge and merging movements are not required. When possible, the W4-3 sign should be placed such that it is visible from both roadways. If this is not possible, a W4-3 sign should be placed on the side of each roadway. When a W4-3 sign is to be installed on a roadway that curves before converging with another roadway that has a tangent alignment at the point of convergence, the *Entering Roadway Added Lane* (W4-6) sign should be used to better portray the actual geometric conditions to road users on the curving roadway.

W4-3

W4-6

- *Access consolidation* has been discussed above. Removal of driveways from N12, an arterial, to non-arterial roadways may be considered.

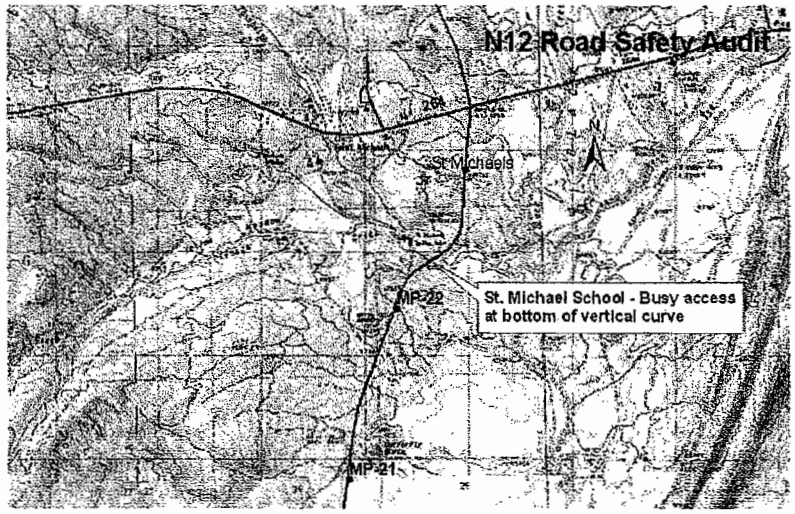
- *Realignment of right turn lane:* Realigning the right turn lane *(right)* to reduce the turn radius, and therefore right-turn speeds, would have added benefits in terms of accommodating safer pedestrian crossings. This realignment can be included in a future intersection upgrade, but it is noted that a redesigned right-turn lane must still be able to accommodate trucks and buses.



Source: Pedestrian and Bicycle Information Center (www.walkinginfo.org)

Road Safety Audit
N-12 (Navajo Nation)
Safety Issue 6: N12 near St Michael's School

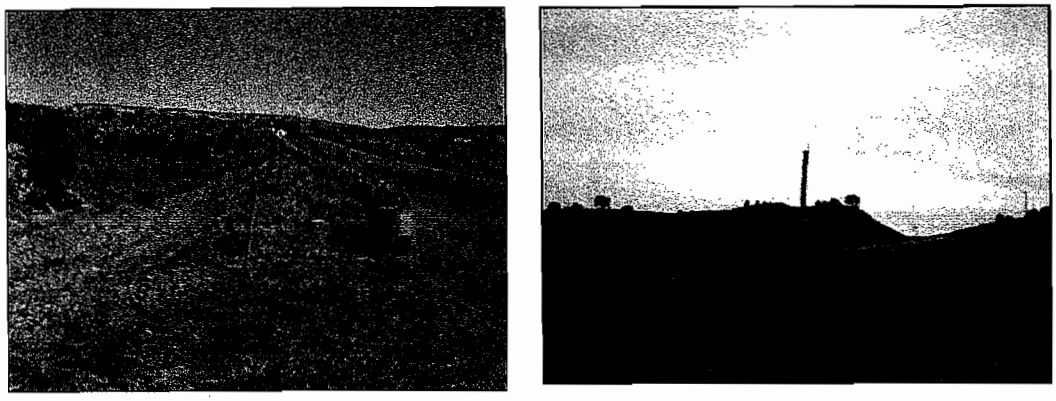
N12 near the St Michael's School driveway (south of Highway 264) is shown below. N12 is a two-lane rural roadway with a driveway for the St Michael's school on the west side of the road. Horizontal curves are present on both highway approaches. The posted speed limit on this section of N12 is 50 mph.



Safety Issue 6(a): Horizontal and vertical curves limit sight distance on the approaches to the school driveway.

Safety Issue Description: Horizontal and vertical curves on both approaches (northbound and southbound) to the St Michael's school driveway limit sight distances, as shown below. Sight lines between drivers approaching on N12 and drivers turning left or right from the driveway are limited to about 750 feet. This distance meets or exceeds AASHTO requirements[1] for stopping sight distance on a downgrade and intersection sight distance for both left and right turns, but does not meet AASHTO requirements for decision sight distance. Decision sight distance is generally considered a conservative value that allows drivers more distance to perform evasive maneuvers (other than a sudden stop) when information is difficult to perceive (as at this unlighted driveway) or when unexpected maneuvers are required (as at this driveway in an undeveloped rural area).

[1] American Association of State Highway and Transportation Officials, *Geometric Design of Highways and Streets* ("Green Book"), 2004. A minimum stopping sight distance of 550 feet is advised for a design speed of 55 mph and downgrade of 6 percent. Minimum intersection sight distances of 530 feet (for vehicles turning right from a stop) and 610 feet (for vehicles turning left from a stop) are recommended for a design speed of 55 mph, but these values would be low for a truck turning from the driveway because of the vertical alignment (sag vertical curve) around the driveway.



Looking north (left) and south (right) from the St Michael's School driveway: Horizontal and vertical curves limit sight lines at the driveway to about 750 feet in either direction.

The risks associated with limited sight lines are increased by three factors:

- Drivers have a substantial workload along this segment of N12, which is characterized by a combination of horizontal curvature (reverse curves) and vertical curvature (crest-sag-crest sequence) in an area with no night lighting and potentially conflicting driveway movements.
- Advance information and warning signs are not consistent. A small white-on-green "St Michael's School" information sign is provided on the northbound approach only, and a yellow diamond "Intersection Ahead" warning sign is provided on the southbound approach only. Both signs provide useful information that ease the driving task (although the legibility of the green information sign is limited by small lettering), but the presence of only one sign on each approach limits information provided to drivers.
- The school driveway meets N12 on a downgrade of about 2 or 3 percent, potentially affecting the braking efficiency of vehicles approaching the highway. The driveway is also slightly skewed, resulting in the need for drivers looking right to turn their heads further. Drivers with limited neck mobility (including many older drivers) may find this maneuver difficult, with the result that their view of northbound traffic approaching from the right may be limited.

Safety Issue 6(b): Roadside hazards may increase the potential risk and severity of an off-road collision.

Safety Issue Description: A steep foreslope is present off the northbound shoulder *(below, left and right)*. This critical slope (steeper than 1V:3H) represents a roadside hazard that could cause a vehicle to overturn. A guard rail has been installed to prevent drivers from entering the roadside area and encountering the steep slope. However, the guardrail does not cover the length of need *(below right)*, with the result that drivers can leave the roadway and enter the sideslope at a location where it is unprotected by the guardrail.

Looking north toward the intersection of N12 and St Michael's School driveway (at left): The roadside incorporates a steep slope off the shoulder. The RSA team is standing near the terminal of the guardrail adjacent to the northbound shoulder.

Looking north at the steep sideslope (approximately 1V:1.5H) off the northbound shoulder of N12. The guardrail terminus is visible at top left (red circle). The guardrail does not appear to cover the entire length of need, with the result that drivers can leave the roadway and encounter this non-recoverable (steeper than 1:4) or critical (steeper than 1:3) sideslope unprotected by the guardrail.

The risk of off-road collisions is increased by three factors:

- Similar to Safety Issue 6(a) above, the risk of off-road collisions is increased by the combination of horizontal curvature (reverse curves) and vertical curvature (crest-sag-crest sequence) in an area with no night lighting and potentially conflicting driveway movements.
- Disused sign base stubs are present just off the northbound shoulder on N12 and next to the school driveway. Drivers who strike these bases may lose control (particularly if the sign stub damages vehicle tires), resulting in an increased risk of an off-road collision.
- Although most drivers leaving the school would be familiar with the T-intersection configuration at the driveway, unfamiliar drivers may be unaware that there is no east leg at this intersection. No checkerboard or arrow sign is provided to direct drivers exiting the school driveway to turn right or left, and the guardrail does not extend opposite the driveway exit to block a vehicle going straight.

Expected Crash Types: rear-end, sideswipe, and off-road collisions

Expected Frequency: infrequent

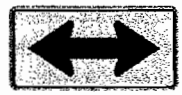
Expected Severity: high

Risk Rating: C (moderate-low risk level)

Suggestions:

Improve signing around the school driveway. Although AASHTO requirements for stopping sight distance and intersection sight distance appear to be met at the St Michael's School driveway, AASHTO requirements for decision sight distance are not met. To improve driver expectancy (which would allow drivers to better anticipate potential conflicts ahead), improved signing may be considered:

- *Two-Direction Large Arrow sign:* For drivers exiting the school driveway, a Two-Direction Large Arrow (W1-7) sign *(right)* may be installed on the far side of the T-intersection to indicate to drivers that they must turn right or left onto N12.

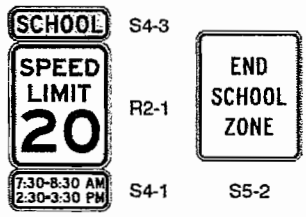


W1-7

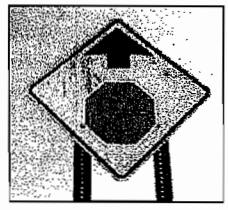
- *Intersection Warning sign:* **A** Side Road (W2-2) sign may be provided on the northbound approach to advise drivers of the upcoming school driveway and the possibility of turning and entering traffic. The sign is already provided on the southbound approach to the driveway. An advance street name plaque may be installed above or below the sign on both approaches to more clearly identify the intersection. The plaque would replace the existing white-on-green information sign on the northbound approach, which has limited legibility because of the use of small lettering.

W2-2

- *School Speed Limit sign:* Alternatively, the posting of a School Speed Limit assembly may be considered. This sign or assembly is used to indicate the speed limit where a reduced speed zone for a school area has been established in accordance with law based upon an engineering study, or where a speed limit is specified for school areas by statute. The reduced speed zone should begin at a point 100 ft from the school property line. The School Speed Limit assembly shall consist of a top plaque (S4-3) with the legend SCHOOL, a Speed Limit (R2-1) sign, and a bottom plaque (S4-1, S4-2, S4-4, or S4-6) indicating the specific periods of the day and/or days of the week that the special school speed limit is in effect. The end of the school speed zone is marked with a standard Speed Limit sign showing the speed limit for the section of highway that follows, or with an END SCHOOL ZONE (S5-2) sign. The posting of a reduced speed may require enhanced enforcement.



- *Chevron signs:* Chevron Alignment (W1-8) signs may be used to provide additional emphasis andguidance for a change in horizontal alignment. Chevron signs may be used as an alternate or supplement to standard delineators on curves.
- Defaced and/or faded "Stop" and "Stop Ahead" *(right)* signs on the driveway exit may be replaced with highly reflective signing for improved visibility and recognition. The placement of "Stop Ahead" sign may be reviewed with reference to its placement, which appears to be close to the existing "Stop" sign.

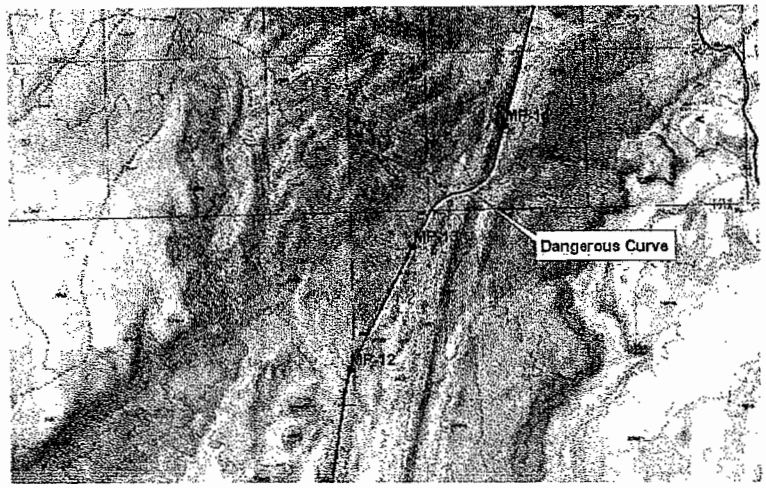


Improve curve delineation. Curve delineation is currently provided by edgelines, but the visibility of the edgelines may be limited by snow, wet pavement, or worn markings. To improve curve delineation, the use of post-mounted delineators may be considered. Delineators are particularly beneficial at locations where the alignment might be confusing or unexpected, such as at curves, and offer effective guidance devices at night and during adverse weather. An important advantage of delineators is that they remain visible when the roadway is wet or snow covered.

Increase the length of the guardrail. The AASHTO *Roadside Design Guide* advises that a roadside barrier should be designed to incorporate a "runout length", the theoretical distance needed for a vehicle that has left the roadway to come to a stop. This length is measured from the upstream extent of the hazard to the point at which a vehicle is assumed to leave the roadway. For a design speed of 55 mph and ADT of between 2,000 and 6,000 vehicles per day, a runout length of 345 feet is advised. The guardrail may be reviewed to confirm its required length, and extended to better accommodate drivers leaving the shoulder where a hazardous sideslope is present or in the runout distance prior to the slope.

Road Safety Audit
N-12 (Navajo Nation)
Safety Issue 7: S-curve on N12

N12 between MP 13 and MP14 has a sharp S-curve, as shown below. In the area of the curve, N12 is a two-lane rural roadway with 8foot paved shoulders and a guardrail on the east side. The guardrail helps to prevent drivers from entering the steep foreslope on the east side of the highway.



Safety Issue 7(a): A steep roadside slope may increase the potential risk and severity of an off-road collision.

Safety Issue Description: A steep foreslope is present off the northbound shoulder *(below right)*. This unrecoverable slope (steeper than 1V:4H) represents a roadside hazard, since a driver entering the slope would likely be unable to regain control of his vehicle before reaching the bottom of the slope, where trees and rocks are present. A guard rail has been installed to prevent drivers from entering the roadside area and encountering the steep slope. However, the guardrail does not cover the length of need, with the result that drivers can leave the roadway and enter the sideslope at a location where it is unprotected by the guardrail.

The risk of off-road collisions is increased by:

- the combination of horizontal curvature (reverse curves) and vertical curvature. A crest vertical curve on both the northbound approach *(below left)* and southbound approach limits drivers' view of the horizontal curve ahead, in an area with no lighting to provide night-time guidance;
- long tangent alignments on both approaches to the S-curve, which may limit drivers' expectation of the horizontal curves;
- missing post-mounted delineators on the northbound approach.

Southbound on N12 approaching the south horizontal curve: A crest vertical curve limits drivers' view of the leftward horizontal curve ahead.

Looking north from the east side of N12, on the roadside next to the south horizontal curve: A steep foreslope is present adjacent to the roadway where there is no guardrail. The two RSA team members in the photo are walking on the paved shoulder on N12.

Safety Issue 7(b): Drivers may be unprepared for vehicles pulling into or out of a school bus stop south of the S-curve.

Safety Issue Description: A school bus stop with a small shelter has been provided off the southbound shoulder along N12, south of the S-curve. A horizontal curve limits sightlines on the approach to the bus stop. As a result, southbound drivers may be unprepared for vehicles (including school buses) pulling off or onto the roadway at the bus stop.

Expected Crash Types:	off-road, rear-end, and sideswipe collisions
Expected Frequency:	infrequent
Expected Severity:	high
Risk Rating:	C (moderate-low risk level)

Suggestions:

Rumble strips: In the undeveloped area around this site, shoulder and centerline rumble strips may be considered on the approaches to and in the horizontal curves on the S-curve. Rumble strips provide auditory and tactile warning to drivers who have passed over the centerline or onto the shoulder, and thus can help to prevent crashes associated with poor visibility (including at night, in fog, or in rain) and drunk or drowsy driving.

A variant of shoulder rumble strips is the *edgeline rumble strip*. These rumble strips are located adjacent to the travel lane along the edgeline. The edgeline, which is painted directly on the rumble strip, has enhanced reflectivity during since tire wear is minimized, and water does not accumulate, on the vertical surface:

Larger warning signs: Current curve warning signs are the conventional 30"-by-30" yellow diamond sign. Sign conspicuousness may be increased by increasing the size of the signs to 36" by 36" or larger.

Chevron signs: Chevron Alignment (W1-8) signs may be used to provide additional emphasis and guidance for a change in horizontal alignment. Chevron signs may be used as an alternate or supplement to standard delineators on curves. Spacing of chevron signs should be such that the road user always has at least two in view, and the signs should be visible for a sufficient distance to provide the road user with adequate time to react to the change in alignment.

Increase the length of the guardrail. The AASHTO *Roadside Design Guide* advises that a roadside barrier should be designed to incorporate a "runout length", the theoretical distance needed for a vehicle that has left the roadway to come to a stop. This length is measured from the upstream extent of the hazard to the point at which a vehicle is assumed to leave the roadway. For a design speed of 55 mph and ADT of between 2,000 and 6,000 vehicles per day, a runout length of 345 feet is advised. The guardrail may be reviewed to confirm its required length, and extended to better accommodate drivers leaving the shoulder where a hazardous sideslope is present or in the runout distance prior to the slope.

School Bus Stop Ahead sign: A "School Bus Stop Ahead" (S3-1) sign *(right)* should be installed in advance of locations where a school bus, when stopped to pick up or discharge passengers, is not visible to road users for a distance of 500 feet in advance, and where there is no opportunity to relocate the bus stop to provide 500 feet of visibility.

S3-1

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OPUS Hamilton

- Traffic Operations
- Transportation Planning
- Road Safety Engineering
- Transit and Sustainability
- Asset Management
- Project Management

EXHIBIT

tabbies D

FY 2015 TTIP Project Information Sheet

Office of Federal Lands Highway
US Department of Transportation - Federal Highway Administration

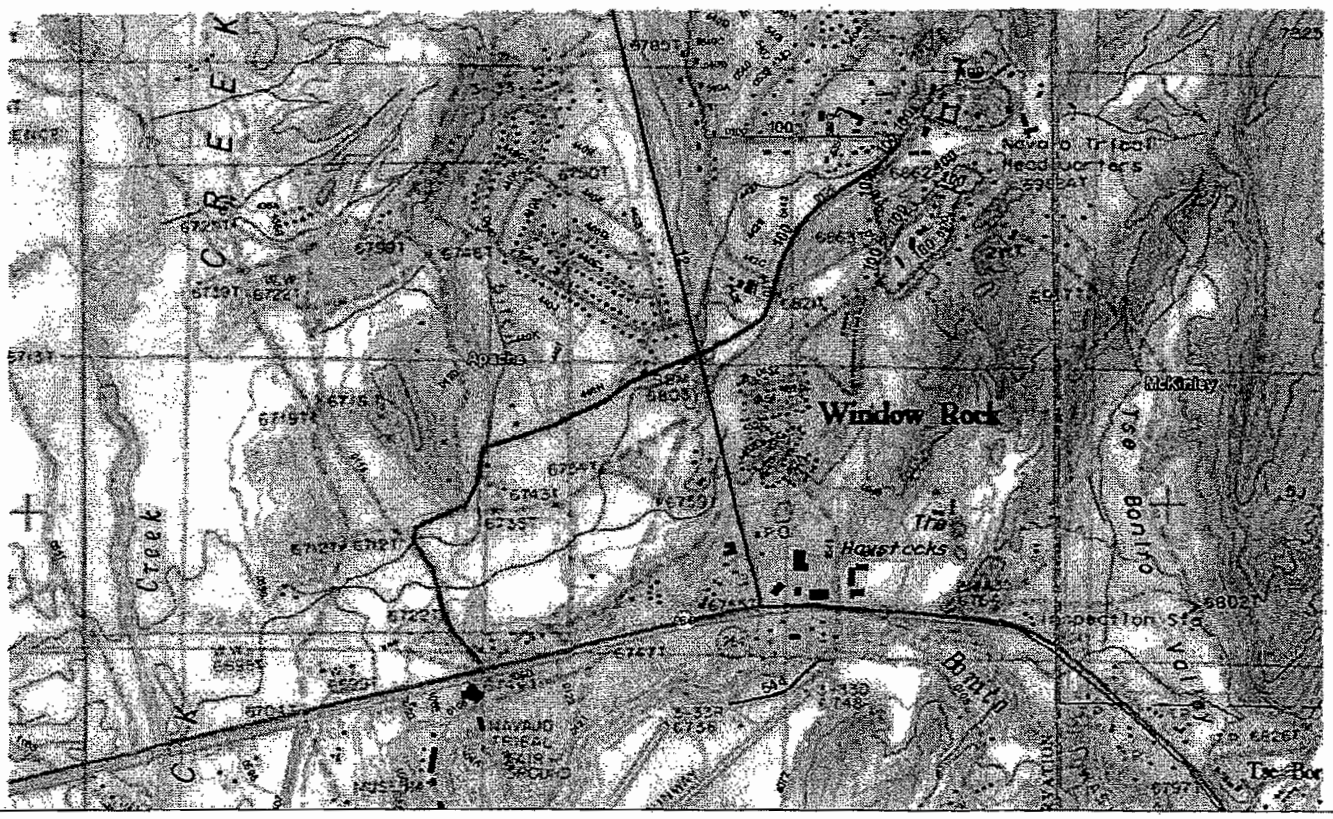
Tribal Transportation Program
Transportation Improvement Program

Agency:	Ft. Defiance	Priority No.:		To Be Delivered by:	NDOT
Tribe	Navajo Nation			Date	7/2/2013
Funding Source	TTP	(Bridge, 2% Planning, Safety, etc)		Current FY	2015

PROJECT INFORMATION: Is Project on Current LRTP? ☐ Include In STIP ☑ STIP Amount $0

Project Name	N100(1-1)/N12(1A)2,4 NN Capitol Streets & Access to Judicial Complex
Location	Window Rock
Type of Work	Pavement Rehabilitation & Widening
Route Num and Section	N100 Sec. 50 — Project Number N100(1-1)/N12(1A)2,4
Length	.70 Miles — County Apache
State	Arizona — Construction Year 2020
Comments	BIA is negotiating with their consultant to develop feasibility for alternate alignment into NN Capital administrative area. BIA recommends Round-About at the intersection of N100 and N12. Need Archeaology, EA/BE and NEPA.

Activity	2015	2016	2017	2018	2019	TOTAL
Administration	$0	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$60,000	$25,000	$0	$0	$0	$85,000
Construction	$0	$0	$0	$0	$0	$0
Construction Engineering	$0	$0	$0	$0	$0	$0
Transit	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0
TOTAL	$60,000	$25,000	$0	$0	$0	$85,000



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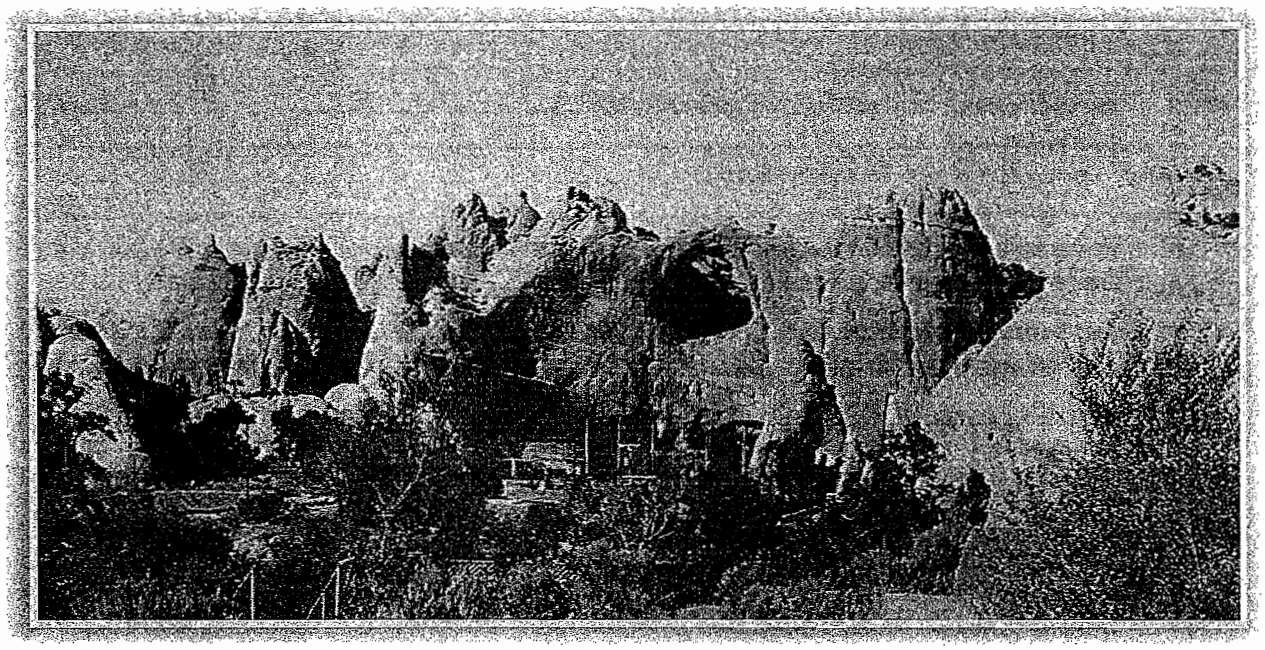
Window Rock Roadways

Prepared for

Bureau of Indian Affairs

Navajo Area Office, Division of Transportation

DRAFT Feasibility & Traffic Study



January 2015

Prepared by
J2 Engineering & Environmental Design, LLC

engineering and environmental design

Engineering Services Window Rock Roadways
Project Number: N100(1-1)/N12a(1-1)2&4
Task Number: A14PD00560

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1.0 Introduction

Beginning in August of 2014 the Bureau of Indian Affairs (BIA) Navajo Region Division of Transportation (NRDOT) in collaboration with the Navajo Division of Transportation (NDOT) initiated the preparation of this roadway feasibility and traffic study for roads located in Window Rock, Arizona. See **Figure 1-1** for a vicinity map. The intent of this study is to evaluate existing traffic circulation along BIA Navajo Route 12 (N12) and Navajo Route 100 (N100/Window Rock Boulevard) with a focus on the intersection of these two routes. The study also examines alleviating the existing traffic congestion with a study of the roadway network leading into, and out of, the existing Navajo Nation government complex area. See **Figure 1-2** for the project study limits.

1.1 Study Area Overview

The study area is approximately 2.6 square miles (6.7 km) located on the Navajo Nation in Apache County within Township 16 North and Range 31 East, Sections 5, 6, 7, 8, 17 and 18; and is generally bounded by the Arizona Department of Transportation (ADOT) State Route 264 (SR 264) to the south, the Arizona/ New Mexico state line to the east, Rocky Ridge Road to the north, and Mustang Road to the west. The general location is the northeast part of Arizona, north of Interstate 40 (I-4) near the Arizona and New Mexico state line.

Window Rock is a district within the Saint Michaels Chapter (Tribal administrative district of the Fort Defiance Agency), home to the capital of the Navajo Nation (Nation) and serves as the major seat of government for Tribal and Federal offices including the legislative, executive, and judicial branch of the Nation. The 2010 census states a population of 2,712 residents, however this count has most likely increased at the time of this report and this population count does not reflect the major population influx from surrounding communities, such as Saint Michaels to the west, Fort Defiance to the north and Gallup to the east, during the course of governmental operations of the Nation. Commuter traffic significantly contributes to the mentioned traffic congestion, mainly during the standard work days from Monday through Friday, especially during the peak times of morning rush hour, lunch hour and afternoon rush hour.

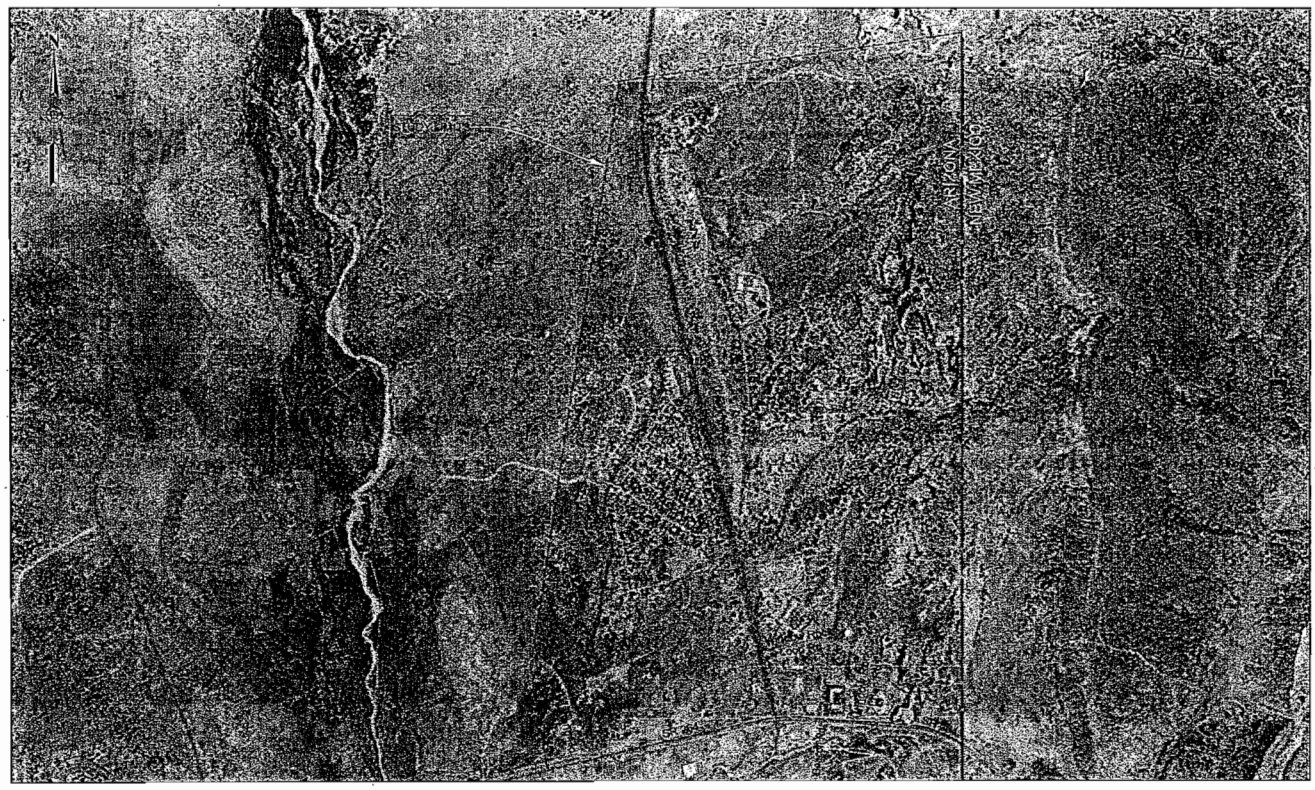
1.2 Purpose and Need

This feasibility and traffic study is the first step in addressing the traffic issues at the N12/N100 intersection, as well as relieving traffic congestion and accommodating future developments in the area. Future developments and growth will significantly and adversely contribute to the existing traffic issues if no action is taken.

The study examines improving N100 by means of a roadway reconstruction with the addition of roundabouts at the Navajo Hill Drive located at the east terminus of N100 and at the N12 intersections. The roundabout at N12 is projected to be a two-lane roundabout in order to facilitate the projected traffic capacity. These roundabouts could potentially increase traffic capacity by 30 to 50 percent compared to traditional signalized intersections according to Federal Highway Administration (FHWA) studies.

VICINITY MAP

FIG 1-1



PROJECT STUDY LIMITS

FIG 1-2

In conjunction with the N100 roadway and intersection improvements, preliminary street alignments/alternatives were developed. Seven preliminary alternatives are evaluated for a new secondary roadway, which are described in **Section 4.0** and shown in **Figure 1-3**, in order to help alleviate traffic flow while also accommodating future developments looking at a 20-year horizon. This secondary roadway alternative also serves as an emergency ingress/egress for the government complex area. Currently, N100 is the only continuous all-weather roadway into and out of this area. The fire and police departments are located off of N100 on the proposed reconstruction section. The new secondary roadway will relieve traffic congestion at both the major intersections of SR 264/N12 and N12/N100 thereby improving the overall traffic operations at these intersections. The traffic operation is typically categorized by a grading system called level of service (LOS), which is a letter designation ranging from A (no delay) to F (severe congestion).

Future developments dictate some of the alternatives discussed within this report. For example, some alternatives will not produce an immediate improvement in current traffic operations, therefore these alternatives were eliminated. These eliminated alternatives may be warranted when future commercial development occurs along or near the routes. Alternatives which provide the most significant improvement in the LOS and traffic operations are analyzed and discussed in detail in Section 7.0 of this report.

1.3 Goals and Objectives

The goals for this study include:

- Identify necessary improvements for routes N100 and N12 in order to mitigate traffic congestion and to achieve a LOS of C as a minimum, with a LOS of B as desirable.
- Identify a secondary new roadway alignment to be constructed in order to achieve the desired LOS for the existing conditions and 20-year horizon, and to also serve as an emergency ingress/egress to the existing government complex area.

The specific objectives of the study include:

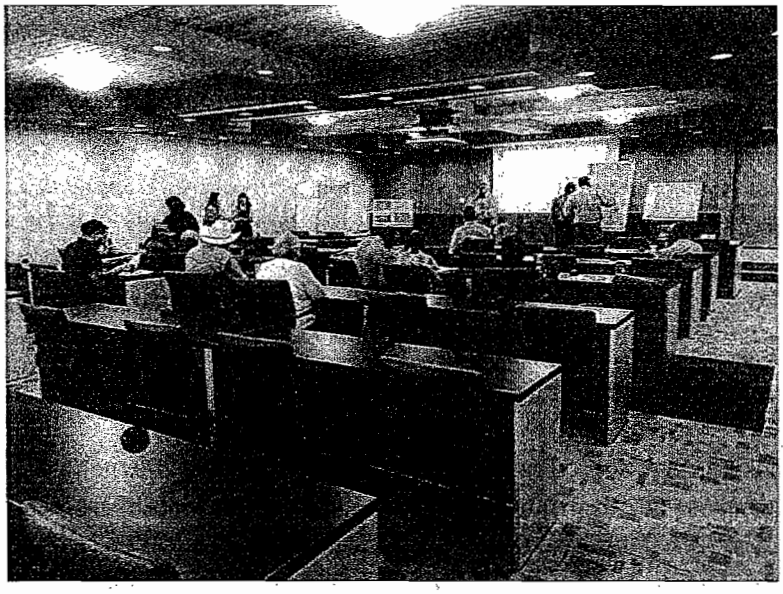
- Identify improvements for N100 and N12.
- Identify potential secondary alternative alignments.
- Determine the preferred alignment.
- Provide a list of constraints/benefits for the preferred alignment.
- Develop conceptual construction cost estimates for the preferred alternatives and concepts.
- For the preferred alternative, identify the short-term (5-Year), mid-term (10-year), and long-term (20-year) improvements necessary to maintain acceptable traffic operations and levels of service.

Figure 1-3
Seven Preliminary Alternatives

Window Rock, Arizona

1.4 Public Outreach

Public involvement for this feasibility study is a vital component of the success of the study and future improvements. J2 Engineering has assisted the BIA and NDOT in presenting feasibility alternatives to the public to incorporate and solicit public feedback into the decision making of the chosen alternative(s). A public meeting was conducted on September 24, 2014 (morning session and afternoon session) where comments have been incorporated into this feasibility report and final recommendation. See **Appendix A** for the Public Meeting/Input Summary Report.



Public Meeting Held at NDOT Facilities (Several minutes before start, waiting for more attendees)

2.0 Existing and Future Conditions

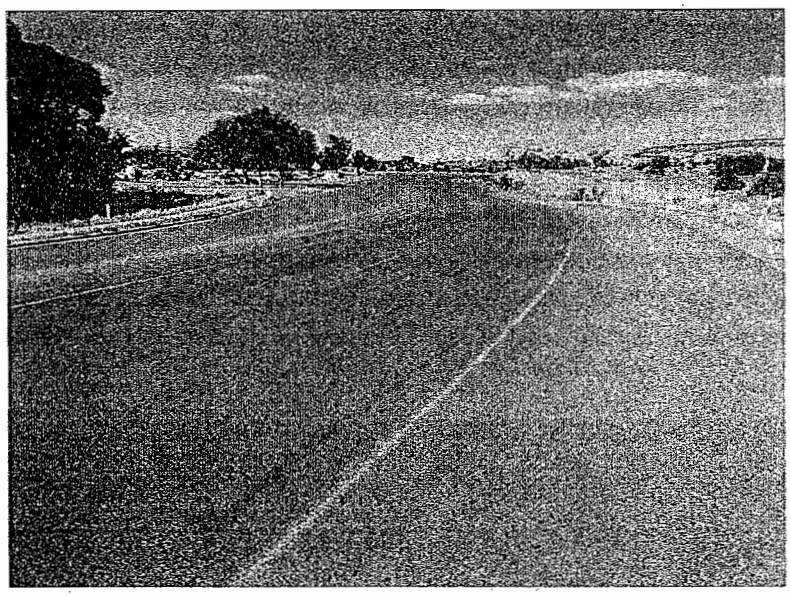
The main transportation spine is comprised of the north-south oriented BIA N12 route and the east-west SR 264 route, both of which operate as a major arterial type roadway. N100 is the only all-weather access to the governmental complex area. A detailed description of these three routes (N100, N12, and SR 264) is located below in **Sections 2.1.1, 2.1.2 and 2.1.3**. The remaining interior roadways in the Window Rock community operate as a collector and local type and have limited access to both N12 and SR 264. Window Rock is designated by the Navajo Nation as a primary growth center for economic development, including the communities of Fort Defiance and Saint Michaels, which are connected directly to the study area via existing roadways. This growth trend will most likely continue along with conceptual and planned future commercial and governmental developments.

2.1 Existing Study Area and Roadways

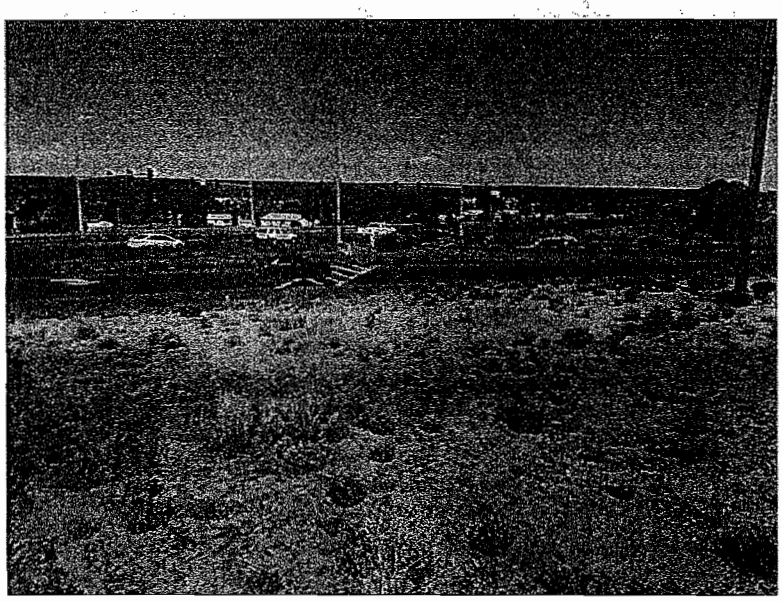
The character of the study area can be considered urban in terms of traffic count and distinction as the capital of the Nation. SR 264 runs through the southern portion of the study area. SR 264 continues west to the communities of Saint Michaels, Oak Springs, and Ganado; east to Gallup, New Mexico. N12 intersects SR 264 at its south terminus and continues north to the communities of Fort Defiance, Sawmill and Navajo.

2.1.1 Existing N100 Roadway (Window Rock Boulevard)

N100 provides access to several government offices, the Veterans Memorial and the Window Rock monument composed of an arching sandstone geologic formation. Offices include the President's Office, the Council Chambers, Administration Office Complex (currently being renovated), Division of Public Safety and the fire department. The existing roadway is comprised of two travel lanes in each direction with a striped median two-way continuous left turn lane. Further east and just before the Navajo Hill Drive intersection, N100 tapers down to a two lane road, one travel lane in each direction. The route operates as a major collector on relatively level grades with a posted speed limit of 30 mph. The surrounding terrain falls from the east to the west, with a steep side slope off the west edge. A few characteristics include super-elevations on its curved segments, a raised curb median at the approach to the intersection of N12, curb and sidewalk on the west side, and a paved shoulder on the east side. Paved street intersections occur at N12, Circle Hill Drive, Navajo Hill Drive, and Morgan Boulevard, in addition 4 connecting paved driveways and 5 dirt driveways exist. The corridor is approximately 0.7 miles (1.1 km) in length from N12 to Morgan Boulevard. The roadway surface consists of weathered cracking asphaltic concrete and barely distinguishable striping. See photo on the next page.



Existing N100 Roadway (Looking north)

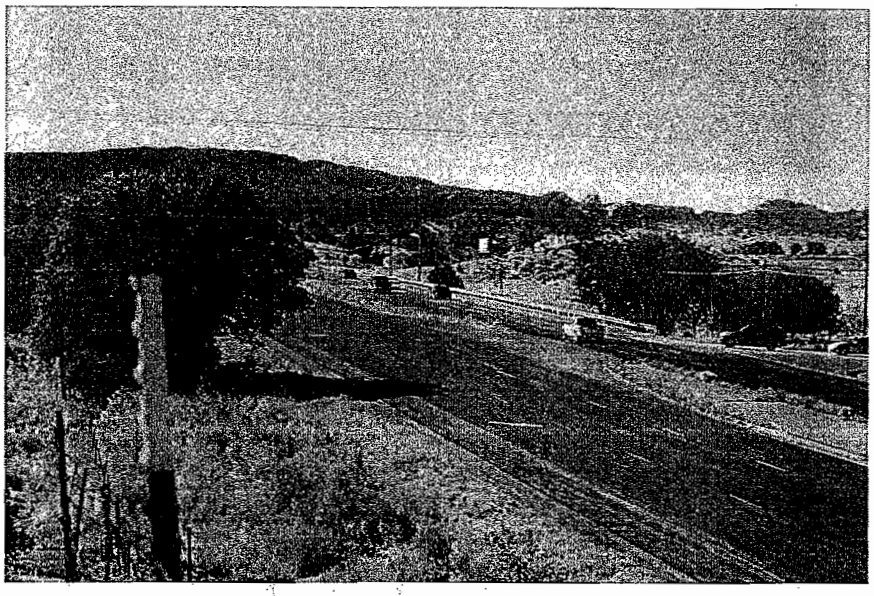


Existing N12 and N100 Intersection (Looking northwest)

2.1.2 Existing N12 Roadway

N12 provides access to the communities located north of Window Rock. The section from the southern terminus at SR 264 to Rocky Ridge Road located north of N100 is comprised of two travel lanes in each direction with a median (raised curb from SR 264 to 300 feet (91 m) north of N100, striped median two-way continuous left turn lane for the remaining portion). Paved street

intersections occur at SR 264, Window Rock Loop Road, N100, Shonto Boulevard and Rocky Ridge Road in addition 9 connecting paved driveways exist. The corridor is approximately 2.0 miles (3.2 km) in length from SR 264 to Rocky Ridge Road. North of N100 an acceleration lane runs several hundred feet (meters) along the north bound direction. The route operates as a major arterial on relatively level grades with a posted speed limit of 35 mph, 55 mph north of N100. The surrounding terrain falls from the east to the west, with a steep side slope off the west edge, especially at the intersection of N100. A few characteristics include a detached sidewalk on the east side from SR 264 to N100, and a paved shoulder the entire length. The roadway surface consists of weathered cracking asphaltic concrete and barely distinguishable striping. See photo below.



Existing N12 Roadway
(Looking south, Shonto Blvd. in the foreground and the signalized N100 intersection in the background)

2.1.3 Existing SR 264 Roadway

SR 264 provides access to the communities located west and east of Window Rock. The entire section is comprised of two travel lanes in each direction with a striped median two-way continuous left turn lane. Paved street intersections within the study area occur at N12, Main Street, and Window Rock Loop Road, in addition 22 connecting paved driveways exist. The corridor is approximately 1.1 miles (1.8 km) in length from Mustang Road to the state line. ADOT classifies the route as a rural minor arterial on relatively level grades with a posted speed limit of 45 mph. The surrounding terrain falls from the north to the south, with a large wash along the south side. A few characteristics include a detached sidewalk on both sides, and curb edges. The roadway surface consists of weathered cracking asphaltic concrete and barely distinguishable striping.

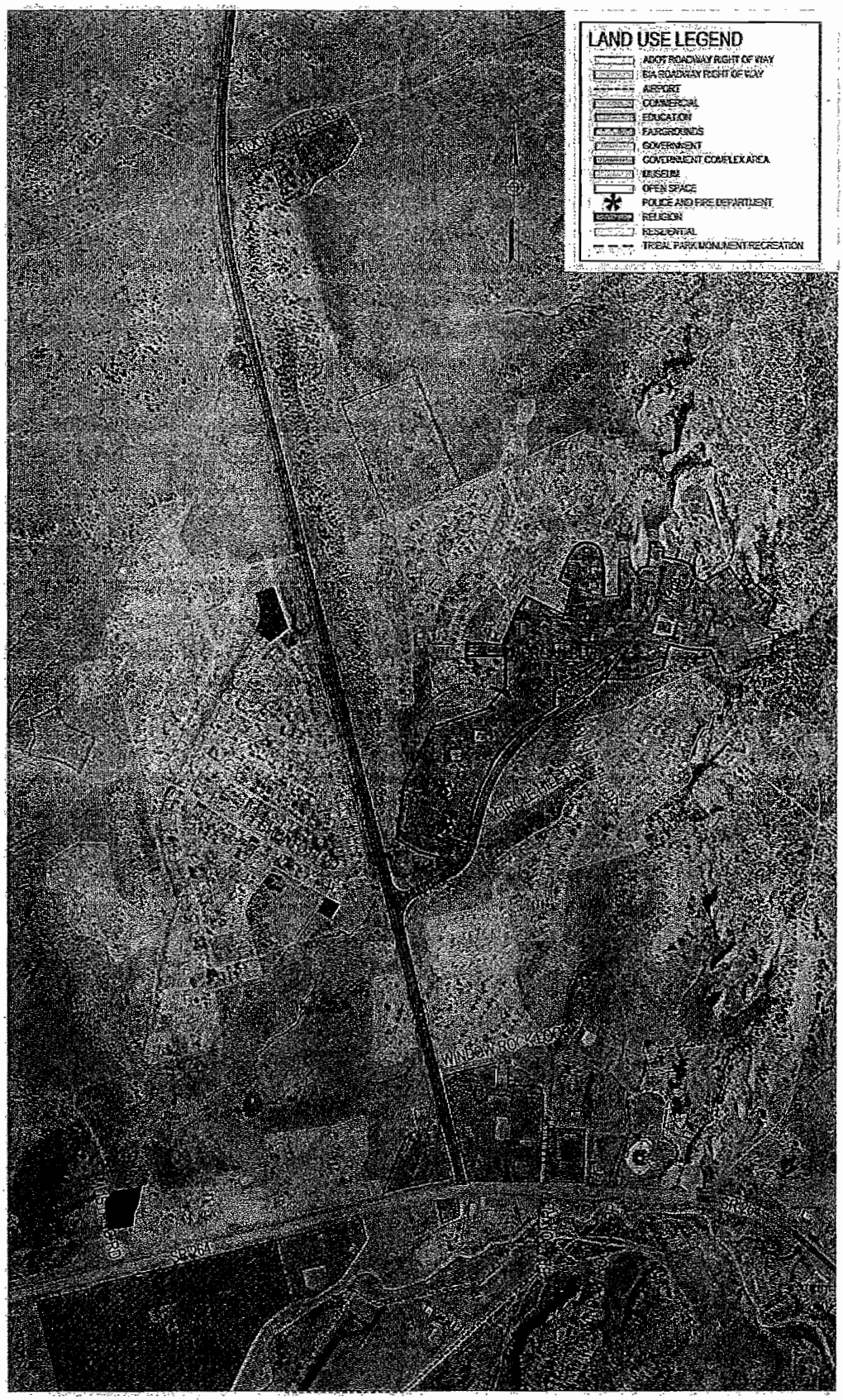
2.2 Existing Land Use, Right of Way, Ownership and Leases

Existing land use in the study area is comprised of a mixture of commercial developments, governmental offices, residential housing subdivisions, home sites, livestock grazing areas and open space.
The existing jurisdiction of land ownership and legal boundaries is complex in the study area. The land is administered by the BIA under the Department of the Interior. The Nation is considered federal trust land and within this framework, the Nation has its own various governmental departments that manage the trust land such as the Navajo Division of Transportation, Navajo Department of Economic Development, Navajo Department of Fish and Wildlife, Navajo Design & Engineering, Navajo Housing Authority, Navajo Forestry Department, and at the local governance level the Saint Michaels Chapter.

An executive order in the early 1900s created the governmental complex area to be the administrative center of the Nation. This area is currently in use today and this status exempts it from the jurisdiction of the Saint Michaels Chapter. The boundaries of this area are unclear, however it would be assumed to cover any existing governmental offices.

Areas outside the executive order domain are comprised of trust land, private land, home site leases, commercial developments, BIA roads right of way, ADOT right of way, and livestock grazing permit areas. The overlapping of all the above land classifications is very complex. Right of way ownership varies within the study area. In some areas full right-of-way is held by jurisdictional authority such as the BIA and in other areas access is by easement such as utility easements.

N100 has an existing right of way width of 200 feet (61 m) and N12 has an existing right of way width of 175 feet (53 m). See **Figure 2-1** - Existing Land Use & Right of Way for Existing Land Use and Right of Way. **Figure 2-1** - Existing Land Use & Right of Way and information presented in this study are based on available information from the Navajo Land Department, BIA Fort Defiance Agency Real Estate Services, ADOT records, and various other sources.



EXISTING LAND USE AND RIGHT OF WAY FIG 2-1

2.3 Existing Utilities

Overhead power lines, water valves, gas valves, communication markers, manhole covers, telephone pedestals and an enclosed high pressure gas facility indicate the most apparent existing utilities in the study area. There is no blue stake on the Nation, therefore during the design phase, it is essential close communication be maintained with the two companies listed below.

2.3.1 Navajo Tribal Utility Authority (NTUA)

NTUA is a non-profit enterprise supplying multi-utility services including electricity, natural gas, potable water, and sanitary sewer service in the study area.

NTUA Contact Person: Delbert Smith, (928) 729-5727. See **Figure 2-2** for existing utility locations.

2.3.2 Frontier Communications

Frontier handles cable television, telephone (both overhead and buried), high-speed internet and fiber optic communications (typically buried) within the study area. Generally the telephone line is located west of N12 on overhead poles, buried communications in the vicinity of Circle Hill Drive and N100 and north of the intersection of N12/N100. Existing telephone overhead lines also exist along Morgan Boulevard, if widened this will require relocation.

Frontier Contact Person: Charles Bernacchi, (928) 871-3741. See **Figure 2-2** for existing utility locations.

2.4 Future Land Use and Planning

It is imperative a land-use plan be developed in the future with governmental and public buy-in for the study area. Input required includes the Saint Michaels Chapter, residents of Window Rock, Apache County, BIA/NDOT and surrounding communities. From this process areas will be identified for commercial development, governmental office expansions, residential housing, in essence a master plan study is required. This process will then drive the necessary infrastructure aimed at attaining set tourism, infrastructure, and transportation goals, in particular the various types of roadways fronting and accessing the identified areas. Business and commercial development and economic growth at the local and regional levels will require new roadways, utility, and drainage improvements.

2.5 Future Opportunities and Constraints

Known future developments for both the near future and the long term 20-Year horizon are listed in Section 7.2. The key opportunity during the land-use planning stage is identifying areas to slate for improvements and foster the growth of economic development and extension of infrastructure to these areas. The obvious key constraint is the weak economic landscape of the Nation and Country in general.

EXISTING UTILITIES

FIG 2-2

3.0 Evaluation Criteria

All seven secondary roadway alternatives were screened using a reasonable and logical evaluation based on considerations such as:

- Community input/concerns (See **Appendix A**)
- Various Navajo governmental department input (such as NNDES, NDOT)
- Opposition from lease holders
- Negative impacts (fatal flaws)
- Environmental impacts (See **Section 6.0**)
- Archaeological/historical impacts
- Traffic analysis (See **Section 7.0**)
- Future developments
- Drainage impacts (See **Section 8.0**)
- Utility impacts
- Right of way considerations
- Estimated construction costs
- Constructability
- Technical design criteria

A no-build option is also considered. See **Section 4.0** for evaluations addressing each alternative and their advantages and disadvantages.

4.0 Proposed Alignment Alternatives and Evaluation (Advantages & Disadvantages)

The new secondary roadway alignment alternatives development process included the creation of seven conceptual alignments which following a general public input process and utilization of evaluation criteria were screened and narrowed to identify the final recommendations.

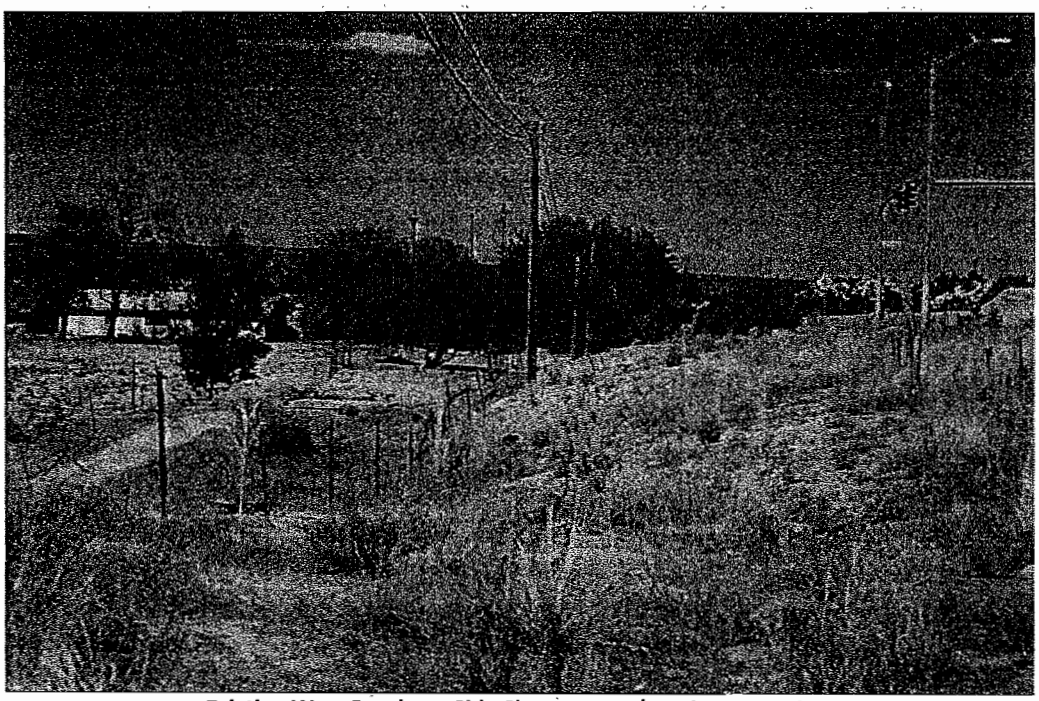
4.1 Alternative No. 1

This alternative examines the addition of a new roadway starting at the N12/N100 intersection and ending at SR 264. This would essentially be an extension of Window Rock Blvd (N100) to the west to intersect with Tse Bonito Road with a stop condition, than Alternative 1 would run southwesterly with two large radius curves to connect with Mustang Road and terminate at SR 264. The roadway will require significant earth fill at the N12/N100 intersection, due to a large drop in elevation of 20 plus feet (6 m) on the west edge of N12 and will require a large drainage drop structure to facilitate the drainage pipe culverts crossing N12. Existing drainage flows in a southwesterly direction, therefore this route will require a second drainage crossing near SR 264. Portions of this alternative will be located in a flood plain. This route will create a by-pass for the residents of the Saint Michaels housing area and the government complex area, for westbound travel on SR 264.

This alternative was initially designated as a reliever route to aid in reducing traffic congestion on N100 and at the intersections of N12/N100 and N12/SR 264. However, the traffic analysis indicates the addition of this route will not significantly improve the traffic flows for the immediate time period (5-Year horizon). The high construction cost due to the length of roadway, earth fill at N12 and flood plain area, relocation of overhead power west of N12, relocation of a fence enclosed high pressure gas facility west of N12, drainage improvements, and the need for a signalized intersection at SR 264 make this alternative cost prohibitive (See **Table 4-1**, Note: the preliminary cost estimates in this document do not include land acquisition costs). The intersection at SR 264 will require ADOT approval. The impacted residents are opposed to this route due to a reduction and bisecting of grazing land (See **Appendix A** - Public Meeting/Input Summary Report). The future 10-Year, 20-Year horizon may warrant this Alternative when the need arises for development opportunities. In the meantime, it is highly encouraged a land-use plan be developed in order to justify removal of grazing permits in this area, and to gain approval from the Saint Michaels Chapter.

It is recommended this alternative be eliminated for design and construction consideration in the immediate future (5-Year Horizon)

Existing Drainage Pipe Culverts West of N12/N100 Intersection
(Looking north, scour at the pipe outlets)



Existing West Roadway Side Slope at N12/N100 Intersection
(Looking North, existing utilizes include overhead power, communications, water vault, chain link enclosed high pressure gas facility)

Table 4-1 - Alternative No. 1 Conceptual Cost Estimate

Alternative No. 1 Conceptual Cost Estimate 1 Lane in Each Direction, Striped Median, No Curb, Sidewalk on One Side (Improvements Include a New Signalized Intersection at SR264 and Connection to St. Michaels Housing)				
ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
EROSION CONTROL (SWPPP BY CONTRACTOR)	LS	1	$20,000.00	$20,000
FILL CONSTRUCTION	CY	31,391	$8.00	$251,125
SUBGRADE PREPARATION	SY	34,172	$2.00	$68,344
PAVEMENT STRUCTURAL SECTION	SY	34,172	$26.00	$888,472
CONSTRUCT SIDEWALK AND RAMPS	SF	42,715	$5.00	$213,575
CONSTRUCT DRIVEWAY ENTRANCE	EA	5	$5,000.00	$25,000
REMOVE PAVEMENT	SY	985	$3.00	$2,955
PAVEMENT MARKING	LF	51,258	$0.75	$38,444
TRAFFIC SIGN ASSEMBLY	EA	20	$200.00	$4,000
INTERSECTION TRAFFIC SIGNALS (SR 264)	LS	1	$250,000.00	$250,000
STREET LIGHTING IMPROVEMENTS/RELOCATION	LS	1	$25,000.00	$25,000
LANDSCAPING IMPROVEMENTS	LS	1	$7,000.00	$7,000
DRAINAGE IMPROVEMENTS (NEW BOX CULVERT & DRAINAGE PIPES)	LS	1	$90,000.00	$90,000
UTILITY RELOCATION (GAS FACILITY & OVERHEAD POWER)	LS	1	$130,000.00	$130,000
MAINTENANCE & PROTECTION OF TRAFFIC (2%)	LS	1	$63,934.00	$63,934
MOBILIZATION (7%)	LS	1	$223,768.00	$223,768
CONSTRUCTION SURVEYING & LAYOUT (3%)	LS	1	$95,901.00	$95,901
CONTINGENCY (25%)	LS	1	$799,173.00	$799,173
			TOTAL	**$3,196,691**

4.2 Alternative No. 2

This alternative looks at a new roadway connecting the government complex area to Window Rock Loop Road. At its north terminus this route will require a new intersection near the Nation fleet management maintenance yard, cross an existing wash and traverse a steep hill to the existing Circle Hill Drive, located in a residential area. The route then progresses along existing Circle Hill Drive, splinters off to open land, connects to an existing asphalt side street located just east of the post office and would finally tee at the Window Rock Loop Road. Improvements along Window Rock Loop Road may be necessary including a possible signalized intersection at SR 264.

This alternative was proposed based on the potential for future commercial development parcels. This alternative is currently not warranted as concepts or plans for any future commercial development in this area are not yet realized. Development should drive the need and layout for this alternative. Once commercial plans have been developed (10-Year or 20-Year horizon) this route will be viable. Saint Michaels Chapter approve will be necessary and a land-use plan will most likely need to be developed for this area. Routing traffic through the Circle Hill Drive area will most likely generate opposition from current residents concerned with pedestrian neighborhood safety issues.

It is recommended this alternative be eliminated for design and construction consideration in the immediate future.

4.3 Alternative No. 3

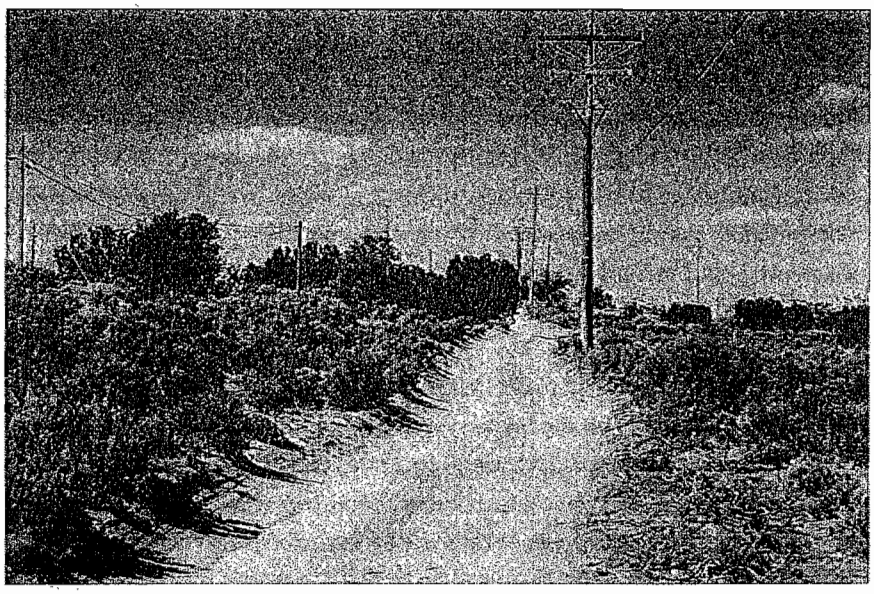
This alternative connects N100 to Window Rock Loop Road it utilizes and extends existing Navajo Hill Drive. A roundabout is proposed to create a new intersection at N100 and Navajo Hill Drive located just south of the Educational Center building. The route continues south to create another roundabout intersection at Window Rock Loop Road just west of the post office. The route will then continue east along existing Window Rock Loop Road to another proposed signalized intersection at SR 264 near the Navajo Nation Museum. This alternative is located on rolling terrain, and in general the existing pavement is in poor condition.

Alternative 3 received a majority of positive feedback from the public for the following reasons: minimal work with land holders, minimal impact on existing property owners, utilization of existing roadways and a lower construction cost compared to other alternatives (See **Table 4-2**). A negative aspect is the close proximity to existing homes and multiple tie-ins with existing cross streets. Approximately two thirds of the route utilizes existing roadways, which will be improved with a new asphalt pavement section and if necessary, street widening. The new signalized intersection at SR 264 encourages traffic to use Window Rock Loop Road rather than Main Street which improves traffic flow due to the increased distance from the existing intersection at SR 264/N12. An existing overhead power line will need to be relocated or placed underground along this route. The traffic analysis determines this route will have a significant impact on improving the traffic issues and it also provides a secondary emergency ingress/egress for the governmental complex area. ADOT approval will be necessary for work at SR 264. Saint Michaels Chapter approval is not necessary and there are no grazing permits.

It is recommended this alternative be selected for immediate design and construction. Currently a separate project by the Nation is in progress for the design of a new Navajo Nation Justice Complex (also referred to as the Supreme Court Complex). The Justice Complex site is bounded by N100, Navajo Hill Drive and Circle Hill Drive. The architectural design is being performed by VCBO Architects out of Salt Lake City, UT. See **Appendix H** for the Navajo Nation Justice Complex Architectural Concept. As a part of the Justice Complex project Circle Hill Drive fronting the complex is to be reconstructed. An engineering design has been performed by Bighorse Engineers for the Navajo Nation Design & Engineering Services (NNDES). A joint work effort to further coordinate this existing design at connecting points will be very beneficial to all parties. See **Appendix N** for the Navajo Nation Justice Complex Civil Design Plans.

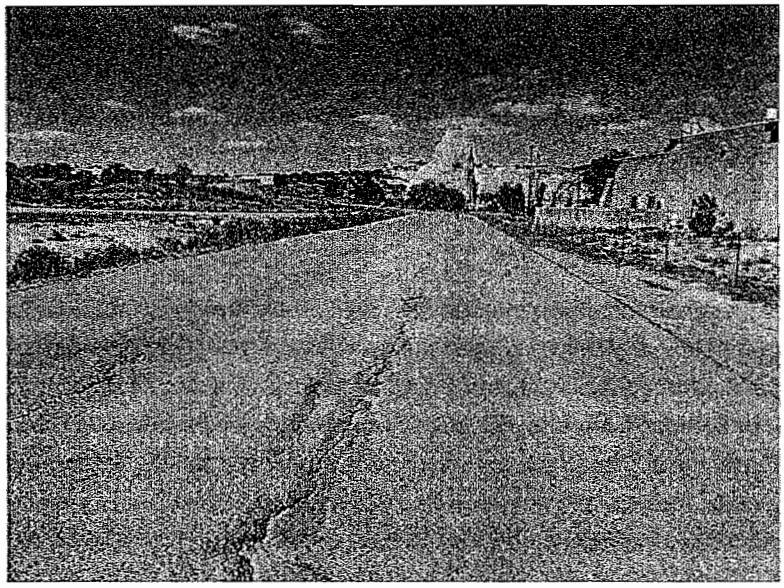
As a part of another separate NNDES effort, Navajo Hill Drive essentially Alternative 3 has been preliminarily designed by Bighorse Engineers. The plans are very preliminary and marked "Draft". See **Appendix O** for Window Rock Road Preliminary Civil Design Plans. Coordination on a joint work effort on this portion will also be beneficial and a design cost savings may be achieved.

VCBO Architecture Contact Person: Phil Haderlie, (801) 575-8800
Bighorse Engineers Contact Person: Max Bighorse, (505) 870-7395



Existing Dirt Roadway along Proposed Alternative No. 3 Alignment
(Looking north, existing overhead power)

Existing Paved Roadway along Proposed Alternative No. 3 Alignment
(Looking south, houses on the right side)



Existing Window Rock Loop Road (Looking north, Navajo Nation Museum on the right)

Table 4-2 - Alternative No. 3 Conceptual Cost Estimate

Alternative No. 3 Conceptual Cost Estimate
1 Lane in Each Direction, Striped Median, No Curb, Sidewalk On One Side (Improvements Include a New Signalized Intersection at SR264)

ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
EROSION CONTROL (SWPPP BY CONTRACTOR)	LS	1	$10,000.00	$10,000
FILL CONSTRUCTION	CY	3,000	$8.00	$24,000
SUBGRADE PREPARATION	SY	25,440	$2.00	$50,880
PAVEMENT STRUCTURAL SECTION	SY	25,440	$26.00	$661,440
CONSTRUCT SIDEWALK AND RAMPS	SF	31,800	$5.00	$159,000
CONSTRUCT DRIVEWAY ENTRANCE	EA	25	$3,000.00	$75,000
REMOVE PAVEMENT	SY	13,924	$3.00	$41,771
PAVEMENT MARKING	LF	25,440	$0.75	$19,080
TRAFFIC SIGN ASSEMBLY	EA	15	$200.00	$3,000
SINGLE LANE ROUND-A-BOUT	LS	1	$150,000.00	$150,000
INTERSECTION TRAFFIC SIGNALS (SR 264)	LS	1	$250,000.00	$250,000
STREET LIGHTING IMPROVEMENTS/RELOCATION	LS	1	$20,000.00	$20,000
LANDSCAPING IMPROVEMENTS	LS	1	$5,000.00	$5,000
DRAINAGE IMPROVEMENTS	LS	1	$15,000.00	$15,000
UTILITY RELOCATION (OVERHEAD POWER)	LS	1	$75,000.00	$75,000
MAINTENANCE & PROTECTION OF TRAFFIC (2%)	LS	1	$47,791.00	$47,791
MOBILIZATION (7%)	LS	1	$167,267.00	$167,267
CONSTRUCTION SURVEYING & LAYOUT (3%)	LS	1	$17,922.00	$17,922
CONTINGENCY (25%)	LS	1	$597,384.00	$597,384
			TOTAL	**$2,389,535**

4.4 Alternative No. 4

This option creates a new stop condition intersection at N12 and Rocky Ridge Road at its north terminus, constructs a new roadway east along existing Rocky Ridge Road (dirt road) for a short distance in order to clear the waste transfer station property, turns south and parallels N12 on the east side of the existing ridge, continues south and connects to an existing asphalt road fronting the old Window Rock Elementary School.

This alternative in concept provided a north outlet to the Fort Defiance community. Traffic analysis determined this option did not alleviate congestion at the N12/N100 area. The alternative is recommended to be eliminated due to negative public feedback (See **Appendix A - Public Meeting/Input Summary Report**), existing utility conflicts (overhead power, communications), grazing permit conflicts, home site conflicts and potential future use for this land under a proposed range management plan. Additionally, Window Rock Elementary School is not being fully utilized; the main elementary school has been moved to Fort Defiance which is 6 miles (9.7 km) north. Traffic counts do not warrant the construction of this alternative and traffic congestion is non-existent at the northern terminus of this route. Saint Michaels Chapter approval is required.

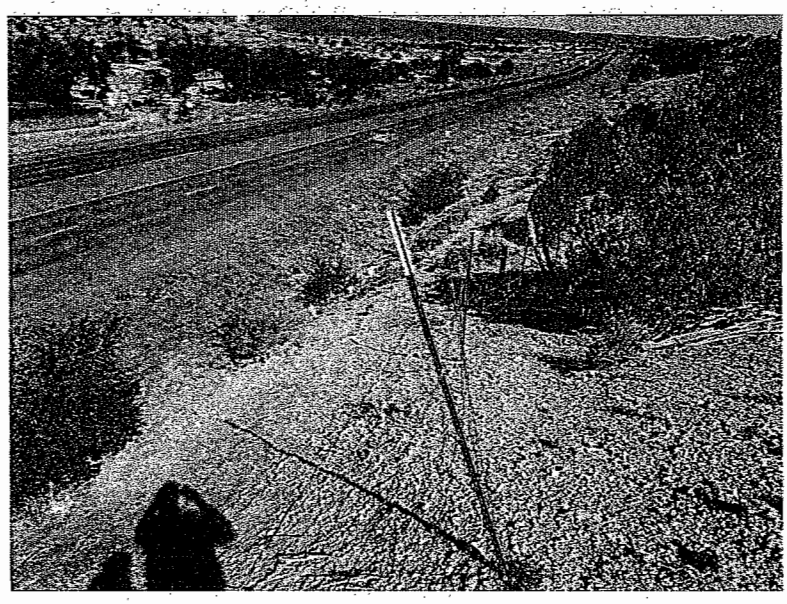
It is recommended this alternative be eliminated for design and construction consideration in the immediate future (5-Year Horizon).

4.5 Alternative No. 5

This alternative shares the same tie-in location on N12 as Alternative 4 (Rocky Ridge Road). Immediately after the stop condition intersection at N12, the route turns south and parallels N12 on the west side of both the waste transfer station and the existing ridge, essentially operating as a frontage road for N12. The route goes in an east direction just south of the Education Center and north of the Administration Office Complex and ties into N100.

This alternative in concept provided a north outlet to the Fort Defiance community and is ideal for police and fire department egress to N12. However, traffic analysis determined this option did not alleviate congestion at the N12/N100 area. Alternative 5 is recommended to be eliminated due to negative public feedback (See **Appendix A - Public Meeting/Input Summary Report**), fiber optics relocation, grazing permit conflicts and possible archaeological issues (a culturally significant site may exist along the south end of the high ridge, an area where roadway excavation will be required). A drainage structure will also be required for crossing a large wash located north of the Administration Office Complex. Other alternative options will provide a greater reduction of traffic congestion with a lower construction cost. The benefit versus cost is low. Traffic congestion is non-existent at the northern terminus of this route. Saint Michaels Chapter approval is required.

A modified Alternative 5 may be warranted in the 10-Year to 20-Year horizon, modified to provide the tie-in with N12 further south than shown in **Figure 1-3**.



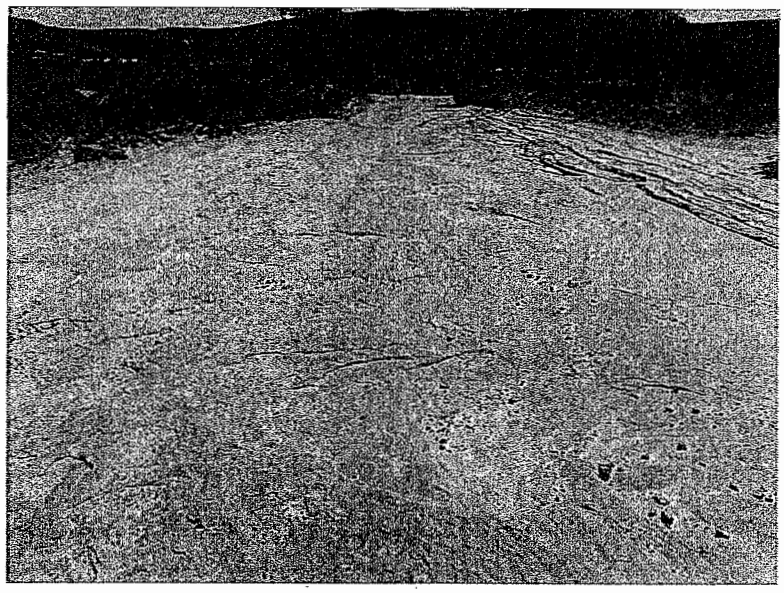
Existing N12, Proposed Alternative No. 5 Alignment to the Right of N12
(Looking north, terrain includes a large ridge on the right side)

4.6 Alternative No. 6

This alternative looks at a new roadway connecting the government complex area to SR 264 near the state line and port of entry. At its north terminus this route will require a new intersection near the Nation fleet management maintenance yard, cross an existing wash and traverse a steep rock outcrop. The route continues in a south direction to SR 264 mainly utilizing an existing dirt road.

This route provides an ideal ingress and egress route for the government complex area however the constructability is not ideal. The mentioned steep rock outcrop is significant in terms of size and elevation. A majority of the route is running on a mix of high terrain solid sand stone bedrock and sand. Construction costs and minimal traffic impact make this option undesirable. Alternative 6 is recommended to be eliminated due to cost, rocky terrain, no significant benefit to alleviating traffic congestion, home owner opposition, and removal of grazing permits. A majority of this alternative is located in the state of New Mexico and McKinley County and will require their inclusion as a stake holder. ADOT approval is required for work at SR 264 and Saint Michaels Chapter approval is also required.

It is recommended this alternative be entirely eliminated for any design and construction consideration.



Existing Roadway along Proposed Alternative No. 6 Alignment
(Looking south at a mixture of solid sand stone bedrock and sand)

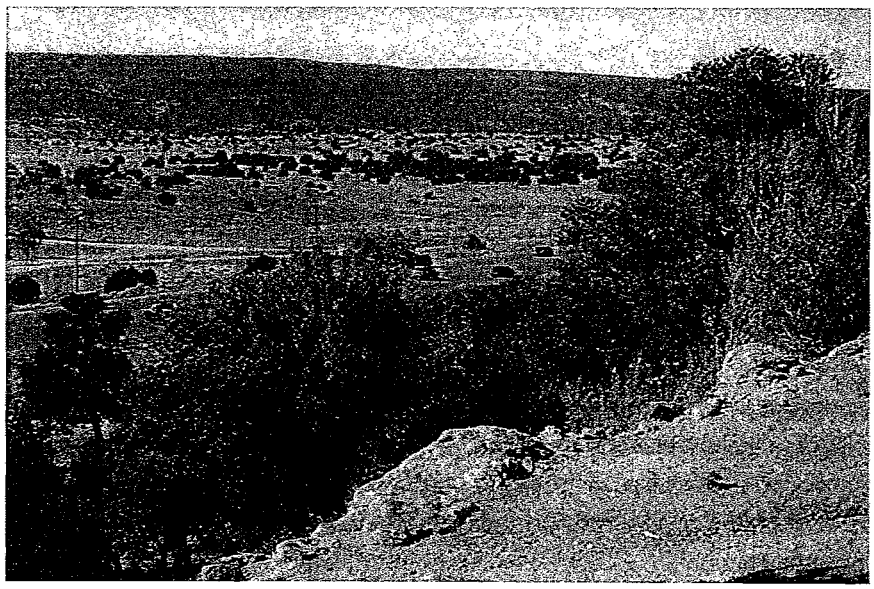
4.7 Alternative No. 7

Alternative 7 investigates the option of improving the existing Morgan Boulevard and extending the roadway to the west to intersect with N12. This option requires construction of a signalized intersection, a stop condition intersection or a roundabout at Morgan Boulevard and N100. At the west terminus a new intersection is required at the connection with N12. Significant roadway excavation and haul-out will be required at the high ridge near the west terminus.

Alternative 7 is viewed favorably by the public for the following reasons: no impact to land holders in terms of grazing permits or home site leases and utilization of existing roadways. This option also satisfies the goal of providing a secondary emergency ingress/egress. It provides an intersection at N12 which also benefits residents at the Saint Michaels Housing area by providing an additional ingress/egress connection opportunity, which also addresses that same issue/problem at existing Shonto Boulevard located north of and in close proximity to the intersection of N12/N100. However, the traffic analysis indicates Alternative 7 will not significantly improve the traffic flows for the immediate time period (5-Year horizon) or improve traffic congestion at the N12/N100 area. Negative aspects are the close proximity to existing homes, pedestrian safety concerns and multiple tie-ins with existing cross streets and driveways. Approximately two thirds of the route utilizes existing roadways, which will be improved with a new asphalt pavement section and if necessary, street widening however widening will be difficult due to the narrow available corridor. Utility relocations (overhead power) will be required with widening. The existing roadway is two lanes but due to the multiple existing driveways, a two lane roadway with a striped median operating as a continuous left turn lane is recommended. Displacement of one residence will be required located west of the intersection of Morgan Boulevard and Chee Dodge Drive.

The negative aspects, high construction cost and low impact to the traffic congestion make this option undesirable in the immediate time frame. However this option should be further considered on a 10 to 20-Year horizon. The conceptual cost estimate for Alternative 7 is shown below in **Table 4-3**.

Existing Morgan Blvd. proposed Alternative No. 7 Alignment
(Looking west, Education Center is the large building to the left)



High Terrain Ridge at West Terminus of Proposed Alternative No. 7 Alignment
(Looking northwest, standing on ridge top with N12 below)

Table 4-3 - Alternative No. 7 Conceptual Cost Estimate

Alternative No. 7 Morgan Blvd. Conceptual Cost Estimate 1 Lane In Each Direction, Striped Median, No Curb, Sidewalk (Improvements include a new signalized intersection at N12 and Connection to St. Michaels Housing)				
ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
EROSION CONTROL (SWPPP BY CONTRACTOR)	LS	1	$10,000.00	$10,000
ROADWAY EXCAVATION	CY	29,705	$10.00	$297,052
EARTHWORK EXPORT/HAUL OUT	CY	29,705	$15.00	$445,578
SUBGRADE PREPARATION	SY	14,480	$2.00	$28,960
PAVEMENT STRUCTURAL SECTION	SY	14,480	$26.00	$376,480
CONSTRUCT SIDEWALK AND RAMPS	SF	36,200	$5.00	$181,000
CONSTRUCT DRIVEWAY ENTRANCE	EA	26	$5,000.00	$130,000
REMOVE PAVEMENT	SY	8,566	$3.00	$25,699
PAVEMENT MARKING	LF	21,720	$0.75	$16,290
TRAFFIC SIGN ASSEMBLY	EA	10	$200.00	$2,000
INTERSECTION TRAFFIC SIGNALS (N12)	LS	1	$150,000.00	$150,000
STREET LIGHTING IMPROVEMENTS/RELOCATION	LS	1	$20,000.00	$20,000
LANDSCAPING IMPROVEMENTS	LS	1	$5,000.00	$5,000
DRAINAGE IMPROVEMENTS	LS	1	$15,000.00	$15,000
UTILITY IMPROVEMENTS/RELOCATION	LS	1	$25,000.00	$25,000
MAINTENANCE & PROTECTION OF TRAFFIC (2%)	LS	1	$52,967.00	$52,967
MOBILIZATION (7%)	LS	1	$185,386.00	$185,386
CONSTRUCTION SURVEYING & LAYOUT (3%)	LS	1	$19,863.00	$19,863
CONTINGENCY (25%)	LS	1	$662,092.00	$662,092
			TOTAL	$2,648,367

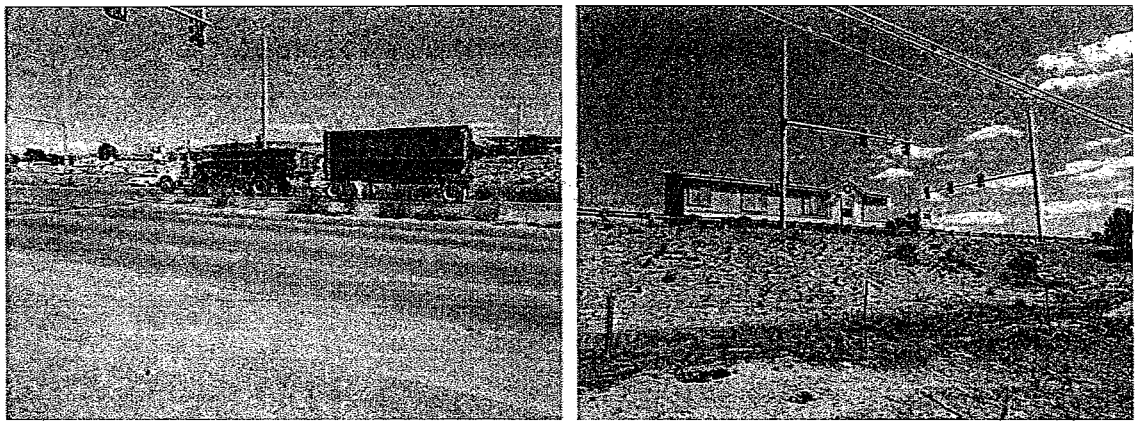
4.8 N100 Reconstruction and N12/N100 Intersection Improvements (Roundabout)

Addressing the improvement of traffic flow is a central goal of this study which is predicated on improving route N100. Another main component with a heavy influence on congestion is the intersection of N12/N100. The traffic analysis determines if the existing signalized intersection is working, or if another type of intersection is needed. The result indicates a roundabout type of intersection is necessary. The roundabout is a circular free-flow type of intersection with vehicles traveling without any stop conditions in a one way movement (counter clock-wise direction) around a central island. The capacity of roundabouts is based on the number of lanes, the more lanes the higher the capacity. A duel/two lane roundabout is proposed for this intersection to handle the existing and future projected traffic. The capacity is increased due to a reduction in vehicle delays, roundabouts do not require entering vehicles to stop, unless yielding to other vehicles. Queue delays based on a signalized red light is eliminated. The proposed duel roundabout is the extent of its ultimate build-out it is not feasible or desirable to ever expand this to three lanes. The future 10-Year to 20-Year horizon traffic volumes necessitates an additional ingress/egress at another location to provide a desirable LOS at the N12/N100 intersection.

It is recommended that dedicated right turn lanes be incorporated into the roundabout design to remove these movements from the circular section. A dedicated right turn lane is a physical separation of a one lane split from the circular lanes by means of curbing and is recommended for the northbound

N12 to eastbound N100 traffic and also for the westbound N100 to northbound N12 traffic. See **Figure 4-1** for examples of several types of roundabouts.

An existing roundabout in the vicinity is located at the junction of US191 and N15 at Burnside Arizona just a few miles (km) northwest of Ganado. The greater part of public opinion regarding roundabouts is positive with the stipulation that there exists a learning curve but once the community learns how to use and maneuver the roundabout it works very well. See the public comments in **Appendix A**.



Types of Vehicles at the N12/N100 Intersection
(Proposed roundabout must accommodate various turning movements)

Another issue is the traffic entering and exiting the Saint Michaels Housing area via Shonto Boulevard. During peak traffic, the left turn from Shonto to Fort Defiance and the left turn from N12 to Shonto Boulevard is a difficult and dangerous maneuver due to fast traffic speeds on N12 and the close proximity to the N12/N100 intersection approximately 420 feet (128 m). For this reason it is recommended that the roundabout layout incorporate a raised median cutting-off the mentioned left turn movements, thus creating a right turn exit only at Shonto. This creates a need for a second access into the area. It is proposed that the existing paved street Jeddito Drive located within the northern part of the Saint Michaels Housing area be extended to create a 'T' intersection with N12 utilizing a stop condition (stop sign). The mentioned left turn movements can then be accommodated at this new junction located approximately 2900 feet (884 m) from the N12/N100 intersection. Sunset Drive located approximately 700 feet (213 m) north of Jeddito Drive is another option for a connection to N12, the connection design can range from a simple stop sign to a signalized intersection to a roundabout. A disadvantage is routing Fort Defiance bound traffic from the south side of Saint Michaels Housing area to the north side via residential streets and the additional cost of new asphalt streets and possible reconstruction of the poor condition of the existing Jeddito Drive asphalt pavement.

Traffic analysis recommends maintaining the existing N100 lane configuration/typical roadway section and horizontal alignment (a slight skew may be necessary for the approach leg to the roundabout). Roadway widening is not warranted. The existing N100 was constructed in the early 1980s (poor pavement condition), reconstruction of the asphalt pavement, curbs, sidewalk, signing and striping, and

drainage improvements is necessary. See **Table 4-4** for estimated construction costs of reconstructing N100 and **Table 4-5** for construction of a new roundabout intersection at N12/N100.

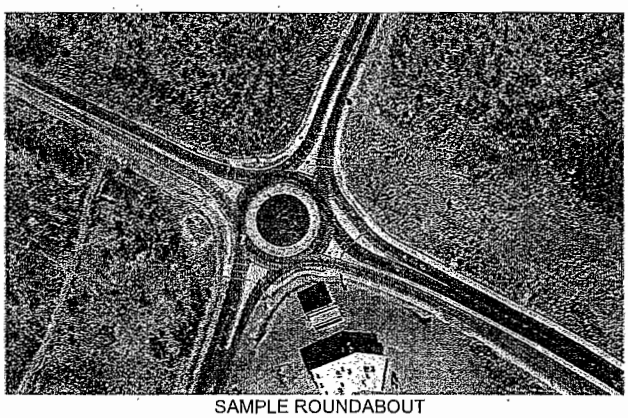
Street lighting for increase visibility and pedestrian safety, landscaping (low maintenance decomposed granite and native trees/shrubs without irrigation), wider sidewalks at least a minimum of 6 feet (1.8 m) wide, decorative hardscape at identified entry nodes/center of roundabout, and an entry monument to the N100 corridor in order to create a sense of arrival and importance to the Nation's capital, these are amenities recommended.

Table 4-4 - N100 Reconstruction Conceptual Cost Estimate

N100 Window Rock Blvd. Reconstruct Conceptual Cost Estimate 2 Lanes Each Direction, Striped Median, Curbs, & Sidewalk on One Side (Does Not Include Round-a-Bout at N12)				
ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
EROSION CONTROL (SWPPP BY CONTRACTOR)	LS	1	$10,000.00	$10,000
SUBGRADE PREPARATION	SY	26,367	$2.00	$52,733
PAVEMENT STRUCTURAL SECTION	SY	26,367	$26.00	$685,533
CONCRETE CURB AND GUTTER	LF	6,780	$18.00	$122,040
CONSTRUCT SIDEWALK AND RAMPS	SF	16,950	$5.00	$84,750
CONSTRUCT DRIVEWAY ENTRANCE	EA	9	$5,000.00	$45,000
REMOVE PAVEMENT	SY	25,289	$3.00	$75,867
REMOVE CURB	LF	3,048	$5.00	$15,240
REMOVE CONCRETE (SIDEWALK, SW RAMPS, DRIVEWAYS)	SF	12,984	$4.00	$51,936
PAVEMENT MARKING	LF	13,560	$0.75	$10,170
TRAFFIC SIGN ASSEMBLY	EA	14	$200.00	$2,800
SINGLE LANE ROUND-A-BOUT	LS	1	$150,000.00	$150,000
STREET LIGHTING IMPROVEMENTS/RELOCATION	LS	1	$30,000.00	$30,000
LANDSCAPING IMPROVEMENTS	LS	1	$10,000.00	$10,000
DRAINAGE IMPROVEMENTS	LS	1	$25,000.00	$25,000
UTILITY IMPROVEMENTS/RELOCATION	LS	1	$40,000.00	$40,000
MAINTENANCE & PROTECTION OF TRAFFIC (2%)	LS	1	$43,251.00	$43,251
MOBILIZATION (7%)	LS	1	$151,379.00	$151,379
CONSTRUCTION SURVEYING & LAYOUT (3%)	LS	1	$16,219.00	$16,219
CONTINGENCY (25%)	LS	1	$540,640.00	$540,640
			TOTAL	**$2,162,558**

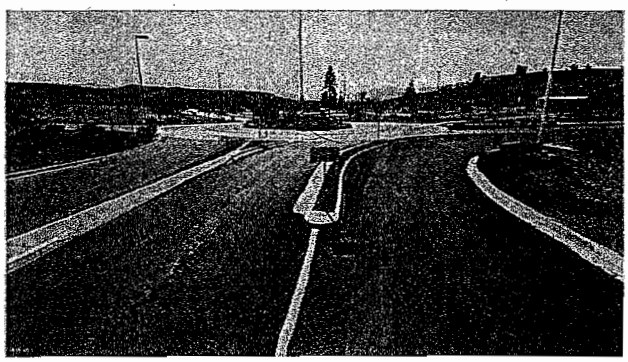
Table 4-5 - N12/N100 Intersection Improvements Conceptual Cost Estimate

N100/N12 Round-A-Bout Conceptual Cost Estimate Duel Ring (2 Lanes And Dedicated Right Only Lanes) Includes Drainage Box Culvert & Baffle Drop Structure				
ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
EROSION CONTROL (SWPPP BY CONTRACTOR)	LS	1	$5,000.00	$5,000
FILL CONSTRUCTION	CY	1,000	$10.00	$10,000
SUBGRADE PREPARATION	SY	11,544	$2.00	$23,089
PAVEMENT STRUCTURAL SECTION	SY	11,544	$26.00	$300,156
CONCRETE CURB AND GUTTER	LF	2,950	$18.00	$53,100
CONSTRUCT SIDEWALK AND RAMPS	SF	10,000	$5.00	$50,000
CONSTRUCT DRIVEWAY ENTRANCE (SHONTO BLVD.)	EA	1	$7,500.00	$7,500
REMOVE PAVEMENT	SY	13,536	$3.00	$40,608
REMOVE CURB	LF	2,749	$5.00	$13,745
REMOVE CONCRETE (SIDEWALK, SW RAMPS, DRIVEWAYS)	SF	2,300	$4.00	$9,200
REMOVE TRAFFIC SIGNALS AND EQUIPMENT	LS	1	$10,000.00	$10,000
PAVEMENT MARKING	LF	5,105	$0.75	$3,829
TRAFFIC SIGN ASSEMBLY	EA	16	$200.00	$3,200
STREET LIGHTING IMPROVEMENTS	LS	1	$15,000.00	$15,000
LANDSCAPING IMPROVEMENTS (ROUND-A-BOUT MONUMENT)	LS	1	$10,000.00	$10,000
DRAINAGE IMPVMTS (BOX CULVERT & BAFFLE DROP STRUCTURE)	LS	1	$250,000.00	$250,000
INTERSECTION STOP CONDITION (N12/JEDDITO DRIVE)	LS	1	$60,000.00	$60,000
UTILITY IMPROVEMENTS/RELOCATION	LS	1	$40,000.00	$40,000
MAINTENANCE & PROTECTION OF TRAFFIC (2%)	LS	1	$27,722.00	$27,722
MOBILIZATION (7%)	LS	1	$97,027.00	$97,027
CONSTRUCTION SURVEYING & LAYOUT (3%)	LS	1	$10,396.00	$10,396
CONTINGENCY (25%)	LS	1	$346,523.00	$346,523
			TOTAL	$1,386,094

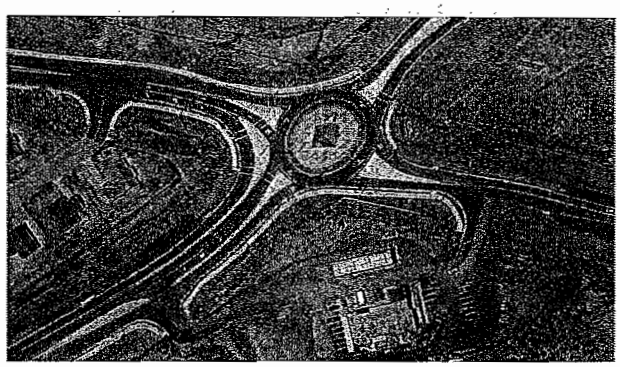


SAMPLE ROUNDABOUT

WINDOW ROCK PROPSED ROUNDABOUT



SAMPLE ROUNDABOUT



SAMPLE ROUNDABOUT

EXAMPLES OF ROUND-A-BOUTS FIG 4-1

4.9 SR 264/N12 Intersection Improvements

This intersection will require some improvements such as restriping the southbound through lane to a shared right turn lane and through lane, creating two right turn lanes. The westbound leg requires a new right turn bay constructed, creating two right turn lanes. These improvements reverberate to improve the traffic flows at other intersections such as N12/N100.

Table 4-6 - SR 264/N12 Intersection Improvements Conceptual Cost Estimate

SR264/N12 Intersection Improvements Conceptual Cost Estimate Restripe North Leg, Add 2 Right Turn Lanes On East Leg				
ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
EROSION CONTROL (SWPPP BY CONTRACTOR)	LS	1	$5,000.00	$5,000
FILL CONSTRUCTION	CY	900	$8.00	$7,200
SUBGRADE PREPARATION	SY	1,600	$2.00	$3,200
PAVEMENT STRUCTURAL SECTION	SY	1,600	$26.00	$41,600
CONCRETE CURB AND GUTTER	LF	700	$18.00	$12,600
CONSTRUCT SIDEWALK AND RAMPS	SF	3,500	$5.00	$17,500
CONSTRUCT DRIVEWAY ENTRANCE	EA	4	$5,000.00	$20,000
REMOVE PAVEMENT	SY	311	$3.00	$933
REMOVE CURB	LF	700	$5.00	$3,500
REMOVE CONCRETE (SIDEWALK, SW RAMPS, DRIVEWAYS)	SF	2,800	$4.00	$11,200
RELOCATE TRAFFIC SIGNAL (NORTHEAST CORNER)	EA	1	$50,000.00	$50,000
PAVEMENT MARKING	LF	700	$0.75	$525
TRAFFIC SIGN ASSEMBLY	EA	4	$200.00	$800
RELOCATE STREET LIGHT	EA	2	$5,000.00	$10,000
LANDSCAPING IMPROVEMENTS	LS	1	$5,000.00	$5,000
DRAINAGE IMPROVEMENTS (REGRADE EXISTING BASIN)	LS	1	$3,000.00	$3,000
MAINTENANCE & PROTECTION OF TRAFFIC (2%)	LS	1	$5,887.00	$5,887
MOBILIZATION (7%)	LS	1	$20,604.00	$20,604
CONSTRUCTION SURVEYING & LAYOUT (3%)	LS	1	$2,208.00	$2,208
CONTINGENCY (25%)	LS	1	$73,586.00	$73,586
			TOTAL	**$294,343**

4.10 No-Build Alternative

The no-build alternative for the future 10-Year and 20-Year horizon will present the Window Rock residents with a general LOS ranging from C to F at critical prominent intersections of N12/N100 and N12/SR 264 and thereby progressively intensify the traffic congestion currently being experienced. The failure to plan for the future, especially in terms of development will amplify existing traffic congestion. The no-build option will hinder commuters, negatively impact large events such as the Navajo Nation Fair and cast a negative perception on the tourism industry. It is highly recommended a no-build option not be considered.

See **Section 7.3** for a traffic analysis discussion.

5.0 Design Considerations

5.1 Design Controls and Guidelines

Roadway design shall be based upon average daily traffic volumes, traffic study, geotechnical report, and drainage analysis. The design will be in accordance with the following reference materials, with the American Association of State Highway and Transportation Officials (AASHTO) as the controlling design criteria:

- "Policy of Geometric Design of Highways and Streets" (AASHTO, latest edition)
- "Standard Specification for the Construction of Roads and Bridges on Federal Highway Projects, FP-2003" Federal Highway Administration (FHWA 7, 2003)
- "Standard Specifications for Highway Bridges" (AASHTO, latest edition)
- "Manual on Foundation Investigations" (AASHTO, latest edition)
- "AASHTO Guide for Design of Pavement Structures" (AASHTO, latest edition)
- "Soil Mechanics, NAVFAC DM-7.1" (Department of the Navy)
- "Highway Drainage Guidelines" (AASHTO)
- "Navajo Region Road Construction Certification Acceptance Program" (BIA – Navajo Region Department of Transportation, NRDOT)
- "Soils and Foundation Workshop Manual" (FHWA)
- "Standard Specifications for Transportation of Material and Methods of Sampling and Testing" (Parts I and III, 15th Edition by AASHTO)
- "Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals" (AASHTO)
- "Manual on Design and Construction of Driven Pile Foundations" (FHWA)
- "Drilled Shafts: Construction Procedures and Design Methods, Pub. No. FHWA-HI-88-042" (FHWA)
- "Manual of Uniform Traffic Control Devices" (FHWA)
- "Roundabouts An Informational Guide" (FHWA)
- "Roadside Design Guidelines" (AASHTO)
- "Americans with Disabilities Act Standards for Accessible Design" (Department of Justice)
- All Arizona Department of Transportation (ADOT) Design Manuals

5.2 Seasonal/Design Considerations

Large events within/near the study area include the Navajo Nation Fair typically held during the first and second weeks in September and the 4th of July Celebration, both events are held at the fairgrounds located south of SR 264. Other locations of interest with tourism traffic include the Navajo Nation Zoological and Botanical Park located near the state line and SR 264, the Navajo Nation Museum, Library, and Visitor Center located west of the Zoo, the Veteran's Memorial, Council Chambers and President's Office are all located in the government complex area directly below the geologic formation named Window Rock.

The open areas not designated with a color boundary shape on Figure 2-1 can be considered open livestock (horses, cattle and sheep) grazing areas. A majority of N12 and SR 264 right of way does practice access control (fencing), it would be prudent for driver safety to take this into consideration during the design phase to limit access to major roadways.

The average elevations in the study area range from 6700 feet to 6900 feet in elevation (2040 m to 2100 m). This high terrain tends to have cold winters with sub-zero temperatures. This should be considered during construction scheduling for the placement of asphaltic concrete and any Portland cement concrete pavement.

5.3 Geotechnical Overview

A geotechnical report is required during the engineering design phase. The pavement structural-sections for reconstruction of existing roadways and construction of new roadways are determined based on testing results. Foundation recommendations are also required. Testing shall be composed of but not limited to soil borings, penetration sampling, rock coring and laboratory testing. A geotechnical investigation and foundation recommendation (GIFR) report will be required.

6.0 Environmental Considerations and Impacts

The environmental considerations and impacts analyzed as part of this feasibility study include a review of existing biological and cultural resources databases and identification of potentially jurisdictional waters. The findings of this effort will be used to inform the decision-making during the feasibility study. Following the feasibility study, the National Environmental Policy Act (NEPA) documentation will be developed, and compliance with all applicable regulations, including, but not limited to the Endangered Species Act (ESA), the National Historic Preservation Act, and the Clean Water Act (CWA) will be demonstrated.

6.1 Analysis Area

The Analysis Area for the environmental considerations is contained within Township 16 North, Range 31 East, Sections 5, 6, 7, 8, 17, and 18, in Apache County, Arizona, and is defined as:

- State Route 264 (SR 264) as the southern boundary
- two miles (3.2 km) west of Navajo Route 12 (N12) for the western boundary
- two miles (3.2 km) east of N12 for the eastern boundary
- three miles (4.8 km) north of SR 264 as the northern boundary

Following is a summary of the environmental considerations for biological and cultural resources and the efforts to date in identifying potentially jurisdictional waters. A more detailed Records Research Report is included in **Appendix B**.

6.2 Biological Resources

The available literature and database documentation of biological resources within the Analysis Area were reviewed for an initial understanding of compliance with the ESA, the Navajo Natural Heritage Program (NNHP), the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act. The review was based on existing information including species abstracts, online review tools, special status species lists by county, and communications with resource experts and agency personnel. The biological review addresses the U.S. Fish and Wildlife Service (USFWS) listed species in Apache County and NNHP listed species.

A determination of the potential for a special-status species to occur in the Analysis Area was made, based on the literature and database review. The potential to occur was identified as present, possible, unlikely, or none.

Currently there are two endangered species, three threatened species, one proposed threatened species, one candidate species, and two species listed as nonessential, experimental populations (EXPN) on the USFWS Special-Status Species list. The listing status, known range, habitat requirements, and the potential for occurrence of each Special-Status Species were evaluated. Results of the screening analysis indicate no USFWS Special-Status Species have potential to occur, and no critical habitat is documented within the Analysis Area.

NNDFW NNHP maintains the list of species identified as endangered on the Navajo Nation, which was last updated September 10, 2008. The NNHP also maintains a list of species considered sensitive by the Navajo Nation. Analysis Area specific data has been reviewed and there are 4 species or subspecies in danger of being eliminated from all or a significant portion of its range on the Navajo Nation, 4 species or subspecies likely to become an endangered species within the foreseeable future, and 12 species or subspecies for which NNFWD does not currently have sufficient information to support their being listed in either of the other two categories but has reason to consider them. Results of the screening analysis indicate one NNDFW NNHP listed species may possibly occur and three are unlikely to occur within the Analysis Area.

A review of the NNDFW biological sensitivity coverage shows the majority of the Analysis Area is identified as Community Development without an associated sensitivity. In general, the remainder of the area is identified as low sensitivity for biological resources, with a small portion in the north east of the Analysis Area considered high sensitivity.

A Biological Assessment will be documented in support of the next phase of the project.

6.3 Cultural Resources

A Class I cultural resources review was conducted at the Cultural Resources Compliance Section office in Window Rock on September 2, 2014. For the Analysis Area and a 100-meter buffer zone, 47 previously conducted projects were identified. The available information for each project was reviewed. During this review, a number of anomalies in the available information were documented and additional information requested of the Cultural Resources Compliance Section. To date, the additional information has not been received.

The review identified two known archaeological sites, one encompassing the Window Rock and the other located in the government complex near the Window Rock. Alternatives considered should avoid these sites.

Additional pedestrian surveys will be needed in support of the next phase of the project.

6.4 Clean Water Act

Based on preliminary discussion with the U.S. Army Corps of Engineers (Corps), it is likely that the ephemeral drainages in the Analysis Area may be considered waters of the U.S. subject to regulation by the Corps and waters of the Navajo Nation subject to regulation by the Navajo Nation Environmental Protection Agency (NNEPA). Should any design alternative impact an ephemeral drainage that possesses the characteristics of an Ordinary High Water Mark, it is likely that construction of that alternative will require that BIA obtain a Section 404 permit from the Corps and Section 401 water quality certification from NNEPA.

6.5 National Environmental Policy Act (NEPA)

A review of the BIA NEPA guidance and the environmental considerations undertaken to date, indicate an environmental assessment may be required to demonstrate NEPA compliance. However, this is the purview of the BIA to determine.

7.0 Traffic Analysis

This section presents the assumptions and results of the traffic analyses for the study area bounded by SR 264 to the south, the Arizona/ New Mexico state line to the east, Rocky Ridge Road to the north, and Mustang Road to the west. The objective of the traffic analysis is to evaluate the main roadway network within the study area for both the existing and future conditions focused on traffic operations with a goal of maintaining a level of service of B. The study evaluates a secondary access into and out of the tribal government complex area and provides short-term, mid-term and long-term recommendations to provide acceptable levels of traffic operations.

7.1 Existing Conditions

The study area is approximately 2.6 square miles (6.7 km), located in the community of Window Rock, Arizona north of SR 264 and continuing for approximately two miles (3.2 km), straddling Route N12. Access to the government buildings located along Window Rock Blvd N100 is of particular focus for this study. **Sections 7.1.1** and **7.1.2** provide a detailed description of the roadway segments and intersections. See **Figure 7-1**.

7.1.1 Study Roadway Segments

SR 264 within the vicinity of the study area extends west of Mustang Road and continues east of Window Rock Loop Road. Two through lanes for each direction of travel and a center two-way left-turn lane is provided on SR 264, which is operated and maintained by ADOT. The posted speed limit along SR 264 is 45 miles per hour (mph) and it is classified as a Rural Minor Arterial. Roadway lighting and continuous sidewalks are provided along both sides of SR 264.

N12 within the vicinity of the study area begins at the intersection of SR 264 and continues north of Rocky Ridge Rd. Two through lanes for each direction of travel is provided on N12 along with a raised median between SR 264 and just north of Shonto Boulevard. Approximately 200 feet (61 m) north of Shonto Boulevard a center two-way left-turn lane is provided. The posted speed limit along N12 between SR 264 and N100 (Window Rock Boulevard) is 35 mph. North of N100 through the northern study limits the posted speed limit is 55 mph. Roadway lighting is provided at the signalized intersection at SR 264 and N100.

N100 (Window Rock Boulevard) within the vicinity of the study area begins at the intersection of N12, continues east for approximately 3,700 feet (1128 m), and then loops back to itself. Two through lanes for each direction of travel and a center two-way left-turn lane is provided on N100 from N12 to approximately 700 feet (213 m) west of Navajo Hill Drive where it tapers down to provide one lane for each direction of travel. The posted speed limit along N100 is 30 mph. Roadway lighting is provided at the signalized intersection of N12.

TRAFFIC STUDY
ROADWAY SEGMENTS AND INTERSECTIONS

FIG 7-1

Mustang Road within the vicinity of the study area begins at the intersection of SR 264 and continues north. To the north of SR 264, Mustang Road is paved for a short distance then turns into an unpaved roadway providing one lane for each direction of travel. There is no posted speed limit and no roadway lighting along Mustang Road.

Main Street within the vicinity of the study area begins at the intersection of SR 264 and continues north approximately 1300 feet (396 m) and terminates at the intersection with Window Road Loop Road. The alignment of Main Street continues south of SR 264 as Beacon Road. There are no existing pavement markings on Main Street. With approximately 40 feet (12 m) of pavement width, it operates as one through lane for each direction of travel. There is no posted speed limit and no roadway lighting along Main Street.

Shonto Boulevard within the vicinity of the study area begins at the intersection of SR 264 and continues west into a residential neighborhood to the intersection with Jeddito Drive. There are no existing pavement markings on Shonto Boulevard. With approximately 56 feet of pavement width, it operates as one through lane for each direction of travel with on-street parallel parking along both sides of the roadway. There is no posted speed limit and no roadway lighting along Shonto Boulevard.

Rocky Ridge Road within the vicinity of the study area begins at the intersection of N12 and continues west. To the west of N12, Rocky Ridge Road is paved for a short distance then turns into an unpaved roadway providing one lane for each direction of travel. To the east of N12, Rocky Ridge Road is a paved roadway. There is no posted speed limit and no roadway lighting along Rocky Ridge Road.

Circle Hill Drive within the vicinity of the study area begins at the intersection of N100 (Window Rock Boulevard) and continues northeast to Navajo Hill Dr, where it loops back to Hill Crest Drive. There are no existing pavement markings on Circle Hill Drive. With approximately 24 feet (7.3 m) of pavement width, it operates as one through lane for each direction of travel. There is no posted speed limit and no roadway lighting along Circle Hill Drive.

Morgan Boulevard within the vicinity of the study area begins at the intersection of N100 (Window Rock Boulevard) and continues to Chee Dodge Drive. Morgan Blvd provides access to the Education Center and operates with one through lane in each direction. With approximately 3 feet (0.9 m)of pavement width, it operates as one through lane for each direction of travel. There is no posted speed limit and no roadway lighting along Circle Hill Drive.

Window Rock Loop Road within the vicinity of the study area begins at the intersection of N12 and continues east, loops to the south and intersects with SR 264. There are no existing pavement markings on Window Rock Loop Road. With approximately 30 feet (9.1 m)of pavement width, it operates as one through lane for each direction of travel. There is no posted speed limit and no

roadway lighting along Window Rock Loop Road. Sidewalks are provided along the south side of the roadway.

7.1.2 Study Intersections

SR 264 and Mustang Road (1) currently operates as a stop-controlled t-intersection, with Mustang Road stopping for SR 264. The striping along SR 264 does not break at Mustang Road. There are two through lanes for each direction of travel along SR 264 with a center two-way left-turn lane. There are no pavement markings on Mustang Road, therefore the southbound approach operates as a single shared right-left turn lane.

SR 264 and N12 (2) currently operates as a signalized intersection. The northbound approach has a dedicated left turn lane, and a shared through-right turn lane. The southbound approach has dual left turn lanes, a through lane, and a dedicated right turn lane. The eastbound approach dual left turn lanes, a through lane, and a shared through-right turn lane. The westbound approach has a dedicated left turn lane, a through lane, and a shared through-right turn lane.

SR 264 and Main Street/Beacon Road (3) currently operates as a two-way stop controlled intersection, with Main Street/Beacon Road stopping for SR 264. The striping along SR 264 breaks at Main Street/Beacon Road. There are two through lanes for each direction of travel along SR 264 with a center two-way left-turn lane. There are no pavement markings on Main Street and Beacon Road, therefore the northbound and southbound approaches operates as a single shared right-through-left turn lane.

N12 and N100 (4) currently operates as a signalized t-intersection. The northbound approach has two through lanes with a free flow right turn lane separated with a raised median. The southbound approach has a dedicated left turn lane and two through lanes. The westbound approach has dual left turn lanes and a free flow right turn lane separated with a raised median.

N12 and Shonto Boulevard (5) currently operates as a stop-controlled t-intersection, with Shonto Boulevard stopping for N12. The northbound approach has a dedicated left-turn lane, two through lanes, and a merging lane from the free flow right-turn lane at the intersection of N12 and N100. The southbound approach has a through lane and a shared through-right turn lane. There are no pavement markings on Shonto Boulevard, therefore the eastbound approach operates as a single shared right-left turn lane.

N12 and Rocky Ridge Road (6) currently operates as a two-way stop controlled intersection, with Rocky Ridge Road stopping for N12. The striping along N12 does not break at Rocky Ridge Road. There are two through lanes for each direction of travel along N12 with a center two-way left-turn lane. There are no pavement markings on Rocky Ridge Road, therefore the eastbound and westbound approach operates as a single shared right-through-left turn lane.

N100 (Window Rock Boulevard) and Circle Hill Drive (Police/Fire driveway) (7) currently operates as a two-way stop controlled intersection, with Circle Hill Drive and the Police/Fire driveway stopping for N100. The striping along N12 breaks at Circle Hill Drive. There are two through lanes for each direction of travel along N12 with a center two-way left-turn lane. There are no pavement markings on Circle Hill Drive and the Police/Fire driveway, therefore the eastbound and westbound approaches operates as a single shared right-through-left turn lane.

N100 (Window Rock Boulevard) and Morgan Boulevard (8) currently operates as a stop-controlled t-intersection, with Morgan Boulevard stopping for N100. There are no pavement markings at this intersection, therefore the northbound approach of N100 operates as a single shared left-through lane, and the southbound approach operates as a single through-right turn lane. The eastbound approach of Morgan Boulevard operates as a shared right-left turn lane.

N100 (Window Rock Boulevard) and N100 (loop) (9) currently operates as a two-way stop controlled intersection, with N100 (loop) and the driveway stopping for N100 (Window Rock Boulevard). There are no pavement markings at this intersection, therefore all approaches operates as a single shared left-through-right turn lane.

SR 264 and Window Rock Loop Road (11) currently operates as a stop-controlled t-intersection, with Window Rock Loop Road stopping for SR 264. There are two through lanes for each direction of travel along SR 264 with a center two-way left-turn lane. There are no pavement markings on Window Road Loop Road, therefore the southbound approach operates as a single shared right-left turn lane.

Window Rock Loop Road and Main Street (12) currently operates as a stop-controlled t-intersection, with Main Street stopping for Window Rock Loop Road. There are no pavement markings at this intersection. Therefore the northbound approach operates as a single shared left-right turn lane. The eastbound approach operates as a single through-right turn lane. The westbound approach operates as a single left-through lane.

N100 (Window Rock Boulevard) and Navajo Hill Drive (19) currently operates as a stop-controlled t-intersection, with Navajo Hill Drive stopping for N100 (Window Rock Boulevard). There are no pavement markings at this intersection. Therefore the northbound approach of N100 operates as a single shared through-right turn lane. The southbound approach of N100 operates as a single left-through lane. The westbound approach of Navajo Hill Drive operates as a single left-right turn lane.

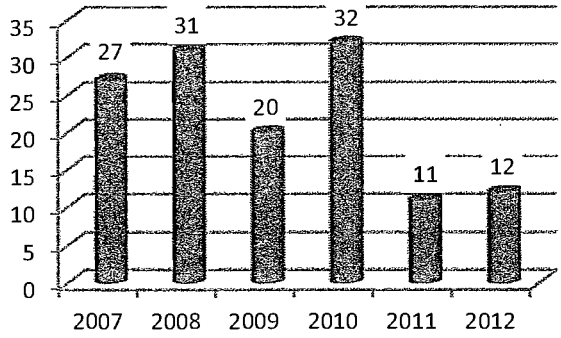
7.1.3 Crash Analysis

Crash data was received from ADOT and the BIA for the six year period from 2007 to 2012 for the following locations:

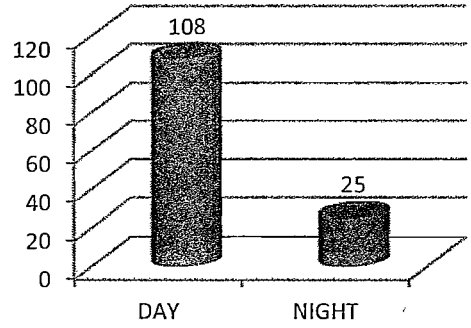
- SR 264, between Mustang Road and Window Rock Loop Road
- N12, from SR 264 to Rocky Ridge Road
- N100, east of N12
- Morgan Road, west of N100

During the six year period there were 133 recorded crashes. The highest number of crashes occurred in 2010, with a total of 32 crashes. A total of 108 (81%) crashes occurred during daylight and 25 (19%) during the night. The highest hour of the day was from 5 pm to 6 pm, where 13 crashes occurred. Of the 133 recorded crashes, 40 (30%) resulted in injuries and 10 (7.5%) resulted in fatalities. The remaining 83 (62.5%) crashes were property damage only. A total of 105 (79%) crashes occurred during clear conditions and read ends were the more common crash type with a total of 39 (29%). See **Figure 7-2** for a collision diagram and **Appendix C** for detailed crash data.

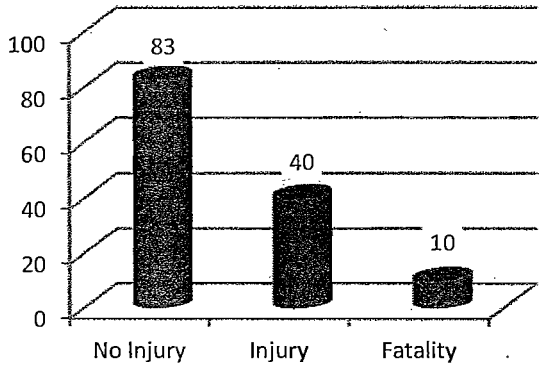
Crash Frequency



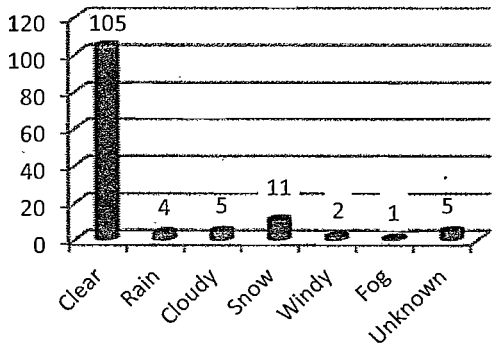
Time of Day



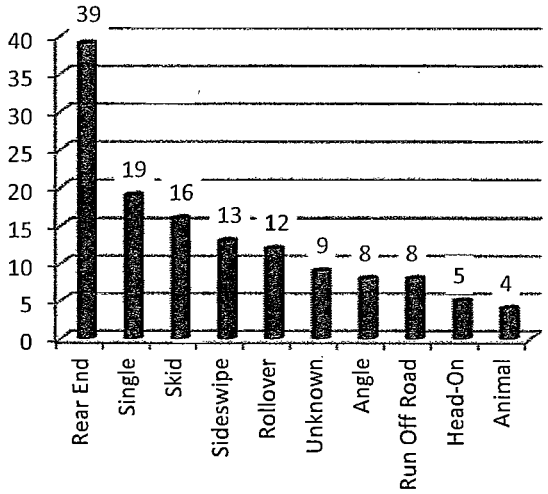
Severity



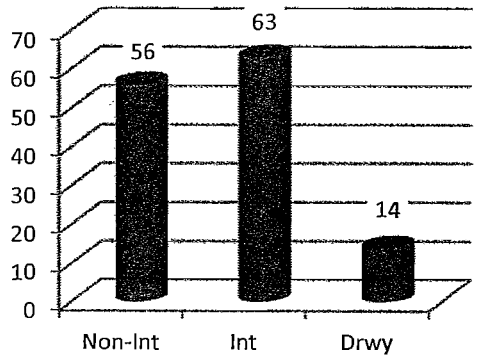
Weather Conditions

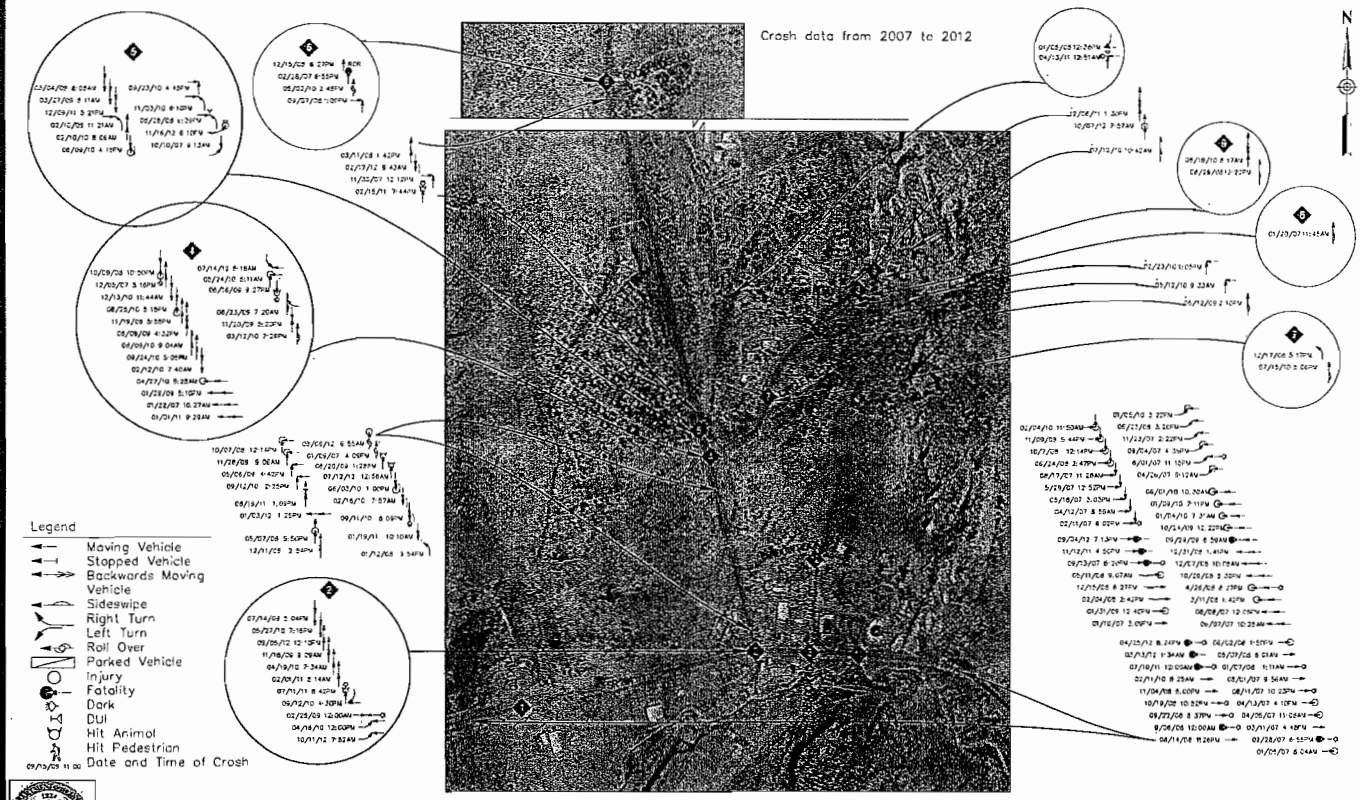


Collision Type



Collision Location





COLLISION DIAGRAM

FIG 7-2

7.1.4 Existing Traffic Counts

An Arizona traffic data collection firm, Traffic Research and Analysis, Inc. (TRA) was utilized to collect traffic counts. Beginning on Saturday, August 16, 2014 and ending on Friday, August 22, 2014, a 7-day classification, bi-directional tube counts for 24-hours in 15-minute intervals was collected at ten (10) locations:

- Mustang Rd north of SR 264
- SR 264 west of N12
- N12 north of SR 264
- Main Street north of SR 264
- N100 east of N12
- Shonto Boulevard west of N12
- Circle Hill Drive east of N100
- N100 (Window Rock Boulevard) north of N100 (loop)
- N100 (loop) east of N100 (Window Rock Boulevard)
- Rocky Ridge Road east of N12

See **Appendix D** for detailed 24–hr count data.

The 7–day counts were then utilized to identify peak days and hours to collect turning movement counts. The count data showed Wednesday to be the highest traffic volume day of the week. Analyzing the count data, the following times were determined for turning movement count data collection:

- AM Peak Period 7:30 am – 9:30 am
- Mid–Day Peak Period 11:30 am – 1:30 pm
- PM Peak Period 3:30 pm – 5:30 pm

Turning movement counts were obtained at the nine (9) study intersections using Miovision cameras on Wednesday, September 10, 2014. See **Appendix E** for detailed turning movement count data.

- SR 264 and Mustang Road (1)
- SR 264 and N12 (2)
- SR 264 and Main Street/Beacon Road (3)
- N12 and N100 (4)
- N12 and Shonto Boulevard (5)
- N12 and Rocky Ridge Road (6)
- N100 (Window Rock Boulevard) and Circle Hill Drive (Police/Fire driveway) (7)
- N100 (Window Rock Boulevard) and Morgan Boulevard (8)
- N100 (Window Rock Boulevard) and N100 (loop) (9)

The turning movement counts were then analyzed for the highest 1-hour within each time period. The AM and PM peak periods had significantly higher traffic counts when compared to the mid-day count. Therefore, the AM and PM peak hours were carried forward for analysis for this study.

- AM Peak Hour 7:30 am – 8:30 am
- PM Peak Hour 4:30 pm – 5:30 pm

The existing turning movement counts for the above peak hours were "balanced" and adjusted to achieve mathematically consistent data. For example, where there are consecutive intersections with no other access points between them, traveling from one intersection to the other must match.

When traffic count data was collected, the existing Administration Building No. 1 and Administration Building No. 2 were under renovation. Therefore all employees were temporarily relocated. Additionally the residents of AZ 1204 Housing were temporarily relocated to treat mold. Therefore, trip generation calculations were utilized to incorporate these trips into the existing traffic volumes. The traffic volumes generated for these facilities were determined from the transportation planning data taken from the Institute of Transportation Engineer's (ITE) publication titled Trip Generation 9th Edition. This publication is considered to be the standard for the transportation engineering profession. The ITE rates are based on studies that measured the trip generation characteristics for various types of land uses. The rates are expressed in terms of vehicular trips per unit of lane use. The following ITE trips rate codes were used:

- Administration Building No. 1 – ITE Code 710 – General Office Building
- Administration Building No. 2 – ITE Code 710 – General Office Building
- AZ 1204 Housing – ITE Code 210 – Single Family Housing

See **Table 7-1** for the trip generation calculations.

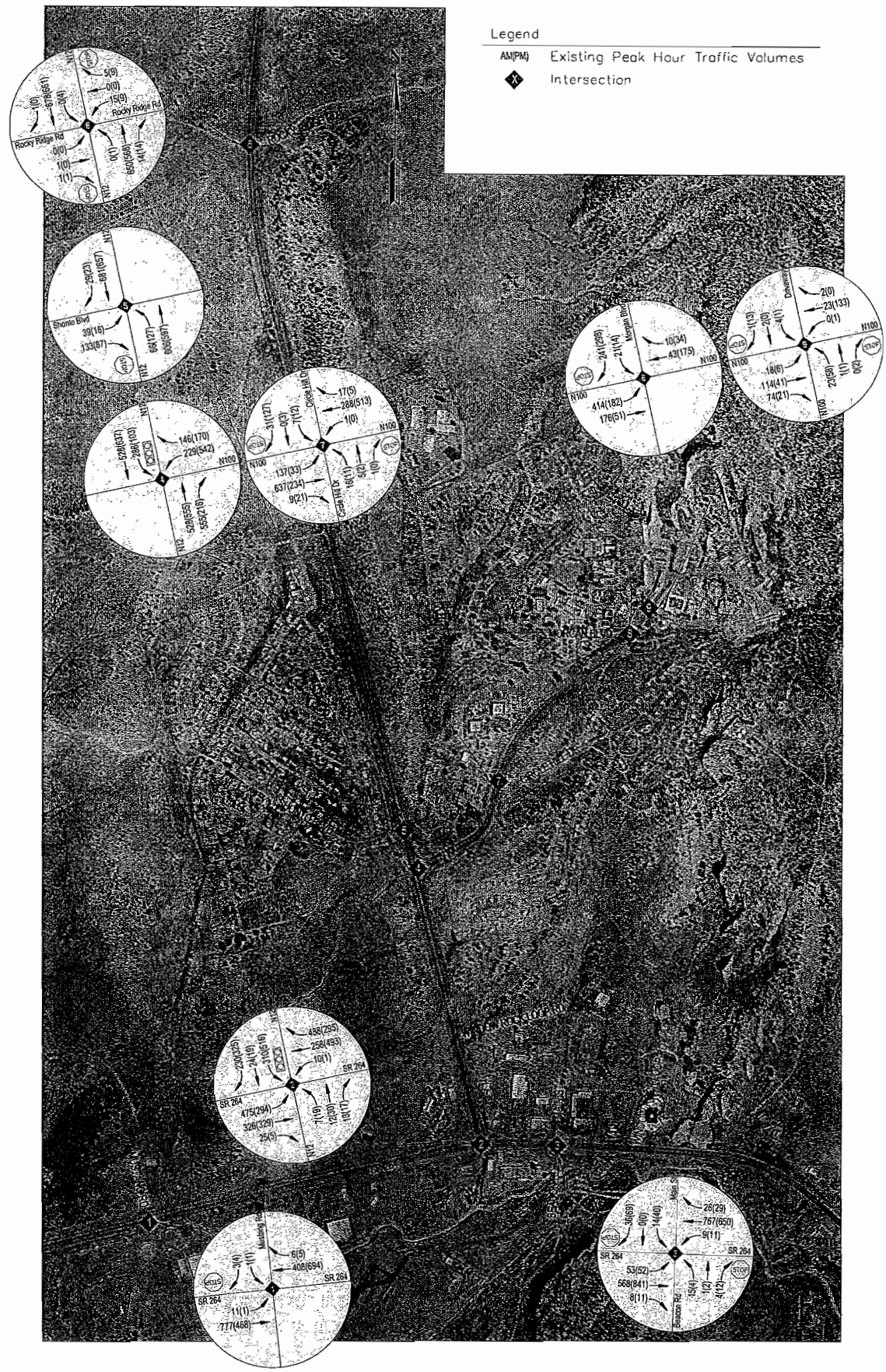
Table 7-1 - Trip Generation for Existing Traffic

			AM		PM	
Land Use	ITE Code	Units	In	Out	In	Out
Administration Building No. 1	710	38,700 Sq Ft	53	7	10	48
Administration Building No. 2	710	38,700 Sq Ft	53	7	10	48
AZ 1204 Housing	210	40 Units	8	22	25	15
		TOTAL	**114**	**36**	**45**	**111**

These calculated trips were then distributed based on the distribution patterns of the traffic count data. The following distribution was calculated and used for the AM(PM) peak hours:

To North	From North
38%(23%)	34%(28%)
To West	**From West**
26%(28%)	32%(35%)
To East	**From East**
36%(49%)	34%(37%)

These trips were added to the peak hour turning movement counts. See **Figure 7-3** for the existing traffic volumes.



2014 EXISTING TRAFFIC VOLUMES

FIG 7-3

7.1.5 Existing Capacity Analysis

The capacity and level of service for the study area intersections were evaluated using the methodology presented in the 2010 Highway Capacity Manual. Traffic analysis software, PTV VISTRO 3.0, was used to perform the analyses. For the signalized intersection of SR 264 and N12 the existing signal timing was provided by ADOT. See **Appendix F** for detailed signal timing sheets. For the signalized intersection of N12 and Window Rock Blvd N100 no signal timing sheets were provided, so a simple single timing sequence was assumed. The results of the capacity analysis reveal the following locations with an existing level of service (LOS) C or worse:

SR 264 and N12 (2)

- NB left AM and PM peak hour operates at LOS E
- NB shared through-right AM and PM peak hour operates at LOS D and E, respectively
- SB left AM and PM peak hour operates at LOS D
- SB through AM and PM peak hour operates at LOS D
- SB right AM and PM peak hour operates at LOS F
- EB left AM and PM peak hour operates at LOS D and E, respectively
- EB though AM and PM peak hour operates at LOS C
- EB shared through-right AM and PM peak hour operates at LOS C
- WB left AM and PM peak hour operates at LOS E and F, respectively
- WB through AM and PM peak hour operates at LOS D and F, respectively
- WB shared through-right AM and PM peak hour operates at LOS F
- Overall Intersection AM and PM peak hour LOS F

N12 and N100 (4)

- SB left AM and PM peak hour operates at LOS F
- WB left AM and PM peak hour operates at LOS D and C, respectively
- WB right AM and PM peak hour operates at LOS C
- Overall Intersection AM and PM peak hour is LOS F and C, respectively

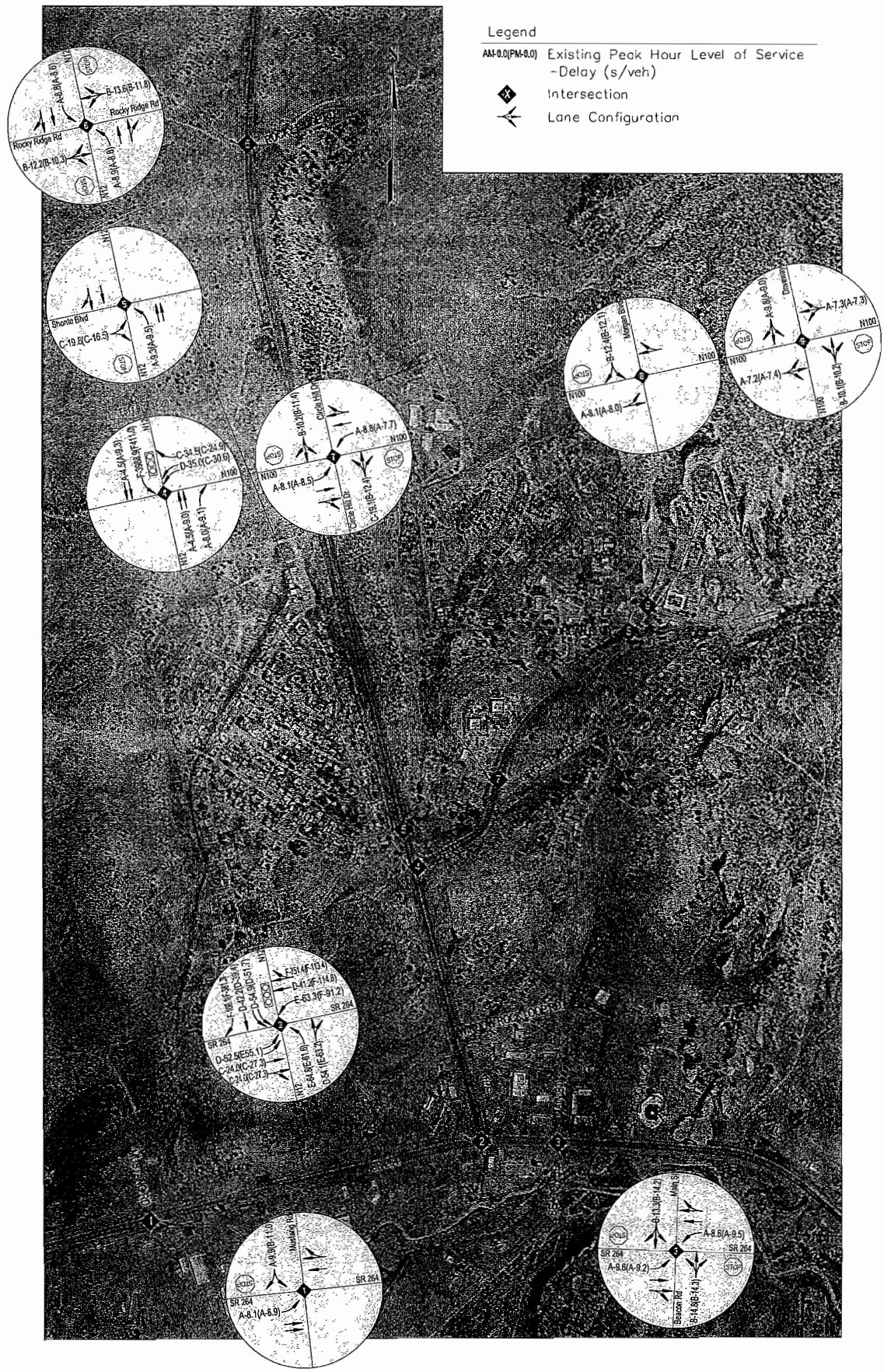
N12 and Shonto Boulevard (5)

- EB left AM and PM peak hour operates at LOS C

N100 (Window Rock Boulevard) and Circle Hill Drive (Police/Fire driveway) (7)

- NEB shared left-through-right AM peak hour operates at LOS C

See **Figure** 7-4 for the AM and PM peak hour capacity analysis. LOS C and D are shown in green, and LOS E and F are shown in red. The detailed capacity analysis sheets can be found in **Appendix G.**



2014 EXISTING CAPACITY ANALYSIS

FIG 7-4

7.2 Future (2034) Conditions

7.2.1 Future Developments

The future (2034) analysis assumes the build out of the following developments based on research, current plans, and conversations with BIA staff. See **Figure 7-5** for the approximate location of the proposed future developments.

Future Supreme Court Complex (Navajo Nation Justice Complex)
Planning and design for the future Supreme Court Complex is currently underway. The Supreme Court Complex will be located south of N100, southeast of the existing Administration Complex Buildings. It will be made up of three separate buildings that were each assumed to be approximately 20,000 square feet (1858 square meters), totaling 60,000 square feet (5574 square meters). It is assumed that that complex will be built out in five (5) years. See **Appendix N** for current Supreme Court Complex (Navajo Nation Justice Complex) plans.

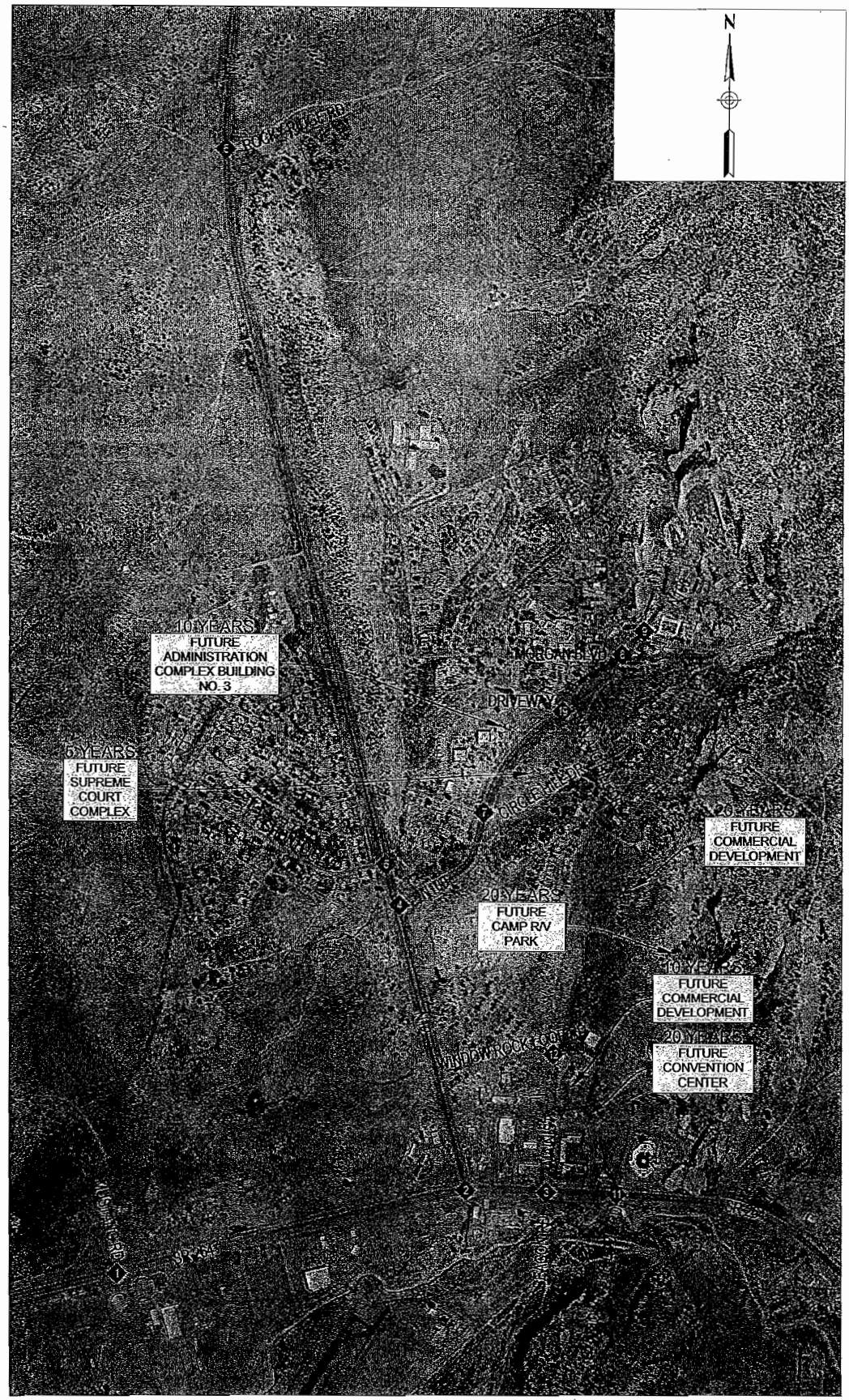
Future Administration Complex Building No. 3
The future Administration Complex Building No. 3 is assumed to be located just east of the current Administration Complex Buildings No. 1 and 2. It is also assumed that the building will be the same size as the current administration buildings, which is approximately 38,700 square feet (3,595 square meters) and will be built out in ten (10) years.

Future Commercial Development (Near Convention Center)
The future Commercial Development is located on the southeast corner of the intersection of Window Rock Loop Road and Main Street. It is assumed that this development will be similar in size to the existing strip mall located on the west side of Main Street, which is approximately 45,000 square feet (4,180 square meters) and will be built out in ten (10) years.

Future Convention Center
The future Convention Center is located on the east side of Main St, just north of the existing Quality Inn. It is assumed that the Convention Center will be approximately 150,000 square feet (13,936 square meters) and will be built out in twenty (20) years.

Future Commercial Development (Along Alternative 2)
The future Commercial Development is located between the Alternative 2 and Alternative 3 alignments. It is assumed that the development will be similar in size to the existing strip mall located on the west side of Main Street, which is approximately 45,000 square feet (4180 square meters) and will be built out in twenty (20) years.

Future Camp/RV Park
The future Camp/RV Park is located on the east side of the Alternative 2 alignment. It is assumed that the park will be approximately 3 acres, with 20 sites per acre and will be built out in twenty (20) years.


N
10 YEARS
FUTURE ADMINISTRATION COMPLEX BUILDING NO. 3
6 YEARS
FUTURE SUPREME COURT COMPLEX
DRIVEWAY
20 YEARS
FUTURE COMMERCIAL DEVELOPMENT
20 YEARS
FUTURE CAMP R/V PARK
10 YEARS
FUTURE COMMERCIAL DEVELOPMENT
20 YEARS
FUTURE CONVENTION CENTER

7.2.2 Future Development Traffic Volumes

The traffic volumes generated by future developments are determined from the ITE publication titled Trip Generation, 9th Edition and previously described in **Section 7.1.4**. The following ITE trips rate codes were used:

- Supreme Court Complex – ITE Code 710 – General Office Building
- Administration Building No. 3 – ITE Code 710 – General Office Building
- Commercial Development (Near Convention Center) – ITE Code 820 – Shopping Center
- Commercial Development (Along Alternative 2) – ITE Code 820 – Shopping Center
- Camp/RV Park – ITE Code 416 – Campground Recreational Vehicle Park

There is no trip generation data in the ITE manual for a convention center or similar use. Consequently, assumptions were made based on research of other convention center trip generation calculations, and attendance and travel characteristics of the Window Rock area. A rate of 1.4 AM peak hour trips per 1000 square feet (93 square meters) of gross floor area was used with 88% entering, and a rate of 1.65 PM peak hour trips per 1000 square feet (93 square meters) of gross floor area was used with 17% entering.

See
Table 7-2 for the trip generation calculations for the proposed future developments.

Table 7-2 - Trip Generation for Future Developments

			AM		PM	
Land Use	ITE Code	Units	In	Out	In	Out
Supreme Court Complex	710	60,000 Sq Ft	83	11	15	74
Administration Building No. 3	710	38,700 Sq Ft	53	7	10	48
Commercial Development (Near Convention Center)	820	45,000 Sq Ft	27	16	80	87
Commercial Development (Along Alternative 2)	820	45,000 Sq Ft	27	16	80	87
Camp/RV Park	416	60 Sites	5	8	10	6
Convention Center	N/A	150,000 Sq Ft	185	25	46	224
		TOTAL	**380**	**83**	**241**	**526**

7.2.3 Background Growth

The 2008 Navajo Region Road Inventory Field Data Module (RIFDS) estimates a two percent annual traffic growth rate for all Navajo-BIA roads. Similarly ADOT also estimates and uses a two percent annual growth rate for all state routes on the Navajo and Hopi reservations. However,

according to the census of 2000 there were 3,059 residents living in the Window Rock area, and the census of 2010 reported a population of 2,712 residents, which is a decrease of approximately 12% over 10-Years. Therefore, for the purposes of this study, it was determined that a one percent annual growth rate was more realistic. The one percent annual growth rate was applied to all traffic volumes along SR 264 and N12.

7.2.4 Future Base Assumptions

N100 Improvements

The proposed improvements along N100 are included in each future analysis, with the exception of the No Build analysis. These improvements consist of the following:

- The intersection of N12 and Window Rock Blvd N100 (4) will be converted from a signalized intersection to a roundabout.
- The intersection of Window Rock Blvd N100 and Navajo Hill Dr (19) will be realigned and constructed as a roundabout.

Optimized Signal Timing

As traffic patterns change, routine modifications to optimize signal timing should occur. The future (2034) analyses incorporate optimized signal timing.

7.3 Future (2034) No Build Alternative

This alternative analyzes the future (2034) traffic volumes if no improvements were made to the Window Rock area, while future development and background growth continued to occur.

7.3.1 Future (2034) No Build Traffic Volumes

The trips for the future developments were distributed based on the existing traffic patterns as previously described in **Section 7.1.4**. These trips were then added to the future (2034) background traffic volumes which were obtained by applying a one percent annual growth rate to the existing traffic volumes along SR 264 and N12. See **Figure 7-6**.

7.3.2 Future (2034) No Build Capacity Analysis

The results of the capacity analysis reveal the following locations with an existing level of service (LOS) C or worse:

SR 264 and N12 (2)

- NB left AM and PM peak hour operates at LOS E
- NB shared through-right AM and PM peak hour operates at LOS E
- SB left AM and PM peak hour operates at LOS D
- SB through AM and PM peak hour operates at LOS D and C, respectively

- SB right AM and PM peak hour operates at LOS F
- EB left AM and PM peak hour operates at LOS F and D, respectively
- EB through AM and PM peak hour operates at LOS C
- EB shared through-right AM and PM peak hour operates at LOS C
- WB left AM and PM peak hour operates at LOS E and F, respectively
- WB through AM and PM peak hour operates at LOS D and F, respectively
- WB shared through-right AM and PM peak hour operates at LOS F
- Overall Intersection AM and PM peak hour LOS F

SR 264 and Main Street/Beacon Road (3)

- NB shared left-through-right AM and PM peak hour operates at LOS E and D, respectively
- SB shared left-through-right AM and PM peak hour operates at LOS C and F, respectively

N12 and N100 (4)

- SB left AM and PM peak hour operates at LOS F
- WB left AM and PM peak hour operates at LOS C
- WB right AM and PM peak hour operates at LOS C
- Overall Intersection AM and PM peak hour LOS F and C, respectively

N12 and Shonto Boulevard (5)

- EB left AM and PM peak hour operates at LOS E and C, respectively

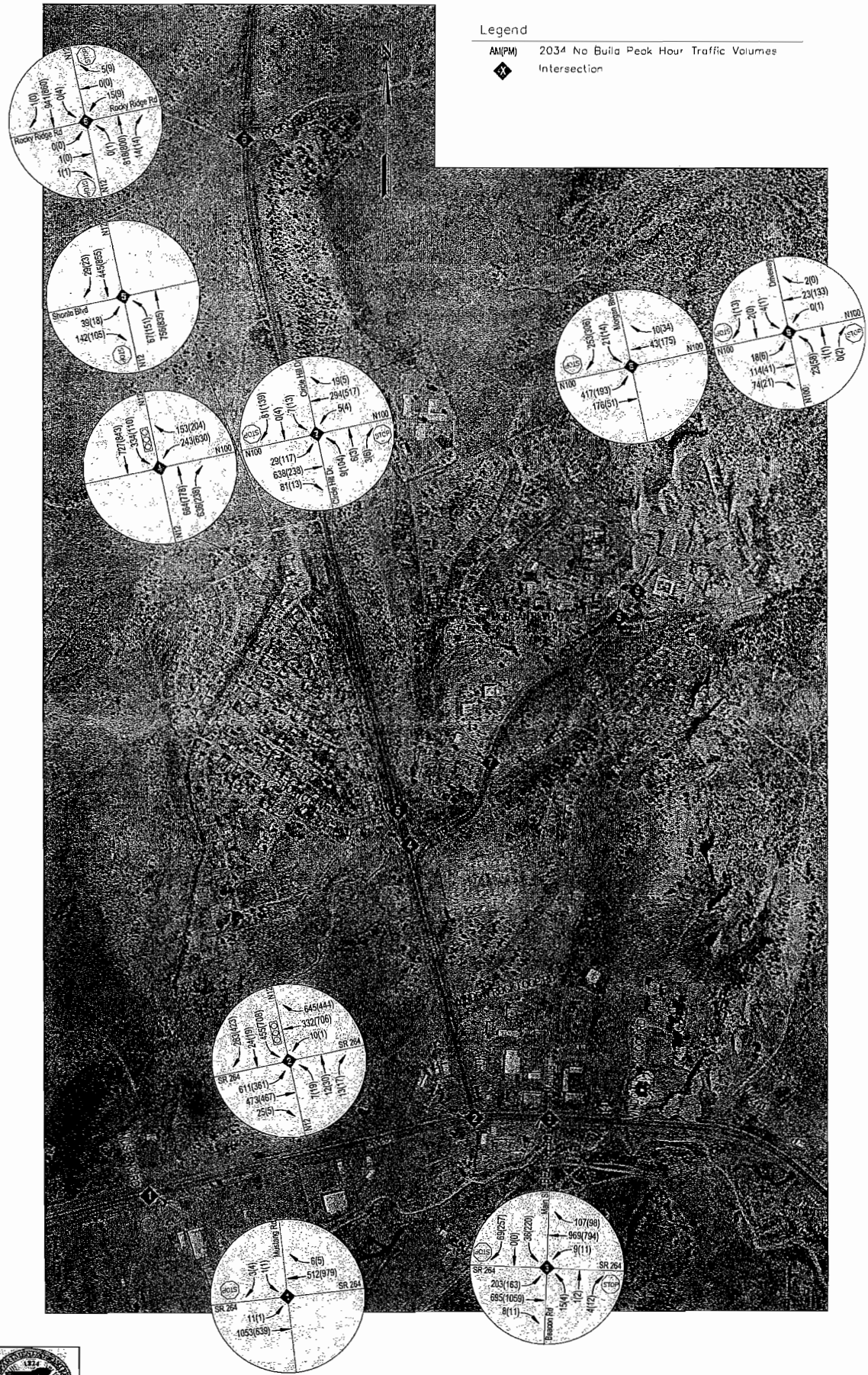
N12 and Rocky Ridge Road (6)

- WB shared left-through-right AM peak hour operates at LOS C

N100 (Window Rock Boulevard) and Circle Hill Drive (Police/Fire driveway) (7)

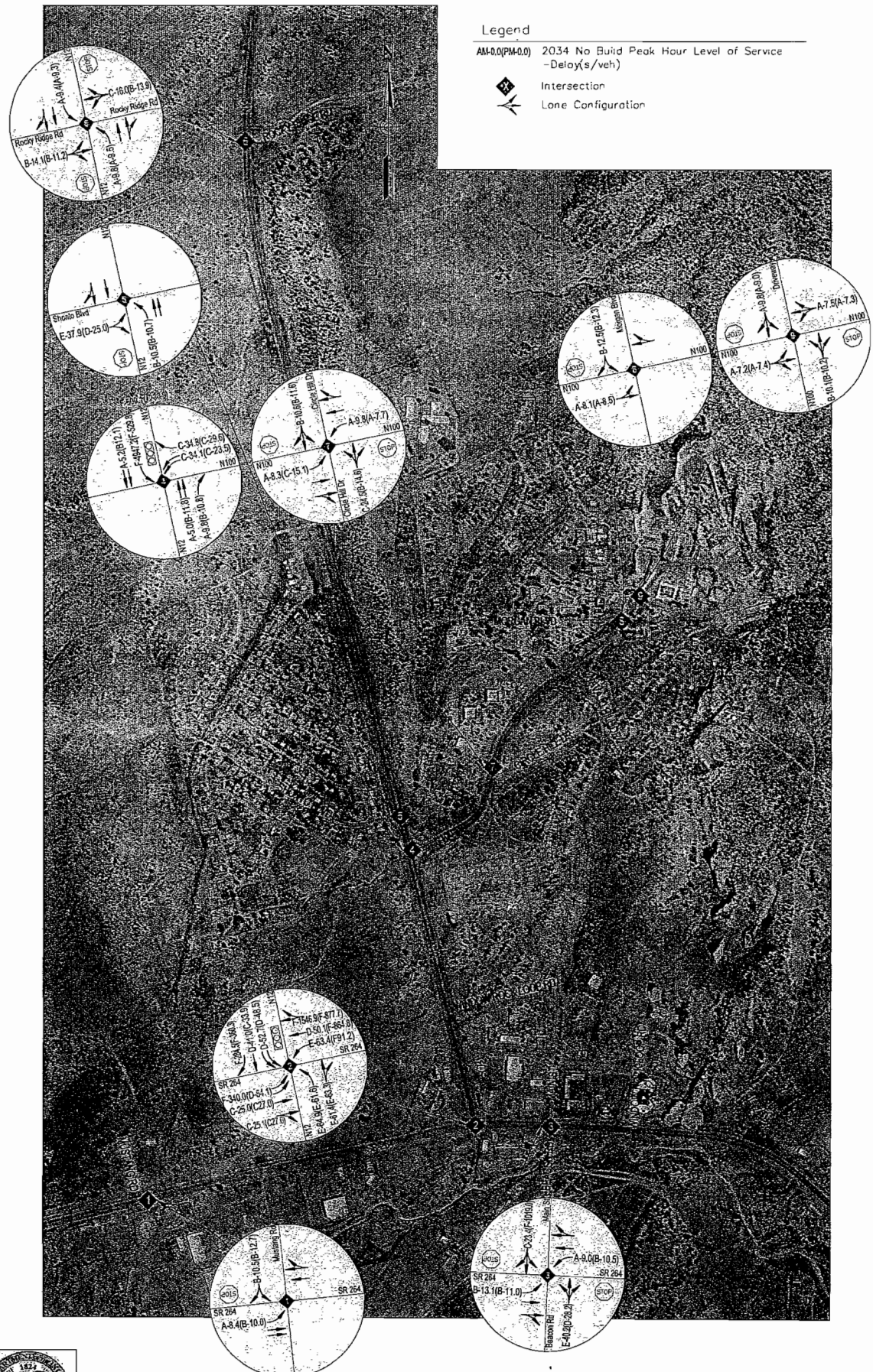
- NEB shared left-through-right AM peak hour operates at LOS C
- EB left PM peak hour operate at LOS C

See **Figure 7-7** for the AM and PM peak hour future (2034) no build capacity analysis. LOS C and D are shown in green, and LOS E and F are shown in red. The detailed capacity analysis sheets can be found in **Appendix I.**



FUTURE (2034) NO BUILD TRAFFIC VOLUMES

FIG 7-6


Legend
AM-0.0(PM-0.0) 2034 No Build Peak Hour Level of Service -Delay(s/veh)
Intersection
Lane Configuration
Rocky Ridge Rd
Rocky Ridge Rd
C-16.0(B-13.9)
A-9.8(A-9.5)
B-14.1(B-11.2)
Shonto Blvd
E-37.9(D-25.0)
B-10.5(B-10.7)
C-34.8(C-29.6)
C-34.1(C-23.5)
A-5.0(B-11.8)
A-9.9(B-10.8)
A-9.8(A-7.7)
A-8.3(C-15.1)
Circle Hill Dr
Navajo Blvd
A-8.1(A-8.5)
A-7.5(A-7.3)
A-7.2(A-7.4)
Dinetah
F-1546.9(F-977.1)
D-50.1(E-964.8)
E-63.4(F91.2)
SR 264
E-340.9(D-84.1)
C-25.0(C27.0)
C-25.1(C27.0)
E-64.9(E-61.6)
E-41.4(E-83.3)
Moloing Rd
B-10.9(B-12.7)
A-8.4(B-10.0)
C-23.4(C-101.0)
A-9.0(B-10.5)
B-13.1(B-11.0)
Balsam Rd
E-40.2(D-39.2)

7.4 Future (2034) Alternative 3

The existing and future (2034) no build analysis reveal that the greatest area needing improvements and a reliever route is to the south of N100 and to the west of N12. Therefore, of the seven (7) alternatives, Alternatives 2, 3 and 6 fall in this area. Alternative 3 provides a direct reliever for traffic along N100 and N12. Therefore, Alternative 3 is the obvious alternative to evaluate.

This alternative analyzes construction of a "Connector Road" from the intersection of Window Rock Loop Road and Main Street (12) to N100 (Window Rock Boulevard).

7.4.1 Future (2034) Alternative 3 Traffic Volumes

The trips of the future developments were distributed based on both the existing traffic patterns, along with the new roadway connected provided by Alternative 3. These trips were then added to the future (2034) background traffic volumes which were obtained by applying a one percent annual growth rate to the existing traffic volumes along SR 264 and N12. See **Figure 7-8**.

7.4.2 Future (2034) Alternative 3 Capacity Analysis

All intersections operate at a LOS D or better for both the AM and PM peak hours.

In addition to the Alternative 3 alignment and improvements described in **Section 7.2.4**, the following improvements were made to improve the level of service:

SR 264 and N12 (2)

- WB duel right-turn lanes added
- SB through lanes converted to a shared through-right turn lane

SR 264 and Main Street/Beacon Road (3)

- SB dedicated left turn lane added

N12 and Shonto Boulevard (5)

- EB dedicated left turn lane added

N100 (Window Rock Boulevard) and Morgan Boulevard (8)

- SB dedicated right turn lane added
- EB dedicated left turn lane added

SR 264 and Window Rock Loop Road (11)

- WB dedicated right turn lane added
- SB dedicated left turn lane added
- Traffic signal added

Window Rock Loop Road and Main Street (12)

- Roundabout added

All intersections operate at an overall LOS D or better during the AM and PM peak hours, which is often considered an acceptable level of service. The following are locations with a level of service (LOS) C or worse:

SR 264 and N12 (2)

- NB left AM and PM peak hour operates at LOS E
- NB shared through-right AM and PM peak hour operates at LOS E
- SB left AM and PM peak hour operates at LOS E and D, respectively
- SB shared through-right AM and PM peak hour operates at LOS D and E, respectively
- SB right AM and PM peak hour operates at LOS D and E, respectively
- EB left AM and PM peak hour operates at LOS D and E, respectively
- EB through AM and PM peak hour operates at a LOS D and C, respectively
- EB shared through-right AM and PM peak hour operates at LOS D and C, respectively
- WB left AM and PM peak hour operates at LOS E
- WB through AM and PM peak hour operates at LOS D
- WB right AM and PM peak hour operates at LOS D
- Overall Intersection AM and PM peak hour LOS D

SR 264 and Main Street/Beacon Road (3)

- NB shared left-through-right AM and PM peak hour operates at LOS C
- SB left AM and PM peak hour operates at LOS C and D, respectively
- SB shared through-right PM peak hour operates at LOS C

N12 and Shonto Boulevard (5)

- EB left AM and PM peak hour operates at LOS C

N12 and Rocky Ridge Road (6)

- Overall Intersection AM and PM peak hour LOS C

N100 (Window Rock Boulevard) and Morgan Boulevard (Police/Fire driveway) (8)

- SB left AM peak hour operates at LOS C

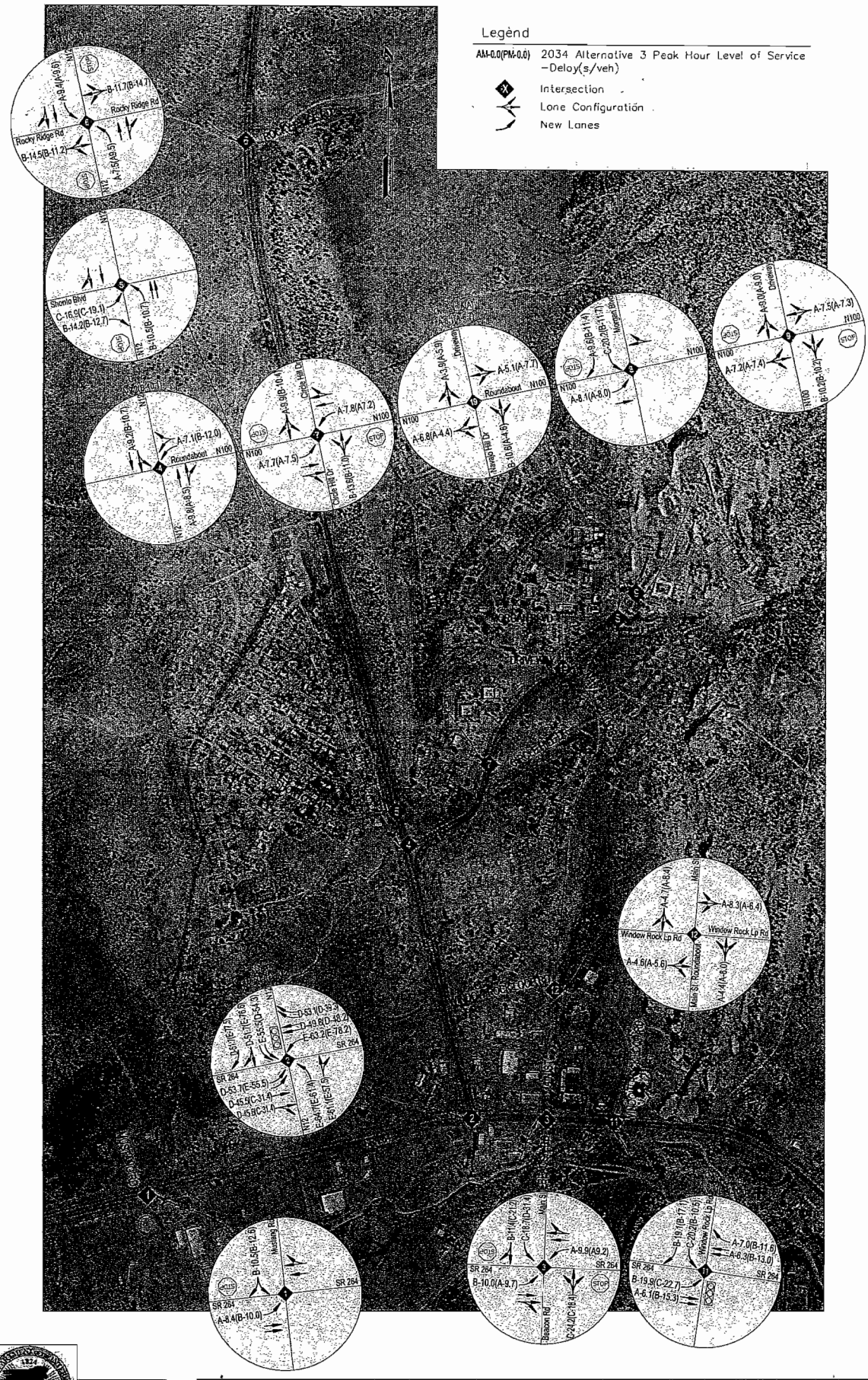
SR 264 and Window Rock Loop Road (11)

- SB left AM peak operates at LOS C
- WB left PM peak operates at LOS C

See **Figure 7-9** for the AM and PM peak hour capacity analysis. LOS C and D are shown in green, and LOS E and F are shown in red. The changes and improvement necessary are also highlighted in red. The detailed capacity analysis sheets can be found in **Appendix J.**

FUTURE (2034) ALTERNATIVE 3 TRAFFIC VOLUMES

FIG 7-8



FUTURE (2034) ALTERNATIVE 3 CAPACITY ANALYSIS

FIG 7-9

7.5 Future (2034) Alternative 1 and 3

This analysis looks at the impacts if both Alternatives 1 and 3 were constructed.

7.5.1 Future (2034) Alternative 1 and 3 Traffic Volumes

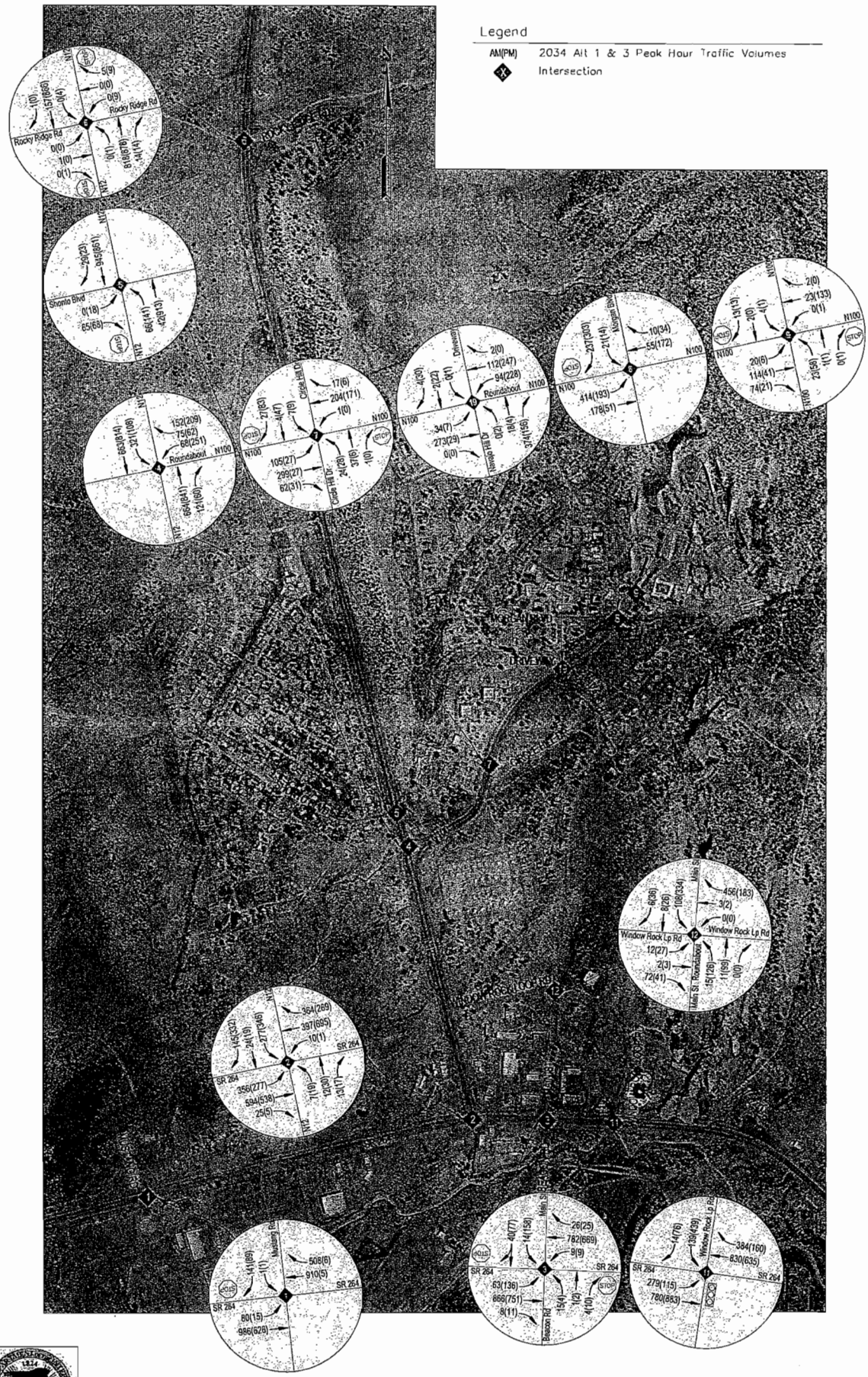
The trips of the future developments were distributed based on both the existing traffic patterns, along with the new roadway connected provided by Alternative 1 and 3. These trips were then added to the future (2034) background traffic volumes which were obtained by applying a one percent annual growth rate to the existing traffic volumes along SR 264 and N12. See **Figure 7-11**.

7.5.2 Future (2034) Alternative 1 and 3 Capacity Analysis

All intersections operate at a LOS D or better for both the AM and PM peak hours.

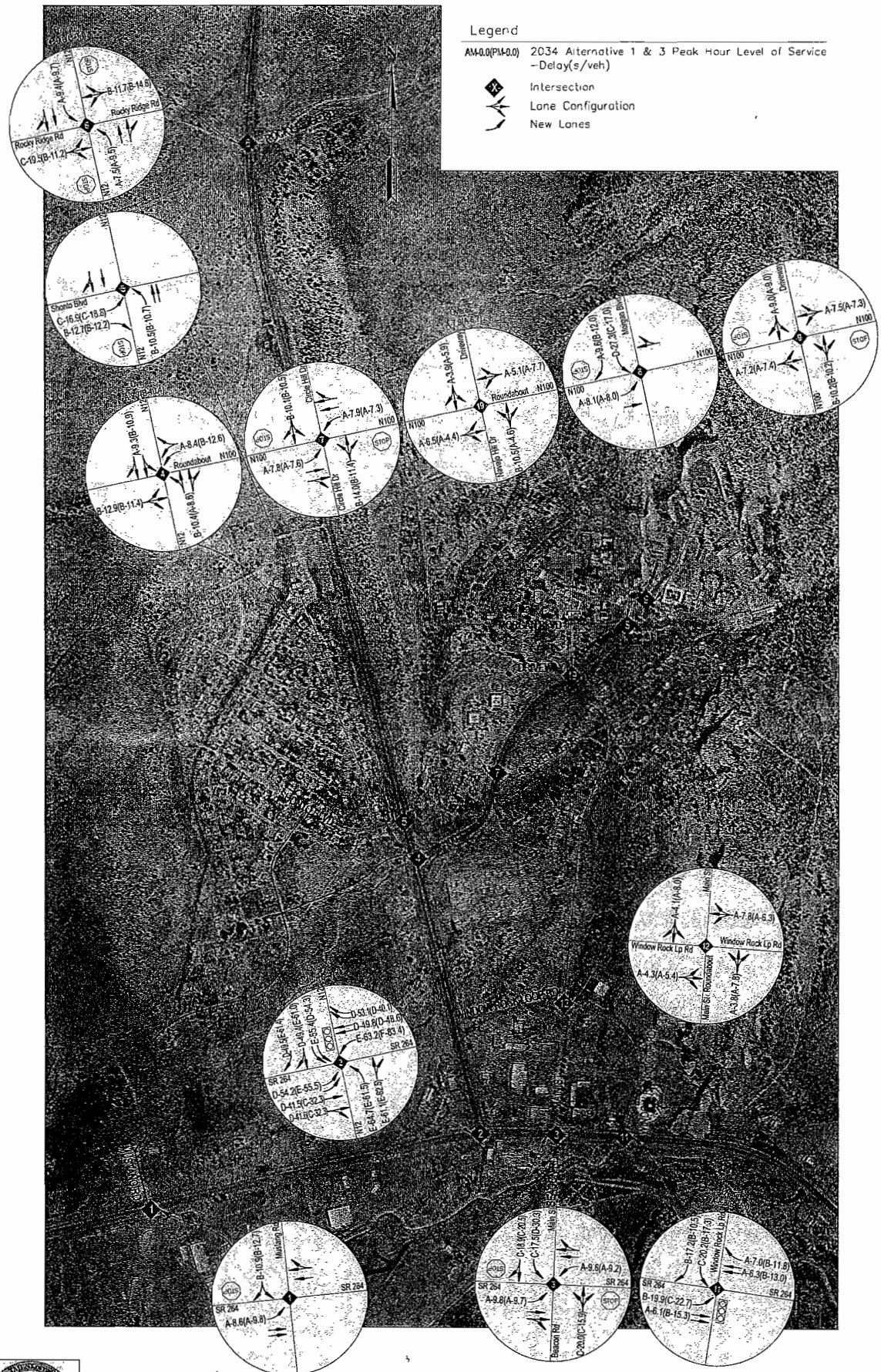
The additional improvements are identical to the Alternative 3 analysis and the capacity analysis is nearly identical. The Alternative 1 alignment serves the west side of N12. However, all future developments are to the east of N12. Therefore adding Alternative 1 does not result in any significant impact to traffic operations.

See **Figure 7-11** for the AM and PM peak hour capacity analysis. LOS C and D are shown in green, and LOS E and F are shown in red. The changes and improvement necessary are also highlighted in red. The detailed capacity analysis sheets can be found in **Appendix K**.



FUTURE (2034) ALTERNATIVE 1 AND 3 TRAFFIC VOLUMES

FIG 7-10



FUTURE (2034) ALTERNATIVE 1 AND 3 CAPACITY ANALYSIS

FIG 7-11

7.6 Preferred Alternative – Alternative 3

Alternative 3 provides the greatest impact to improving traffic operations in and around the Window Rock area. Ultimately, the necessary improvements for this alternative include:

Alternative 3

- Construct roadway alignment with one lane for each direction of travel and a center two-way left-turn lane

SR 264 and N12 (2)

- WB duel right-turn lanes added
- SB through lanes converted to a shared through-right turn lane

SR 264 and Main Street/Beacon Road (3)

- SB dedicated left turn lane added

N12 and N100 (4)

- Two lane roundabout

N12 and Shonto Boulevard (5)

- EB dedicated left turn lane added

N100 (Window Rock Boulevard) and Morgan Boulevard (8)

- SB dedicated right turn lane added
- EB dedicated left turn lane added

SR 264 and Window Rock Loop Road (11)

- WB dedicated right turn lane added
- SB dedicated left turn lane added
- Traffic signal added

Window Rock Loop Road and Main Street (12)

- Construct roundabout

N100 (Window Rock Boulevard) and Navajo Hill Drive (19)

- Construct roundabout

These improvements are to be constructed over the course of 20-years. In an effort to prioritize these improvements, a short-term (5-Year), mid-term (10-year) and long-term (20-year) analysis was conducted.

7.6.1 Short-Term (5-Year)

Short-Term (5-Year) Alternative 3 Traffic Volumes

The trips for the 5-Year future developments were calculated and distributed based on both the existing traffic patterns, along with the new roadway connected provided by Alternative 3. The future Supreme Court Complex is anticipated to be built out in five (5) years. The trips from the future Supreme Court Complex were then added to the future (2019) background traffic volumes which were obtained by applying a one percent annual growth rate for five (5) years to the existing traffic volumes along SR 264 and N12. See **Figure 7-12**.

Short-Term (5-Year) Alternative 3 Capacity Analysis

The following improvements are needed to be constructed in the short-term (between now and 5-Years):

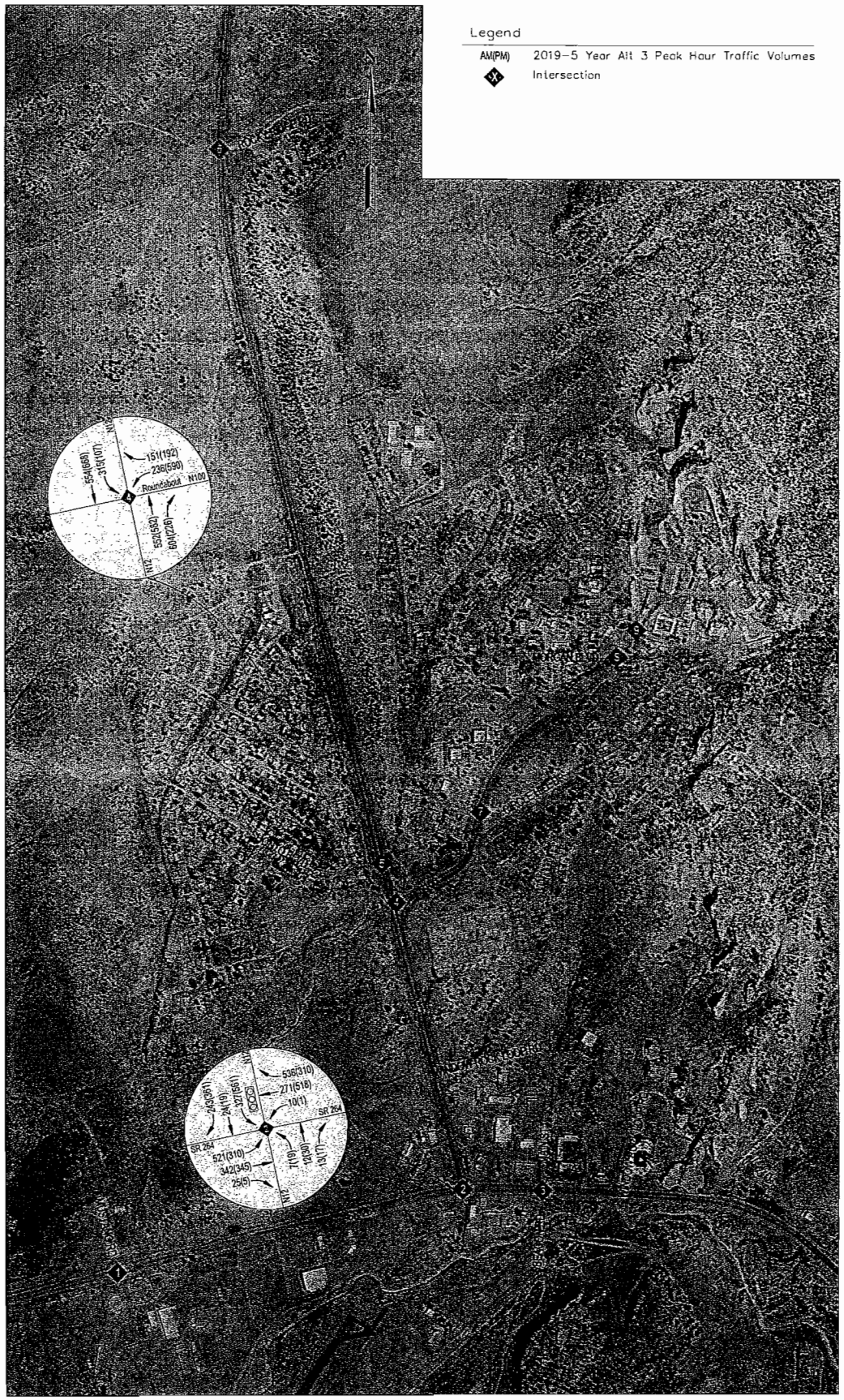
SR 264 and N12 (2)

- WB duel right-turn lanes added
- SB through lanes converted to a shared through-right turn lane

N12 and N100 (4)

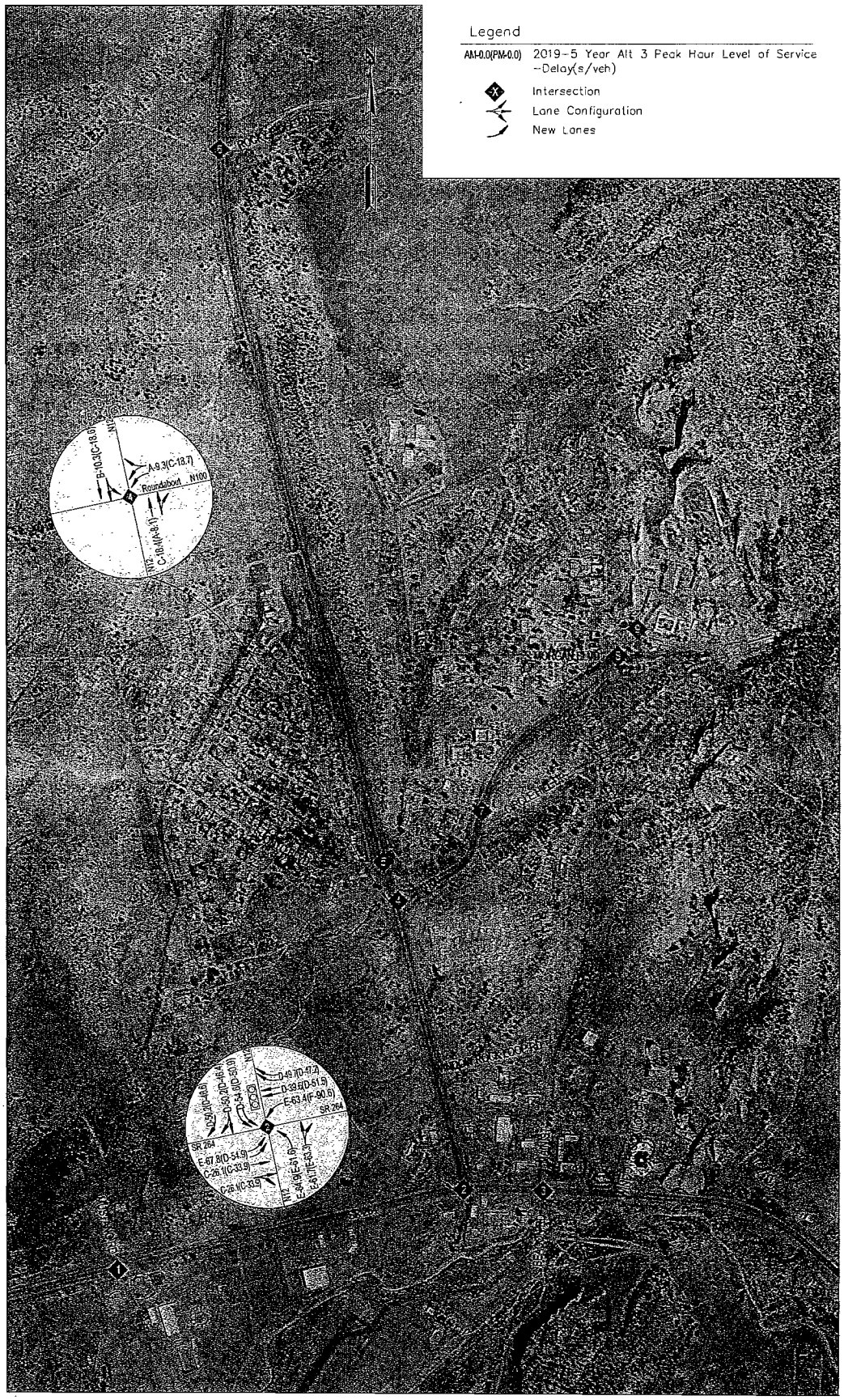
- Two lane roundabout

These two intersections are currently operating with overall intersection LOS F during the AM and/or PM peak hours. Therefore, these improvements are currently necessary. See **Figure 7-13** for the short-term (5-Year) capacity analysis with these improvements.



FUTURE (2019) 5-YEAR ALTERNATIVE 3 TRAFFIC VOLUMES

FIG 7-12



FUTURE (2019) 5-YEAR ALTERNATIVE 3 CAPACITY ANALYSIS

FIG 7-13

7.6.2 Mid-Term (10-Year)

Mid-Term (10-Year) Alternative 3 Traffic Volumes

The trips for the 10-year future developments were calculated and distributed based on both the existing traffic patterns, along with the new roadway connected provided by Alternative 3. The future Commercial Development (near the Convention Center) and the future Administration Complex Building No. 3 are anticipated to be built out in ten (10) years. The trips from the future Supreme Court Complex, Commercial Development (near the Convention Center) and Administration Complex Building No. 3 were then added to the future (2019) background traffic volumes which were obtained by applying a one percent annual growth rate for ten (10) years to the existing traffic volumes along SR 264 and N12. See **Figure 7-14.**

Mid-Term (10-Year) Alternative 3 Capacity Analysis

The following improvements are needed to be constructed between the short-term and mid-term (between 5-Years and 10-years):

Alternative 3

- Construct roadway alignment with one lane for each direction of travel and a center two-way left-turn lane

SR 264 and Window Rock Loop Road (11)

- WB dedicated right turn lane added
- SB dedicated left turn lane added
- Traffic signal added

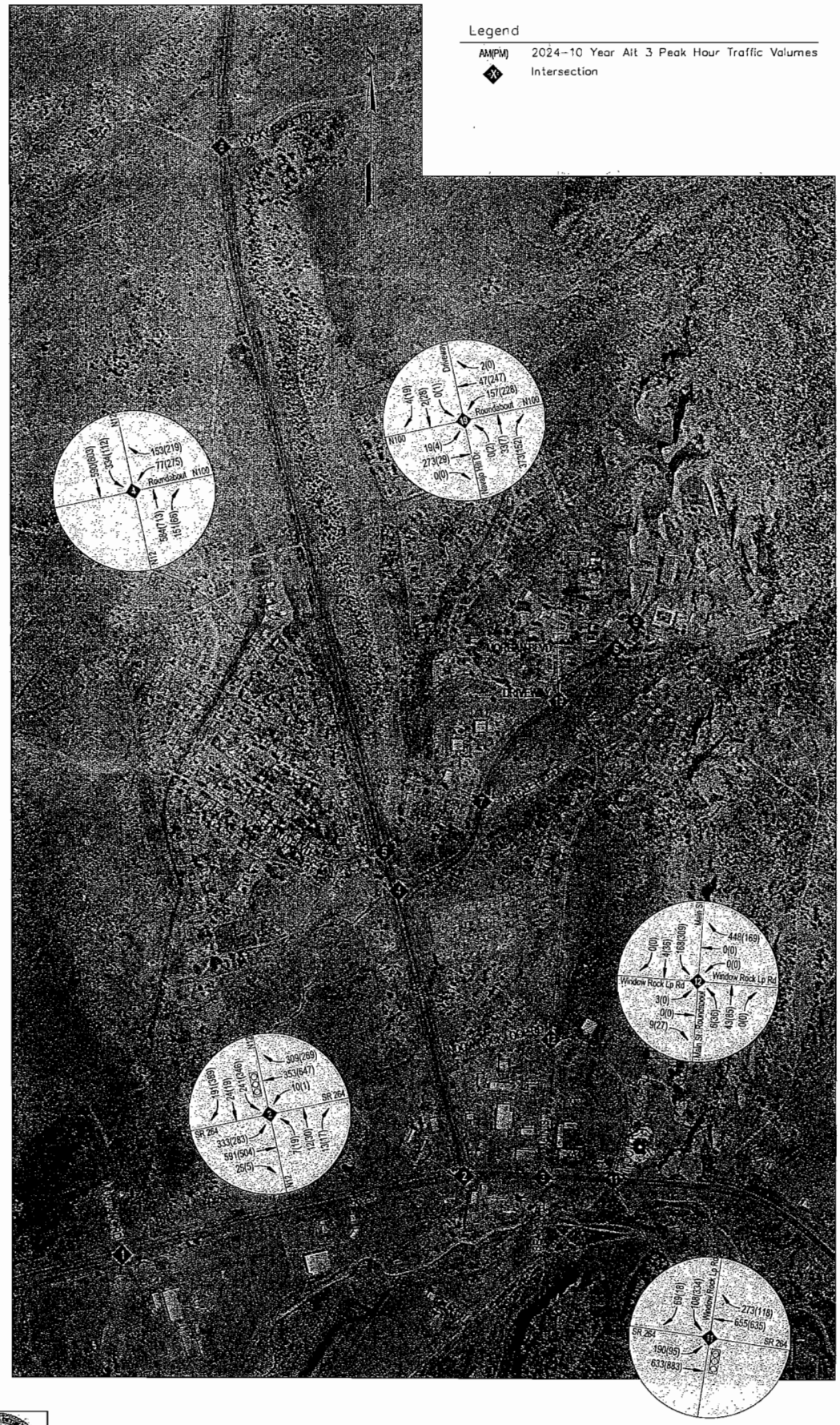
Window Rock Loop Road and Main Street (12)

- Construct roundabout

N100 (Window Rock Boulevard) and Navajo Hill Drive (19)

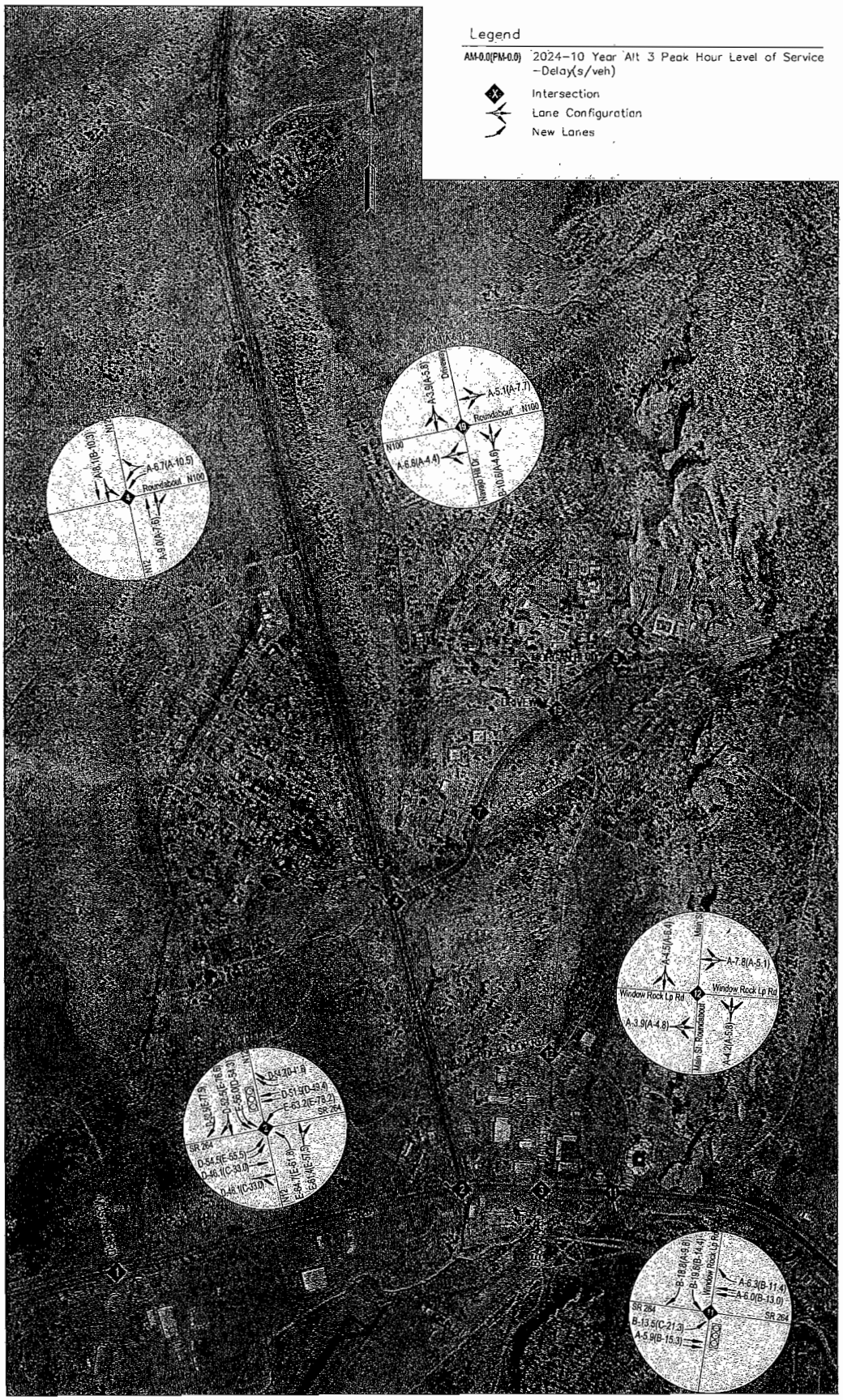
- Construct roundabout

Between the short-term (5-Year) and mid-term (10-year), all of the improvements associated with the Alternative 3 alignment will need to be constructed to ensure acceptable levels of service. See **Figure 7-15** for the mid-term (10-year) capacity analysis with these improvements.



FUTURE (2024) 10-YEAR ALTERNATIVE 3 TRAFFIC VOLUMES

FIG 7-14



FUTURE (2024) 10-YEAR ALTERNATIVE 3 CAPACITY ANALYSIS

FIG 7-15

7.6.3 Long-Term (20-Year)

Long-Term (20-Year) Alternative 3 Traffic Volumes

The long-term traffic volumes are shown in **Figure 7-8**. Traffic volumes from all future developments were added to the future (2034) background traffic volumes which were obtained by applying a one percent annual growth rate for twenty (20) years to the existing traffic volumes along SR 264 and N12.

Long-Term (20-Year) Alternative 3 Capacity Analysis

The remaining improvements are needed to be constructed between the mid-term and long-term (between 10-years and 20-years):

SR 264 and Main Street/Beacon Road (3)

- SB dedicated left turn lane added

N12 and Shonto Boulevard (5)

- EB dedicated left turn lane added

N100 (Window Rock Boulevard) and Morgan Boulevard (8)

- SB dedicated right turn lane added
- EB dedicated left turn lane added

Between the mid-term (10-year) and long-term (20-year), all of the remaining improvements will need to be constructed to ensure acceptable levels of service. See **Figure 7-9** for the long-term (20-year) capacity analysis with these improvements.

7.6.4 Multi-Modal

As part of the turning movement count data collection conducted on Wednesday, September 10, 2014, the pedestrian crossings were collected at the nine (9) intersections. See Table 7-3 - Pedestrian Count Data

Table 7-3 - Pedestrian Count Data

	Intersection	AM Peak Period 7:30 – 9:30 am	Mid-Day Peak Period 11:30 am – 1:30 pm	PM Peak Period 3:30 – 5:30 pm
1	SR 264 and Mustang Road	0	4	7
2	SR 264 and N12	1	17	7
3	SR 264 and Main Street/Beacon Road	8	9	6
4	N12 and N100	1	2	8
5	N12 and Shonto Boulevard	4	0	1
6	N12 and Rocky Ridge Road	0	1	2
7	N100 (Window Rock Boulevard) and Circle Hill Drive (Police/Fire driveway)	3	2	4
8	N100 (Window Rock Boulevard) and Morgan Boulevard	0	0	0
9	N100 (Window Rock Boulevard) and N100 (loop)	4	5	6

There are a number of advantages to creating a pedestrian and bike friendly environment including:

- **Health Benefits** – Regular physical activity provides the opportunity for healthier living, and can help to preventing heart disease, obesity, high blood pressure and diabetes.
- **Economic Benefits** – Walking and bicycling are a more affordable form of transportation over driving. In addition to reduced spending, studies show that bicycle and pedestrian facilities can increase home values, drive spending at local businesses and spur economic development.
- **Environmental Benefits** – Motor vehicles create air pollution. Walking and bicycling helps to reduce these harmful emissions.

Pedestrian and bicycle friendly improvements should be considered with these roadway improvement projects. A few improvements include:

- **Sidewalks** – Provide continuous sidewalks and ADA compliant ramps at intersections. This increases the attractiveness of walking and biking along a roadway. Roadways without sidewalks are also more than twice as likely to have pedestrian crashes as sites with sidewalks on both sides of the street.
- **Pedestrian and/or Roadway Lighting** – Install continuous pedestrian lighting or roadway lighting that will also provide lighting for pedestrians. Lighting can significantly help to reduce pedestrian related crashes. Furthermore, lighting encourages walking during dark or dusk and improves safety and comfort.
- **Bike Lanes** – Provide bike lanes along roadways. Bike riding is safer and more enjoyable with a rideable surface and designated area for bicycles.
- **Multi-Use Paths** – A multi-use path serves as part of a transportation circulation system and supports multiple recreation opportunities, such as walking, bicycling, and inline skating.

8.0 Drainage Analysis, Consideration and Impacts

The goal of the project is to develop alternatives for transportation corridors to relief congestion within Window Rock, Arizona. As part of this process, team members have developed hydrologic models (HEC-1) to quantify design discharges and volumes at key concentration points within Window Rock. This information will be utilized to develop preliminary cost estimates for the proposed roadway improvements. The models may be further refined during the final design process. It is anticipated that the models may be utilized by the BIA/NDOT for planning future development and/or roadways.

FEMA Flood Insurance Rate Maps (FIRM) is not available for the Navajo Reservation within the State of Arizona. Therefore, the flood hazards have not been quantified for the Window Rock area. This study will quantify drainage improvements required for future projects within Window Rock.

8.1 Existing Drainage

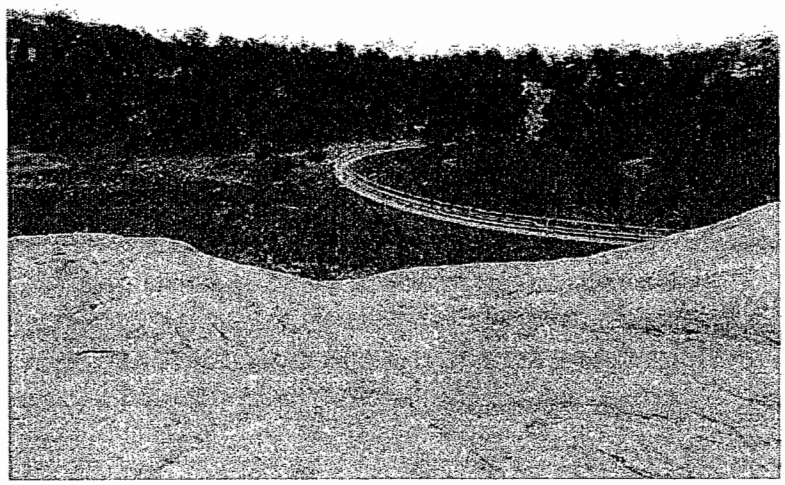
Storm water runoff within the project area flows from the bluff east of town in a westerly/southwesterly direction toward N12 and/or SR-264. The watershed contributing to Window Rock was delineated to identify flow parameters at key concentration points along the potential roadway alignments. Drainage Figure 8-1 titled Subbasin Location Map, located in **Appendix P**, is a topographic map which identifies each watershed.

The project area contains culverts at the following locations:

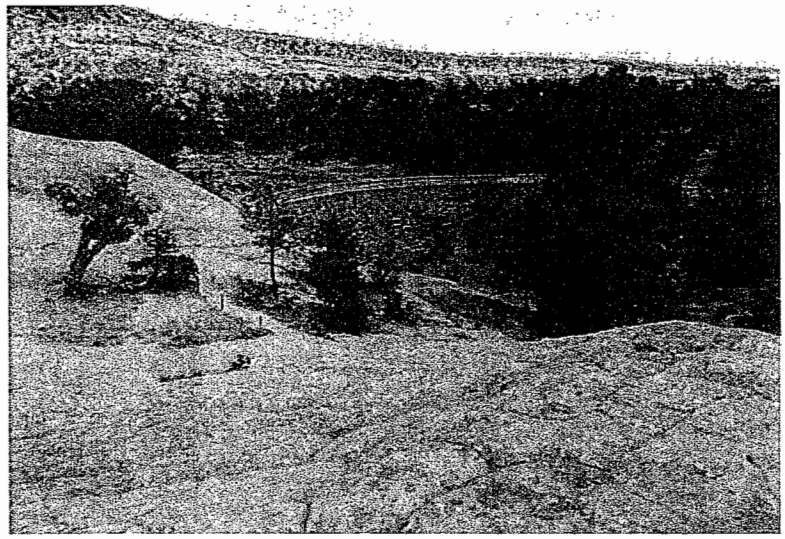
- 2 -48" pipes at N12/N100 intersection;
- 36" pipe crossing N100 between N12 and Circle Hill Drive;
- 24" pipe west of N100 /Morgan Boulevard Intersection.

These culverts will be inspected during the final design to determine if they may remain in place (be extended), or if they need to be replaced.

Drainage Area 10 (DA10) is approximately 93.6 acres (37.89 hectares) and consists of undeveloped mountain ranges and scattered vegetation. This drainage area has been eliminated from the drainage analysis, DA10 includes a rock dam structure which would contain upstream runoff and prevent this watershed from entering the Town of Window Rock. The structural stability of the dam was not evaluated as part of this study.



DA10 Rock Dam



DA10 Rock Dam

8.2 Hydrologic Parameters

Arizona Department of Transportation (ADOT) procedures and methodologies were utilized for this project. The procedures and methodologies are outlined in ADOT publications entitled Highway Drainage Design Manual, Volume I, – Hydrology and Highway Drainage Design Manual, Volume II, - Hydraulics. The following paragraphs define the hydrologic parameters utilized for the study.

8.3 Precipitation

Precipitation for the project was obtained from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14. The CoE hypothetical 6-hour rainfall distribution was utilized for this project. A summary of the rainfall distribution is shown in **Appendix P.**

8.4 Green Ampt Soil Parameters

Green Ampt soil parameters were utilized for this project. The Green Ampt procedures requires identification of five parameters for each soil classification (surface retention loss (IA), soil moisture (DTHETA), capillary suction (PSIF), saturated hydraulic conductivity (XKSAT), effective impervious area (RTEMP). Drainage Figure 8-2, titled Soil Classification Map shows the soil types within the drainage areas. Soil classifications and the Green Ampt parameters for each sub-basin are summarized in Appendix P.

8.5 Clark Unit Hydrograph Parameters

Clark Unit Hydrograph procedures were utilized for this project. The Clark Unit Hydrograph requires estimation of three parameters; the time of concentration (T_C), the storage coefficient (R), and a time area relation. The time of concentration is the travel time, during the corresponding period of most intense rainfall excess, for a flood wave to travel from the hydraulically most distant point in the watershed to the point of interest (concentration point).
ADOT defines three times of concentration (T_C) equations. The desert/mountain and the urban time of concentration equation were utilized for this project. These equations are defined as follows:

- Desert/mountain

  $Tc = 2.4\ A^{.1}\ L^{.25}\ Lca^{.25}\ S^{-.2}$

- Urban

  $Tc = 3.2\ A^{.1}\ L^{.25}\ Lca^{.25}\ S^{-.14}\ RTIMP^{-.36}$

where

Tc	=	time of concentration, in hours
A	=	area, in square miles
S	=	watercourse slope, in ft/mile
L	=	length of the watercourse to the hydraulicly most distant point, in miles
Lca	=	length measured from the concentration point along L to a point n L that is perpendicular to the watershed centroid, in miles, and
RTIMP	=	effective impervious area, in percent

The Clark Unit Hydrograph parameters are defined in **Appendix P.**

8.6 Routing

Normal depth routing procedures were utilized for the project. Channel geometries, Manning's coefficient (roughness), and longitudinal slopes were estimated based on field investigations and topographic mapping developed for the project. The topographic mapping was supplemented with USGS 7.5 minute quadrangles for areas outside of the mapping limits. The routing parameters are summarized in **Appendix P.**

8.7 Summary of Hydrologic Analyses

Results of the hydrologic analyses are summarized in Table 8-1, in **Appendix P.** Since there was limited streamflow data available in the project area, calibration of the model was not possible. However, the results were verified through the use of regional regression equations. The USGS publications entitled Methods for Estimating the Magnitude and Frequency of Floods in the Southwestern United States, Water Supply Paper 2433 and Analysis of the Magnitude and Frequency of Peak Discharges for the Navajo Nation in Arizona, Utah, Colorado, and New Mexico Scientific Investigations Report 2006- 5306 were utilized for model verification. Table 8-2, in **Appendix P,** shows the comparison of peak discharge values. Table 8-3, **Appendix P,** summarizes the drainage areas described above along with their hydrologic characteristics and resulting flows.

8.8 Proposed Drainage Improvements

8.8.1 N100 (N12 to Morgan Blvd) Drainage Improvements

Roadway improvements for N100 will occur between N12 and extend north to Morgan Blvd. Currently N100 is a five lane roadway with a dual left turn lane between N12 and approximately Navajo Hill Drive. The five lane roadway section transitions to a two lane roadway at Navajo Hill Drive. A single lane roundabout is proposed at the intersection of Navajo Hill Drive and N100; these roadway improvements will affect the existing flow pattern of drainage area 40. Reference Figure 8-3, located in **Appendix P.**

N100 and Morgan Blvd: Currently runoff from DA40 runs off the ridge, overtops the N100 roadway and makes its way into Wash 70. Roadside ditches parallel to N100 along the east side of N100 will be constructed with improvements to convey this flow southerly to DA50. Drainage Area 35 has concentrated flows which also cross N100. The construction of the roadway improvements and roundabout would require drainage improvements as well. Pipe culverts would be constructed to convey runoff from DA35, including upstream contributing subbasins underneath roadway N100 into Wash 70, this would maintain the existing flow pattern. The 25-Year flows exiting DA35 and required to pass N100 were calculated to be 196 cfs. This would require triple 42" pipe culverts, this is depicted in Figure 8-3, located in **Appendix P.**

N100 and N12: Southbound N100 at the intersection with N12 currently provides one designated right turn lane and dual left turn lanes onto N12. Northbound 100 at the intersection of N12 provides two northbound lanes. The construction of a two lane roundabout at this intersection

would require corresponding drainage improvements. Existing conditions convey overland flow from DA70 underneath N12 via two 48" diameter CMPs. Roadway improvements could potentially impact the existing drainage structures. These structures (2 -48" CMPs and roadside ditches) will need to be re-installed to accommodate the new roadway configuration. The 50 year contributing flows reaching the existing pipe culverts was calculated to be 562 cfs. The existing double 48" CMP pipe flow capacity is approximately 200 cfs, the existing pipes are grossly undersized. Drainage improvements for this alternative will require a double barrel 6'x6'concrete box culvert, this is depicted in Figure 8-3, located in **Appendix P.**

N100 and Police Station: There is an additional wash crossing along N100 near the existing Police station. The contributing flows for this crossing exit DA55 and were calculated to be 87 cfs for the 25-Year storm event. Double 36" CMPs will be required for this pipe crossing underneath N100, this is depicted on Figure 8-3, located in **Appendix P.**

8.8.2 Alternative 3 Drainage Improvements

Roadway improvements for Alternative 3 will consist of extending the existing Circle Hill Drive to the south to Window Rock Loop Road, extending Circle Hill Drive to the north to intersect N100 Loop, and improving existing segments of Circle Hill Drive. Roadway improvements for Alternative 3 fall within Drainage Areas DA75, DA35, and DA40. Within Drainage Area 35, pipe culverts or an At-Grade crossing with concrete cut off walls will be necessary where proposed alignment 3 intersects N100 loop (the northern terminus of alternative 3). Within Drainage Area 75 another wash crossing occurs at Window Rock Loop Road and the proposed Alternative 3 alignment (southern terminus). Roadway improvements could potentially impact the existing drainage flow patterns pipe culverts may be required at this crossing in order to maintain existing flow patterns. The contributing flows for this location were calculated to be 74 cfs and would require double 36" CMP's underneath Window Rock Loop Road this is depicted on Figure 8-3, located in **Appendix P.**

8.8.3 Alternative 7 Drainage Improvements

Roadway improvements for Alternative 7 will consist of improving the existing Morgan Blvd, creating a roundabout at the intersection of Morgan and N100 and connecting this alignment to N12 (near Jeddito Drive). Roadway improvements for this option fall within Drainage Areas 70 and 65. Currently overland flows exit DA 25 cross Morgan Blvd and enters Wash 70. The construction of a roundabout at the intersection of Morgan and N100 will impact this existing wash crossing. Pipe culverts may be necessary under Morgan Blvd to allow overland flow to continue its natural flow pattern. The contributing flows were calculated to be 58 cfs for the 25-Year storm event. This would require double 24" CMPs underneath Morgan Blvd. Pipe culverts will be used to convey the runoff underneath the roadway (N100), allowing it to resume its natural flow pattern, and enter Wash 70. These pipe culverts were calculated for the alternative outlined in **Section 8.8.1** and are depicted on Figure 8-3, located in **Appendix P.**

8.8.4 Alternative 1 Drainage Improvements

Roadway improvements for Alternative 7 will consist of a roundabout at the intersection of N100 and N12, constructing a roadway segment connecting this intersection to Tse Bonito Road, extending Tse Bonito Road to SR264. Roadway improvements for this alternative could potentially impact a major wash crossing at N100 and N12. Currently Drainage Area 70 crosses N12 via two 48" CMPs. Improvements for alternative 1 will require culvert improvements to maintain the existing flow pattern across N12, this is discussed in section 8.8.1. The proposed roadway segment connecting Window Rock to the St. Michaels Housing development will be in proximity to an existing wash, Black Creek Wash, in order to fit roadway improvements between the wash and existing homes without adverse impacts retaining walls may be required adjacent to Black Creek Wash. Black Creek Wash crosses alternative alignment 1 at approximately 300 feet north of the SR264 connection. Black Creek Wash migrates into an existing stock irrigation tank which attenuates the peak flows, the excess flows will cross the proposed alignment. It is anticipated that a 4-36" CMP crossing is required for this alternative option.

9.0 Conclusions and Final Recommendations

CONCLUSION: A combination of the N100 (Window Rock Boulevard) reconstruction, conversion of the signalized intersection at N12/N100 to a two-lane roundabout intersection, construction of a box culvert drainage structure at the intersection of N12/N100 and SR 264/N12 intersection improvements (westbound duel right-turn lanes added and southbound lanes converted to a shared through-right turn lane) is recommended and feasible and should be advanced into the engineering phase. The above improvements provide the greatest immediate impact to the traffic circulation within a short-term 5-Year window, and these improvements address the goals and objectives of this study.

RECOMMENDATIONS:

Mid-Term (10-Year) Horizon

The following improvements are needed to be constructed between the short-term and mid-term (between 5-Years and 10-years):

Alternative No. 3

- Construct roadway alignment with one lane for each direction of travel and a center two-way left-turn lane

SR 264 and Window Rock Loop Road

- WB dedicated right turn lane added
- SB dedicated left turn lane added
- Traffic signal added

Window Rock Loop Road and Main Street

- Construct roundabout

N100 (Window Rock Boulevard) and Navajo Hill Drive

- Construct roundabout

Long-Term (20-Year) Horizon

The remaining improvements are needed to be constructed between the mid-term and long-term (between 10-years and 20-years):

SR 264 and Main Street/Beacon Road

- SB dedicated left turn lane added

N12 and Shonto Boulevard

- EB dedicated left turn lane added

N100 (Window Rock Boulevard) and Morgan Boulevard

- SB dedicated right turn lane added
- EB dedicated left turn lane added

Beyond 20-Years

These improvements are beyond 20-years, at which point another traffic study will be necessary to validate:

Alternative No. 1

- Construct roadway alignment with one lane for each direction of travel and a center two-way left-turn lane, to accommodate westbound SR 264 traffic.

Alternative No. 7

- Construct roadway alignment with one lane for each direction of travel and a center two-way left-turn lane, to accommodate northbound N12 traffic.

EXHIBIT
tabbies
F

February 25, 2015

Resource and Development Committee

RE: Engineering Work on N12 & N100

Dear Chairperson:

Back in 2007 the Navajo Division of Transportation (NDOT) and Federal Highway Administration (FHA) identified several routes to perform Road Safety Audit (RSA). Two locations were the N100/N12 and N12/SR264 junctions. Navajo Regional Division of Transportation (NRDOT) was asked to participate in the audit and in January 2007 the RSA report was developed and sent to BIA and NDOT for use in identifying a safety project to address the safety concerns.

The RSA report findings was to redesign and reconfigure the N12/N100 intersection to reduce the number of rear end accidents during the peak hours and to provide for free flow of traffic to improve the traffic Level of Service (LOS) up to a Level B or A. The best recommended option was to design a round-a-about for the intersection with other improvements to provide for secondary access into the government offices at a second location.

During the 2010 TCDC update process for the 2010 Construction Priority List; the Ft. Defiance Roads Committee added N12/N100 intersection onto the road priorities and it was then added to the Tribal Transportation Improvement Plan (TTIP) for the year 2016.

Then in 2013 the Justice Department came before Resource and Development Committee with a request to fund a road project to accommodate the new proposed justice center along N100 across from the Public Safety building which moved the up on the TTIP to begin just the engineering of the N12/N100 junction improvement in 2014.

Feasibility & Traffic Study

A meeting was conducted with NDOT to outline the scope of work which was to do a feasibility study and traffic analysis for the presentation of the findings to RDC before proceeding with the new design of the N12/N100 intersection. Part of the scope of work was to conduct a public hearing and also conduct a LOS for the surrounding roads to determine a secondary access road to build as a future project.

The findings were reported to RDC this past November 2014. The results of the two studies (see attachments) indicated that the current configuration of N12/N100 intersection is operating at peak hours to a LOS C & D which means that there in a continued backup of traffic. In the 20 year projection the situation at the intersection under the current condition will be a LOS E to F which is a complete failure.

So by putting in free flowing intersection as the RSA and the traffic study recommends, the intersection will be brought to the LOS C for the next 5 to 10 years. For the 20-year horizon the recommended secondary access roads with other improvements to the N12/SR264 junction will improve the intersections in question so it can be able to operate at the LOS B/C level which will eliminate the traffic backups.

Recommendations

Based on the feasibility study and traffic study results, it highly recommended that the Resource and Development Committee do the following:

1. Immediately direct NDOT and NRDOT to start the design for the new N12/N100 intersection with other street improvements needed to accommodate the new round-a-about with the projected construction of the new intersection for 2016/2017 on the TTIP; and
2. Add a road project to the TTIP this year to begin the design for the secondary access road and improvements to other existing streets to accommodate the future developments and traffic impacts and schedule the construction in the years 2018, 2019 or 2020; and
3. Work with Arizona Department of Transportation (AD)T) to install new signal lights on the secondary access junction with SR264 and to have ADOT widened the N12/SR264 intersection to accommodate two right turn lanes onto N12 and the two left lanes to N12; and
4. Add another road project to the IITP to extend the west leg of the round-a-about to tie into SR264 across from the fairgrounds as another project for the 2021 construction year.

Again, based on the feasibility study and traffic study results, if all the above projects are completed the Window Rock traffic will flow smoothly without traffic backups for the next thirty (30) years. The highly recommended actions must be carried out according to the prescribed schedule without any further delay. The Nation has not utilized the expertise of professional transportation planners to insure that the growth centers receive the necessary feasibility studies and traffic analysis to avoid last minute planning and jugging of construction projects as seen in Chinle community.

It is of utmost importance that Resource and Development Committee give diligent consideration to ensure that the funding, planning, designing and construction of the much needed improvements of Window Rock transportation network be carried out expeditiously.

Leonard H. Pete, Member
NN Resource and Development Committee

Cc: Honorable LoRenzo Bates, Speaker
Office of the Speaker
Resource & Development Committee Members
23rd Navajo Nation Council

Paulson Chaco, Director
NN Department of Transportation
Herbie Larsen, Manager
NRDOT

Office of Legislative Counsel
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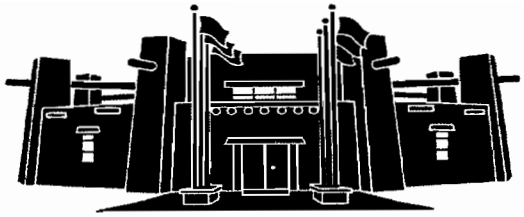

Honorable LoRenzo Bates
Speaker
23rd Navajo Nation Council

MEMORANDUM

TO: Honorable Leonard Pete
Navajo Nation Council

FROM: Erika Friedlander, Staff Attorney
Office of Legislative Counsel

THRU: Mariana Kahn, Senior Attorney
Office of Legislative Counsel

DATE: March 16, 2015

SUBJECT: AN ACTION RELATING TO RESOURCES AND DEVELOPMENT; AMENDING THE FISCAL YEAR 2015 NAVAJO NATION TRIBAL TRANSPORTATION IMPROVEMENT PLAN

Pursuant to your request, attached is the above-referenced proposed resolution and associated legislative summary sheet. Based on existing law and review of the documents submitted, the resolution as drafted is legally sufficient. However, as with all legislation, it is subject to review by the courts in the event of a challenge.

Please review the proposed resolution to ensure it is drafted to your satisfaction. If this proposed resolution is acceptable to you, please sign it where it indicates "Prime Sponsor", and submit it to the Office of Legislative Services for the assignment of a tracking number and referral to the Speaker.

If the proposed resolution is unacceptable to you, or if you have further questions, please contact me at the Office of Legislative Counsel and advise me of changes you would like made to the proposed resolution. You may contact me at (928) 871-7166. Thank you.

OLC No. 15-274-1

THE NAVAJO NATION
LEGISLATIVE BRANCH
INTERNET PUBLIC REVIEW PUBLICATION

LEGISLATION NO: _0104-15__ SPONSOR: Leonard H. Pete

TITLE: An Action Relating To Resources And Development; Amending The Fiscal Year 2015 Navajo Nation Tribal Transportation Improvement Plan

Date posted: March 26, 2015 at 4:55PM

Digital comments may be e-mailed to comments@navajo-nsn.gov

Written comments may be mailed to:

Executive Director
Office of Legislative Services
P.O. Box 3390
Window Rock, AZ 86515
(928) 871-7586

Comments may be made in the form of chapter resolutions, letters, position papers, etc. Please include your name, position title, address for written comments; a valid e-mail address is required. Anonymous comments will not be included in the Legislation packet.

Please note: This digital copy is being provided for the benefit of the Navajo Nation chapters and public use. Any political use is prohibited. All written comments received become the property of the Navajo Nation and will be forwarded to the assigned Navajo Nation Council standing committee(s) and/or the Navajo Nation Council for review. Any tampering with public records are punishable by Navajo Nation law pursuant to 17 N.N.C. *§374 et. seq.*

THE NAVAJO NATION
LEGISLATIVE BRANCH
INTERNET PUBLIC REVIEW SUMMARY

LEGISLATION NO.: 0104-15

SPONSOR: Honorable Leonard H. Pete

TITLE: Relating To Resources And Development; Amending The Fiscal Year 2015 Navajo Nation Tribal Transportation Improvement Plan.

Posted: March 26, 2015 at 4:55 PM

5 DAY Comment Period Ended: March 31, 2015

Digital Comments received: *No comments were received.*

Executive Director
Office of Legislative Services

04/01/15 @ 9:30a.m.
Date/Time

MEMORANDUM

To : Whom It May Concern

From :

Tom Platero, Executive Director
OFFICE OF LEGISLATIVE SERVICES

Date : March 12, 2014

Subject : ***Standing Delegation of Authority – OLS Executive Director***

Effective immediately and ending July 31, 2015, the following shall be the standing delegation for the position of Executive Director for Office of Legislative Services:

1st Caleb Roanhorse, Legislative Advisor
2nd Linda Youvella, Legislative Clerk Supervisor
3rd Shammie Begay, Legislative Advisor
4th Janice Jumbo, Administrative Services Officer

This delegation will be in effect when I am on travel or on leave status. The delegation shall cover day-to-day operations. This standing delegation supersedes all previously issued standing delegation letters.

Thank you for your cooperation with the designated staff while they are delegated. If you should have any questions, I can be reached at (928) 871-7236/7254 or by e-mail at tomplatero@navajo-nsn.gov.

ACKNOWLEDGMENTS:

Caleb Roanhorse	Linda Youvella	Shammie Begay	Janice Jumbo
Legislative Advisor	Legis. Clerk Supervisor	Legislative Advisor	Admin. Services Officer

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RESOURCES AND DEVELOPMENT COMMITTEE
23rd NAVAJO NATION COUNCIL

FIRST YEAR 2015

COMMITTEE REPORT

Mr. Speaker,

The **RESOURCES AND DEVELOPMENT COMMITTEE** to whom has been assigned:

> **Legislation # 0104-15:** An Action Relating to Resources and Development: Amending the Fiscal Year 2015 Navajo Nation Tribal Transportation Improvement Plan. *Sponsor: Honorable Leonard Pete*

Has had it under consideration and report the matter did **DID NOT PASS;** however, the following directive was issued: Chairman is to schedule a meeting between RDC, NDOT and all of the Stakeholders to discuss with regards to the Window Rock master plan.

and thereafter voted on the legislation and the matter failed.

Respectfully submitted,

Alton Joe Shepherd, Chairperson
Resources and Development Committee
Of the 23rd Navajo Nation Council

Date : May 20, 2015
Motion: Leonard Tsosie
Second: Benjamin Bennett
Vote : **2-3 (FAILED)**
(Chair Voted to Break Tie Vote)